

CHAPTER V

Cone*

Guillaume Jacques
CRLAO, CNRS

1. Introduction

The Cone <teo.ne> Tibetan language is spoken in Cone county (Chinese Zhuóní 卓尼), Gannan Tibetan Autonomous Prefecture in Gansu province. Cone County is home to around 88,000 people of which only 60% are Tibetan.¹ The Cone language is only preserved in very few villages. The variety described in this paper is from Nyinpa village (Chinese Níbā 尼巴, local pronunciation /nə¹mbæ/), located in the southwest of Cone, in the valley of Chas.bu gshus (Chēbāgōu 車巴溝) alongside Mdo.khog (Dāogào 刀告) village. Nyinpa borders Thebo (Diébù 迭部) county in the southeast, Mdzod.dge (Ruò'ěrgài 若爾蓋) county in Sichuan in the southwest and Klu.chu (Lùqǔ 碌曲) in the west.

The standard spelling of the county <teo.ne> strikes one as non-Tibetan looking. It is pronounced locally as /tɕɔ¹nɛ/. Various folk-etymologies have been proposed to explain this name (for instance *|gro.nas| ‘wheat and barley’) but none seem fully convincing.

Several varieties of Tibetan spoken in Cone county have been studied in previous publications, in particular Qú (1962), Yáng (1996) and Rnam.rgyal (2008).

The present study is based on recordings collected during a field trip in Chengdu in October-November 2010, from a young student (age 23 at that time) named Dkon.mchog Rin.chen (公巧仁欠). Although my language consultant has been schooled in Amdo Tibetan since an early age, he still uses his home tongue on a regular basis with his family or with Cone relatives in Chengdu. The data collected include a wordlist, elicited verbal and nominal paradigms, as well as three texts.

The findings of this study are presented in six sections: general methodology, synchronic phonology, historical phonology, historical morphology, vocabulary and classification. The

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¹ The sociolinguistic data in this article are taken from Prins' (2002) survey.

paper also includes an English-Cone vocabulary of 1,300 words with their etymology in Common Tibetan.

2. Preliminaries on general methodology in Tibetan dialectology

Unlike most languages of the Sino-Tibetan family, Tibetan languages have a rich written record dating back to the eighth century. Hence, most researchers studying modern Tibetan varieties use the written language as a clue to reconstructing their historical phonology.

However, rather than referring to ancient texts to compare modern dialects with the oldest attested stage of Tibetan, the usual practice is to simply cite forms from Jäschke (1881) indiscriminately as ‘Written Tibetan’, lumping together recent words and archaic vocabulary. The practice of referring to ‘Written Tibetan’ may have been useful in a former stage of Tibetology, when Old Tibetan texts were poorly available and Tibetan literature was not in a searchable format, but should be avoided now that the documentation of earlier stages of Tibetan has considerably improved.

In this paper, I use an IPA-based transcription of Tibetan (Jacques 2012b). While the commonly used Wylie transcription (Wylie 1959) is useful and quite appropriate to transcribe the Tibetan script, it is not convenient as a tool to describe the historical phonology of the modern Tibetan languages. Modern dialects and the intermediate phonetic stages must be transcribed in IPA; thus, it is confusing to use for the oldest stage a transcription that is not compatible with IPA, and which non-specialists may find counterintuitive.

Tibetan languages can potentially contribute to a general theory of phonological change by providing uncontroversial examples of sound changes that are unparalleled in better-known language families such as Indo-European or Semitic. Very few language groups have such a long documented history: only Romance, Arabic, Indo-Aryan and Chinese have a comparable variety of dialects with more than 1,300 years of continuous written record.²

Thus, Tibetan specialists should take pains to present their data in a clear and explicit way, so that these data can be accessible to other linguists. It is hoped that this new transcription will contribute making Tibetan languages better known to a broader public of historical linguists.

The correspondences between the Tibetan script and our system are shown in Table 1. Since the vowels are transcribed in an identical way in the present transcription and in the Wylie system, they are not included here.

² Not including languages such as Greek with a very long documented history but very few distinct modern languages.

Table 1: Correspondences between the Tibetan script, Wylie transcription and IPA

| Tibetan Alphabet | Wylie | Present system | Tibetan Alphabet | Wylie | Present system |
|------------------|-------|-----------------|------------------|-------|----------------------|
| ཀ | k | k | མ | m | m |
| ཁ | kh | k ^h | ཅ | ts | ts |
| ག | g | g | ཇ | tsh | ts ^h |
| ང | ng | ŋ | ཉ | dz | dz |
| ཅ | c | tɕ | ཐ | w | w or fi ^w |
| ཆ | ch | tɕ ^h | ཛ | zh | ʒ |
| ཇ | j | dʒ | ཌ | z | z |
| ཉ | ny | ɲ | ཎ | ‘ | fi or ⁿ |
| ཏ | t | t | ཏ | y | j or j |
| ཐ | th | t ^h | ར | r | r |
| ད | d | d | ལ | l | l |
| ན | n | n | ཤ | sh | ɕ |
| པ | p | p | ས | s | s |
| ཕ | ph | p ^h | ཧ | h | h |
| བ | b | b | ཨ | - | ʔ |

The letter ཎ, a notoriously difficult problem of Tibetan historical phonology (see Sun 1986:§4.2.5; Coblin 2002, 2006; Hill 2005a, 2009, 2010), is transcribed as homorganic prenasalization <n> when occurring as a the first element of an initial cluster. The semi-vowel in consonant clusters (<wa.zur> and the <ja.btags>) are transcribed as <w> and <i>. Syllable boundaries are indicated by a dot in all transcriptions; unlike Wylie transcription. Placenames and person’s names however are cited in Wylie, as IPA would be unpractical.

Moreover, in order to add some clarity to the treatment of Tibetan etyma, I propose to distinguish several stages, each of which will be represented in this paper by a different writing convention: Pre-Tibetan, Common Tibetan, Old Tibetan and Classical Tibetan.

By **Pre-Tibetan**, I designate the stage of the language just before the advent of writing but after Tibetan separated from its closest relatives (Tamangic and Bumthangic). This stage is reconstructed by internal reconstruction from the earliest attested stages of the language. It is only marginally useful in dialect descriptions, but can be relevant to explain some morpho-phonological alternations in Common Tibetan. It is reconstructed on the basis of a series of phonetic laws (Hill 2011) that have been discovered by comparison with other Sino-Tibetan languages and by application of internal reconstruction (see Jacques 2012a).

Old Tibetan represents the oldest attested stage of the Tibetan language, including texts from the eighth to the tenth century (see Hill 2010a). As sources of Old Tibetan texts we use forms attested in the database of the Old Tibetan Documents Online website (<http://otdo.aatfts.ac.jp/>), and in various publications (in particular Li & Coblin 1987; Huang & Mã 2000; Dotson 2009). Although no reliable dictionary of Old Tibetan exists, the searchable OTDO database allows to locate whether a given word (and a particular spelling) is present in a substantial portion of the Old Tibetan corpus.

Common Tibetan corresponds to the stage of the common ancestor of all Tibetan dialects. It is almost equivalent to Old Tibetan, but differs in several ways. First, it encompasses all the vocabulary that can be reconstructed from modern languages, not only the one attested in old texts, and including variants in the cases of certain words, as will be treated in detail in this paper. Second, unlike Old Tibetan which presents very irregular spellings, Common Tibetan is an idealized system, which discards irrelevant spelling variations. However, it does include dialectal variants that are not explainable by regular sound changes or by language contact.

One conspicuous feature that Old Tibetan shares with some dialects (including Amdo and Cone) is the palatalization of velars and labials before the front vowels $[-i]$ and $[-e]$. For instance, the noun ‘mirror’ spelled $\langle me.loŋ \rangle$ in Classical Tibetan (and pronounced without palatalization in Lhasa Tibetan and Western Tibetan languages), but its Old Tibetan spelling is $\langle m^i.e.loŋ \rangle$ with palatalization on the $/m/$.

It would appear that Old Tibetan here is less conservative than Lhasa Tibetan and Western Tibetan, having undergone a secondary palatalization, but the issue is very complex. As N. W. Hill pointed out to me, some words are *never* palatalized in Old Tibetan and modern languages (for instance Old Tibetan $\langle men.tog \rangle$ ‘flower’, Classical $\langle me.tog \rangle$, Cone $/m^L.t^h u/$ as if from $|me.t^h og|$), and one should consider the possibility that palatalization in these contexts go back to Common Tibetan: languages without palatalization such as Lhasa or Western Tibetan, would have lost it. While the loss of palatalization does not seem very probable, until this issue is settle we systematically reconstruct doublets in Common Tibetan with both the palatalized and the non-palatalized forms when both are attested in spellings and modern languages.

Concerning the thorny problem of the phonemic status of aspiration in Old Tibetan (see Hill 2007), I will assume that aspiration was marginally contrastive already in Common Tibetan, since some loanwords (mainly from Chinese) with unaspirated stops word-initially belong to the reconstructible vocabulary, but for all other contexts I assume for Common Tibetan the same distribution between aspirated and unaspirated stops as that found in Classical Tibetan. Only Pre-Tibetan will be reconstructed without aspiration.

In other words, Common Tibetan is not a reconstruction in the usual sense of the term, but rather an idealized form of Old Tibetan devoid of its philological complexities and not restricted to the particular dialect of scribes from the Imperial period. Some additional features, such as uvulars in some isolated dialects, might reflect pre-Old Tibetan phonological contrasts (Sun 2003b:783) and would need to be integrated in the Common Tibetan forms, but we leave this issue for further research; it is not relevant in any case to the study of the Cone language

since it does not have any trace of these uvular consonants. On the other hand, the vocalic split *elia* in Western Tibetan dialects, thought by Shafer (1941) to be an archaic feature lost in Old Tibetan, has been shown to be a recent development in those languages (Jacques 2009b).

We will use starred forms for Common Tibetan only in the case of etyma non-attested in Old Tibetan or early Classical Tibetan, whose existence can only be ascertained by comparison between modern Tibetan languages.

Classical Tibetan is a much less-well defined term referring to all documents written after Old Tibetan. Spellings attested only in Classical Tibetan texts must be used with caution, as Classical Tibetan is the use of a writing system close to Old Tibetan to transcribe later forms of Tibetan whose phonological and morphological systems had already undergone tremendous change. We will systematically indicate in this paper when Classical Tibetan, as represented in texts and dictionaries (I used in particular Hill 2010b, a compilation of verbal forms from all available dictionaries), is misleading as a tool to study modern dialects.

The conventions for writing forms from these stages will be the following: Pre-Tibetan forms, being reconstructed, are preceded with an asterisk *; Common Tibetan is represented between vertical bars ||; Old and Classical Tibetan are indicated in Jacques' (2012) IPA transcription between <>. Forms from modern Tibetan languages are cited between // for phonological form and square brackets [] for phonetic realization.

Here are a few examples of words in the various stages of Tibetan in question:

Table 2: The different types of Tibetan forms referred to in this paper

| Meaning | Pre-Tibetan | Common Tibetan | Old Tibetan | Classical Tibetan | Cone |
|----------------------------|--------------------|---|---|-------------------------|----------------------|
| one | *kV-tik > *kV-teik | gteig | <gte ^h ig> ~ <gteig> | <gteig> | /tei ^H / |
| wild animal (herbivore) | | ri.dags | <ri.dags> | <ri.d ^w ags> | /rə ^L ta/ |
| eye | *tV-mik | dmig , dm ⁱ ig , -m ⁱ ig , -mig | <dm ⁱ ig> ~ <-m ⁱ ig> | <mig> | /ɲi ^H / |
| oath | | mna | <m+n> ~ <mna ^f > | <mna ^f > | /næ ^H / |

Pre-Tibetan forms are given only for words that have clear cognates in Tamangic or Bumthangic languages.

The numeral ‘one’ is <gteig> in Classical Tibetan, but in Old Tibetan the two spellings with an aspirated affricate <gte^hig> and an unaspirated one <gteig> are equally common, reflecting the fact that the contrast between the two series was not yet fully phonemicized. We normalize the form this word to |gteig| in Common Tibetan, following Classical Tibetan and all modern languages.

The noun ‘wild animal’ is <ri.dags> in Old Tibetan, but is spelled <ri.d^wags> in Classical Tibetan with a spurious <^w> (a symbol called <wa.zur> in Tibetan) present only to disambiguate

syllabification (otherwise the spelling <d+g+s> could be read as either <dags> or <dgas>). Hence, here the Common Tibetan form does not include the <wa.zur> and follows the Old Tibetan form <ri.dags>. Not all cases of <w> are spurious however: when this character is present in Old Tibetan texts, it must necessarily indicate a medial |-w-| (see Hill 2006 and Jacques 2009a).

The noun ‘eye’ is spelled <mig> in Classical Tibetan, but has a prefix in Old Tibetan <dm̄ig> and most dialects preserve a direct trace of this prefix, either as a consonant or as a high tone as in Cone (and Lhasa Tibetan). The prefixless form is attested in Old Tibetan only as the second element of a compound as in <te^hu.m̄ig> ‘spring’. The allomorphy between <dm̄ig> and <-m̄ig> found in Old Tibetan must be projected to Common Tibetan; the Classical Tibetan form represents a later spelling regularization. However, since some Tibetan languages also have no palatalization in this word and since this appears to be an innovation shared by Old Tibetan and Eastern dialects, we reconstruct the non-palatalized forms |dm̄ig| / |-mig| in Common Tibetan too as dialect variants.

The noun ‘oath’ |mna| is spelled with a final <ñ> in Classical Tibetan and sometimes in Old Tibetan. However, an alternative spelling <m+n> (which would have to be read <man> according to the conventions of Classical Tibetan) also appears in Old Tibetan texts. It is clear here, contra Hill (2010a), that the letter <ñ> in syllable-final position is just a spelling convention used to distinguish between the syllables |man| and |mna|, but that in the time of Old Tibetan texts, this convention was not yet fully established. Therefore, the correct Common Tibetan form must not include the final <ñ>.

In this paper, Cone Tibetan forms will be compared to Common Tibetan rather than to either Classical or Old Tibetan directly, but justification will be given whenever Common Tibetan differs from Classical Tibetan in a non-trivial way. Tibetan linguistic terms (as opposed to etyma) are cited in Classical Tibetan, as these words had not yet been coined at the Common Tibetan stage.

Phonetic forms from other sources not transcribed by the author (and thus of doubtful value) are represented in italics without //.

A final convention used in this paper are the curly brackets {}, used to indicate a set of elements; thus {/w/, /j/, /r/} for instance means ‘any of /w/, /j/ or /r/’.

3. Synchronic phonology

Unlike Amdo Tibetan, but like other Tibetan languages of the southern Gansu area like ‘Brug.chu (Zhōuqū 舟曲), Cone has lost all initial consonantal clusters from Common Tibetan, but some groups of consonants are preserved across syllable boundaries. Most final consonants have been lost, resulting in a tonal language with a rich consonantal and vocalic inventory, but with a relatively simple syllabic structure.

3.1 Inventory of initial consonants

Nyinpa Cone has the following 47 initial consonants, a system quite similar to that of the Sbathang dialect (Gésāng & Gésāng 2002).

Table 3: List of consonantal phonemes in Cone Tibetan

| | | | | | |
|----------------|-----------------|-----------------|-----------------|----------------|-----|
| p | t | | | k | |
| p ^h | t ^h | | | k ^h | |
| b | d | | | g | |
| mb | nd | | | ŋg | |
| | ts | tɕ | tʂ | | |
| | ts ^h | tɕ ^h | tʂ ^h | | |
| | dz | dʒ | dʐ | | |
| | ndz | ndʒ | ndʐ | | |
| m | n | ɲ | | ŋ | |
| | s | ɕ | ʂ | x | h |
| | s ^h | ɕ ^h | ʂ ^h | x ^h | |
| | z | ʐ | (ʐ) | ʎ | (ɣ) |
| w | l | j | r | | |
| | ɬ | | | | |

This system is particularly unusual typologically for having as many as four contrastive aspirated fricatives (see Jacques 2011). The contrast between /h/, /x/ and /x^h/ is exceedingly rare, but clear minimal pairs can be found (see /æ^h.xi^h/ ‘piglet’ vs. /x^hi^h/ ‘louse’ in the table below). [z] is an allophone of /r/ (phonetically a fricativized alveolar trill [r̥]) in the high tone (superscript ^h).

The voiceless lateral fricative /l/ is slightly aspirated, and would be more properly represented as [l^h]. It could be considered to be a fifth aspirated fricative, but there is no unaspirated counterpart in Cone, so that aspiration is not contrastive for this consonant. The status of [ɣ] is problematic, and will be discussed in §3.3.

The following examples illustrate all the consonantal phonemes of Cone; we have not attempted at providing systematic minimal pairs for want of space, but such pairs can be found in our wordlist in the appendix):

Table 4: Examples of Cone consonants

| Consonant | Example 1 | CoT | Example 2 | CoT |
|--------------------|---|----------------------------------|---|---------------------------------|
| /p/ | /pu: ^H / to heap, to stack | dpun | /pə ^H / hair | spu |
| /p ^h / | /p ^h u: ^L / to push | ⁿ p ^h ul | /p ^h ɑ: ^H / pig | p ^h ag |
| /b/ | /ba: ^L / to soak | sban | /be: ^L / to bury | sbas |
| /mb/ | /mba: ^L / mask | ⁿ bag | /mbə: ^L / worm | ⁿ bu |
| /m/ | /ma: ^H / soldier | dmag | /me: ^H / wound | rmas |
| /w/ | /wæ: ^L / fox | wa | /wɔ̃ ^L mbæ/ deaf | fion.pa |
| /t/ | /ta: ^H / tiger | stag | /tɑ: ^H / to chop | gtub |
| /t ^h / | /t ^h ɑ: ^H / to grind | ⁿ t ^h ag | /t ^h u: ^H / to meet | t ^h ug |
| /d/ | /da: ^L / to lick | ldag | /dɑ: ^L / to hit | rdun |
| /nd/ | /ndæ: ^L / arrow | mda | /ndu: ^L / to sit | ⁿ dug |
| /ts/ | /tsɑ: ^H / to beg | bslan | /tsu: ^H / fontanelle | gtsug |
| /ts ^h / | /ts ^h ɑ: ^L / nest | ts ^h an | /tshu: ^L / to sell | ⁿ ts ^h on |
| /dz/ | /dza: ^L / moon | zla.ba | /dze: ^L / to speak | bzlas |
| /ndz/ | /ndzɔ̃: ^L / yak-bull hybrid | mdzo | /ndzu: ^L / to insert | ⁿ dzugs |
| /n/ | /næ: ^H / snot | snabs? [?] | /nɑ: ^L / west | nub |
| /s/ | /sæ: ^L / to eat | za | /su: ^L / to bark | zug |
| /s ^h / | /s ^h ɑ: ^L / ground | sa.ba | /s ^h u: ^L / basket | sle.bo |
| /z/ | /za: ^L / good | bzam | /zu: ^L / carpenter | bo.ba |
| /l/ | /la: ^H / musk deer | gla.ba | /lu: ^L / wind | rlun |
| /ʎ/ | /ʎæ: ^H / god | ʎa | /ʎu: ^L / to fall | ʎun |
| /tɕ/ | /tɕɑ: ^H / iron | lteags | /tɕæ: ^L / tea | dza |
| /tɕ ^h / | /tɕ ^h ɑ: ^H / blood | k ^h rag | /tɕ ^h ɑ: ^L / small | tɕ ^h un |
| /dz/ | /dza: ^L / to be full | rgjags | /dzɑ: ^L / to run | rgj ^u g |
| /ndz/ | /ndzu: ^L / to raise | ⁿ gjog | /ndzɑ: ^L / to suck | ⁿ dzib |
| /ɲ/ | /ɲæ: ^L / fish | ɲa | /ɲɑ: ^L / little | ɲun |
| /ɕ/ | /ɕe: ^L / mouse | b ⁱ fɲu | /ɕɑ: ^L / to paint | b ^u g |
| /ɕ ^h / | /ɕ ^h e: ^L / marmot | ⁿ p ^h i.ba | /ɕ ^h ɑ: ^H / flour | p ^h ie |
| /z/ | /zi: ^L / to twist (a rope) | ? [?] | /zæ: ^L / to glue | sb ⁱ ar |
| /j/ | /ja: ^L / light | jan | /jɑ: ^L / country | jul |
| /tʂ/ | /tʂɑ: ^L / cliff | brag | /tʂɑ: ^L / six | drug |
| /tʂ ^h / | /tʂ ^h ɑ: ^H / horizontal | ⁿ p ^h red | /tʂ ^h ɑ: ^H / to rob | ⁿ p ^h rog |
| /dz/ | /dzæ: ^L / sound | sgra | | |
| /ndz/ | /ndzɛ: ^L / rice | ⁿ bras | /ndzɑ: ^L / dragon | ⁿ brug |
| /ʂ/ | /ʂe: ^H / bridle | srab | /ʂɑ: ^H / to protect | bsrun |
| /ʂ ^h / | /ʂ ^h e: ^L / coarse | hral | | |
| /r/ | /rɑ: ^L / to rot | rul | /zɑ: ^H / snake | sbrul |
| /k/ | /ka: ^H / marrow | rkaŋ.ba | /kɑ: ^H / to push | skul |
| /k ^h / | /k ^h ɑ: ^L / snow | k ^h a.ba | /k ^h ɑ: ^H / hole | k ^h un |

| | | | | |
|-------------------|--|-------------------|---|---------------------|
| /g/ | /gɑ: ^L / to stride | brgal | /gɑ: ^L / to wait | sgug |
| /ŋg/ | /ŋgɔ: ^L / head | mgo | /ŋgɑ: ^L / to block | ^ɳ gag |
| /ŋ/ | /ŋɔ: ^L / face | ŋo | /ŋɑ: ^H / silver | dŋul |
| /x/ | /xu: ^H / plough | geol | /xɑ: ^L wɔ/ mother's brother | zan.bo |
| /x ^h / | /x ^h ɑ: ^L / place where one sat before | ɕul | /x ^h ɑ: ^L / deer | ɕa.ba ³ |
| /x/ | /xə: ^L / to melt | zu | /æ ^H .xi ^H / piglet | |
| /x ^h / | /x ^h ə: ^H / to die | ɕi | /x ^h i ^H / louse | ɕig |
| /ɣ/ | /ɣɑ: ^L / female genital organs | gzan | /ɣə: ^L / to cause to melt | gzu |
| /h/ | /hi ^H / to take off | p ^h ud | /hu ^H / to hit a target | p ^h og |

Prenasalized stops and affricates are treated as independent phonemes, not clusters in this language, because no {nasal+stop} type clusters are found.

Voiced stops and fricatives (except [z^h]) only occur with a low tone (superscript^L), a fact that will be explained by historical phonology in §4.3.1.

Of the 210 clusters of Common Tibetan, none has been preserved in Cone. However, we will see that some limited clusters appear at syllable boundaries (cf. §3.3).

3.2 Vowels

The vocalic system is extremely rich, probably one of the richest of any Tibetan language; it is also quite divergent from that of both Amdo and Spathang Khams. The following 23 vocalic phonemes are attested:

Table 5: The vocalic system of Cone Tibetan

| | | | | | | | |
|---|----|---|----|---|----|----|------|
| i | i: | ɯ | ɯ: | u | u: | ĩ: | (ũ:) |
| ɪ | ɪ: | | | | | | |
| e | e: | | | o | o: | ẽ: | õ: |
| ɛ | | ə | | ɔ | | | |
| æ | | | | ɑ | ɑ: | ã | ã: |

Since tonemes have markedly distinct realizations with short and long vowels, one could propose an alternative analysis with four instead of two tonemes (see next section) and view vowel length as a secondary feature of tones; the vowel system would then be reduced to 15. However, we will see that this analysis is problematic.

Cone is the only known dialect of Tibetan with five contrastive degrees of height (i ɪ e ɛ æ). The following examples illustrate the vowel phonemes:⁴

³ In Classical Tibetan <ɣ^wa.ba> has a spurious *wa-zur*, this word is spelled <ɕa.ba> in Old Tibetan (see Jacques 2009a for a textual example).

⁴ In this table ‘analogical’ indicates verb forms that are not regularly related to their Common Tibetan equivalent, but underwent analogical leveling (see §5).

Table 6: Examples of Cone vowels

| Vowel | Example | Meaning | CoT | Example | Meaning | CoT |
|-------|-------------------------------------|----------------------|--------------------|-----------------------------------|---------------------------|---------------------------|
| /i/ | /tsi ^H / | to lay bricks | rtsig | /ki ^H / | to dye, present | skud |
| /i:/ | /tsi: ^H / | to count, past | brtsis | /ti: ^H / | to spread (a sheet), past | btiŋs |
| /ɪ/ | /tɪ ^L / | to catch up | ded | /pɪ ^L / | Tibetan | bod |
| /ɪ:/ | /tɪ: ^H / | to cook, past | btsos | /tɪ: ^H / | to watch, imperative | bltos |
| /e/ | /tse ^H / | to cut | gtsab | /te ^H / | to plant | btab |
| /e:/ | /tse: ^H / | to search, past | btsal | /pe: ^L / | wool | bal |
| /ɛ/ | /rɔ ^L tse ^H / | summit | ri.rtse | /ɛ ^H se ^H / | cotton | srinʔ |
| /æ/ | /tsæ ^H / | grass | rts ^w a | /tæ ^H / | horse | rta |
| /ʌ/ | /tsu ^H / | top of head | gtsug | /tu ^H / | to chop | gtub |
| /ʌ:/ | /kʌ: ^H / | to push | skul | /dʌ: ^L / | to hit | rdug |
| /ə/ | /tsə ^H / | to count | rtsi | /kə ^H / | to steal | rku |
| /u/ | /tu ^H / | to hang, imperative | t ^h ogs | /ku ^H / | to block | k ^h og |
| | | | analogical | | | analogical |
| /u:/ | /tu: ^H / | to think, imperative | t ^h oŋ | /tsu: ^H / | to sell | btsoŋs |
| | | | analogical | | | |
| /o/ | /ɲo ^H / | man, dative | mi.la | /mbo ^L / | bug, dative | ⁿ bu.la |
| /o:/ | /to: ^L / | smoke | du.ba | /lo: ^H / | lung | glo.ba |
| /ɔ/ | /kɔ ^H / | to carve, present | rko | /hɔ/ | target | p ^h og |
| /ɑ/ | /kɑ ^H / | to block, past | bkag | /tɑ ^H / | tiger | stag |
| /ɑ:/ | /kɑ: ^H / | marrow | rkaŋ | /lɑ: ^H / | musk deer | gla.ba |
| /ĩ:/ | /pĩ: ^H / | incense | spos | /ɲĩ: ^H / | name | miŋ * Cm ⁱ iŋ |
| /ẽ:/ | /tẽ: ^H / | felt | stan | /tsẽ: ^H / | to sew, past | btsems |
| /ã/ | /nã ^L / | forest | nags | /nã ^H / | pus | rnag |
| /ã:/ | /nã: ^H / | sky | gnam | /tã: ^H / | to speak, present/past | gtam btams |
| /õ:/ | /kõ: ^H / | thirsty | skom | /tõ: ^H / | to speak, imperative | gtoms |

There is no length contrast with the low vowels /æ/, /ɔ/, /ɛ/ and the nasal vowels /ĩ:/, /ẽ:/, /õ:/ . Only /ã:/ has a short counterpart /-ã/ in a few words. The status of /u:/ as a phoneme is problematic, as it is only attested in a few items with palatal or alveolo-palatal initial: /ɲũ:^L/ |ɲol| ‘sleep, imperative’, /tɕũ:^Lwa:^H/ ‘Potentilla anserina’ |gro.ma| and /mbo^Ltɕũ:^Lwa:^H/ ‘ant’ |ⁿbu.grog.ma|. There is no obvious minimal pair with /o:/.

3.3 Syllable structure

In Cone Tibetan, monosyllables are (C)V(C); there are no initial clusters, and very few final consonants. Disyllables have the structure (C)V(C).(C)V(C), and allow clusters across syllable boundaries (indicated here by a dot).

Of the nine final consonants of Common Tibetan (|-b| |-d| |-g| |-m| |-n| |-ŋ| |-r| |-l| |-s|), only /-r/ is preserved in Cone in word-final position. Most syllables are open syllables with no final consonant.

Only the following four closed rhymes are attested in monosyllables and in the last syllable of words:

Table 7: Rhymes with final /-r/ in Cone Tibetan

| Rhyme | Example | CoT | Example | CoT |
|-------|--|-------------------|--------------------------------|------|
| /-æɾ/ | /kær ^H / to chop firewood, past | bkarʔ | /zær ^L / steep | gzar |
| /-or/ | /kor ^H / to turn | skor | /tor ^H / to scatter | gtor |
| /-er/ | /ndzer ^L / nail | ⁿ dzer | /ser ^H / gold | gser |
| /-ər/ | /sər ^L / angle | zur | /kər ^L / tent | gur |

However, across syllable boundaries in disyllables and polysyllables, we do find other types of codas that never appear word-finally. In addition to clusters with /r/ as the first element, we find four types of clusters: voiceless geminated stops, [χ] + voiceless, [ʁ] + voiced and nasal + voiceless stop/affricate clusters ([nt], [nt^h], [nts^h], [ntɛ^h], [ŋk^h]). [χ]/[ʁ] can be phonologically analyzed as the coda /-k/ of the preceding syllable. When followed by a syllable with initial /k-, final /-k/ after /æ/ and /ɔ/ is realized as a uvular stop. The nasal is always homorganic; we analyze it as an archiphoneme /N/ that functions phonologically as the coda of the first syllable.

Table 8: Phonetic realizations of the codas /-N/ and /-k/ word-internally

| Phonetic form | Phonological form | Meaning | Etymology |
|---|--|-----------|--------------------------------------|
| [lɛχ ^L te ^h æ ^H] | /læk ^L .te ^h æ/ | tool | lag.te ^h a |
| [nɛχ ^L te ^h ɑ ^H] | /næk ^L .te ^h ɑ/ | wife | * nag.te ^h ags |
| [p ^h ɛχ ^L tsi: ^H] | /p ^h æk ^L .tsi:/ | lard | p ^h ag.ts ^h il |
| [sɔχ ^L tɪ: ^H] | /sɔk ^L .tɪ:/ | pestle | ʔ gtun |
| [tɛɔχ ^L tɛ ^H] | /tɛɔk ^L .tɛ/ | table | tɛog.tɛ |
| [ŋɔɁ ^H mæ ^H] | /ŋɔk ^H .mæ/ | mane | rŋog.ma |
| [tɛɔɁ ^L rɔ: ^H] | /tɛɔk ^L .rɔ:/ | valley | grog.rɔŋ |
| [t ^h ɛɁ ^L ri: ^H] | /t ^h æk ^L .ri:/ | far | t ^h ag.rɪŋ |
| [tɛq ^H qɔ ^H] | /tæk ^H .kə/ | tiger.GEN | stag.gi |
| [næn ^H te ^h u ^H] | /næN ^H .tehu/ | ear | rna.mte ^h og |
| [tɛŋ ^H k ^h æ ^H] | /tɛN ^H .k ^h æ/ | autumn | ston.k ^h a |

| | | | |
|--|---------------------------|--------|------------|
| [lan ^L tʰiː ^H] | /laN ^L .tʰiː/ | palm | lag.mtʰil |
| [tseŋ ^H kʰaː ^H] | /tseN ^H .kʰaː/ | prison | btson.kʰaŋ |
| [dzəN ^L tə ^L] | /dzəN ^L tə/ | always | rgiun.tu |

In view of the highly abstract (and diachrony-informed) character of these analyses, we will always provide the surface phonetic forms of words containing /-k/, /-C/ or /-N/ in this paper, so that readers willing to apply a different synchronic analysis are not compelled to reconstruct back the surface phonetic forms. In any case, the phonetic transcription, rather than the phonological one, has been used when transcribing Cone texts and seems more appropriate for further work on the description of the morphosyntax of the language. The abstract phonological analysis is only useful for studying morphophonology and historical phonology.

A marginal contrast between surface [ɣ] and [ʏ] appears to be found in intervocalic position. Both sounds can appear between /æ/ or /ɔ/ and another vowel:

Table 9: Contrast between /ɣ/ and /ɣ/

| Base form | Suffixed form | Underlying form | Meaning | Suffix | Etymology |
|----------------------|--------------------------------------|---------------------------------------|---------|------------|-------------------|
| /tɑ ^H / | [tæ ^H ɣe ^L] | /tæk ^H -e ^L / | tiger | dative | stag |
| /ndu ^L / | [ndɔ ^L ɣæ ^H] | /ndɔk ^L -æ/ | colour | lexical | * mdog.ba |
| /ndzu ^L / | [ndzɔ ^L ɣæ ^L] | /ndzɔk ^L -æ ^L] | to put | converbial | ⁿ dzog |
| /mæ ^H / | [mæ ^H ɣə ^H] | /mæ ^H -Gə/ | low | constative | dma |
| /tʰɔ ^H / | [tʰɔ ^L ɣə ^H] | /tʰɔ ^L -Gə ^H / | high | constative | mtʰo |

Although the diachronic origin for this contrast is clear, its synchronic analysis is not straightforward. Positing a distinct phoneme /ɣ/ is not entirely satisfying not only because of its marginal status, but also because it considerably complicates the morphological analysis. The sequences [æɣV] and [ɔɣV] occur in forms corresponding to Common Tibetan [-ag] and [-og] followed by a vowel-initial suffix, in particular in the dative and the converbial suffixes (the complete paradigms involving these two suffixes will be described in the section on morphology). [æɣV] and [ɔɣV] alternate with /-ɑ/ and /-ɔ/ respectively in non-suffixed forms.

A possible analysis for these sequences, which would account well for the morphology and the diachrony, is to suppose that [ɣ] is the surface reflex of final /-k/ in syllable-final position when it is reassociated to the initial of the following syllable. In this theory, [tæ^Hɣe^L] and [ndzɔ^Lɣæ^L] are to be analyzed as /tæk^H-e/ and /ndzɔk^L-æ/ underlyingly. This abstract analysis will be followed in this paper, but we systematically provide the surface forms for convenience. However, in order to present texts and example sentences in descriptions of morphosyntax, the phonetic transcription seems more practical.

The base forms in this table could be analyzed as having a phonological final consonant underlyingly; thus, one could propose that [tɑ^H] is really /tæk^H/ phonologically, and that a set of phonological rules change it to the surface form [tɑ^H] when occurring word-finally. However, this analysis is too abstract, and would confuse diachronic and synchronic analysis. It is

preferable to keep a phonological representation that is not too far removed from the phonetic surface.

We find geminate consonants intervocalically, always preceded by short vowels. Only unaspirated voiceless stops and nasals are geminated. Although no minimal pair between geminates and non-geminates could be found, there is little doubt that geminates are phonemic, as we do find non-geminated consonants following short vowels (e.g. /tɕʰə˦˥tɕ/ ‘lip’ |mte˦˥u.to|). The following examples illustrate geminated consonants (we transcribe the geminates by the archiphonemes /C/ for oral stops and /N/ for nasal ones):

Table 10: Cone geminate stops and their origin

| Phonetic form | Phonological form | Meaning | Etymology |
|-------------------------------------|---------------------------|-----------------|-----------------------|
| [mək ^H kæ ^H] | /məC ^H .kæ/ | fog | smug.pa |
| [e˦˥ət ^L ti˦˥] | /ɛhəC ^L .ti˦˥/ | heel | p ^{hi} .rtiŋ |
| [æt ^H tæ ^H] | /æC ^H .tæ/ | hoe | ? |
| [rəp ^L pæ ^H] | /rəC ^L pæ/ | wisdom | rig.pa |
| [næŋ ^H ŋɔ ^H] | /næN ^H .ŋɔ/ | sky | * gnam.ŋɔ |
| [ŋæm ^H mæ ^H] | /ŋæN ^H .mæ/ | in the old days | sŋa.ma |

The phonological rules governing the archiphonemes /-k/, /-C/ and /-N/ will be described in detail in §4.5.1. Additionally, two archiphonemes /G/ and /D/ will be posited to account for various morphological alternations. They are realized as [k], [g], [ɣ] and [t], [d], [r] depending on the preceding syllable. The distribution of these allomorphs will be set out in §5.1.1.

In disyllables, short vowels belonging to the set that have a length contrast (/i//ɪ//e//u//ʊ//ɑ/) become long when there is no cluster or geminated consonant. For instance, /ɲi^H/ ‘eye’ |dm̩ig| becomes /ɲi˦˥-/ in /ɲi˦˥x^her/ ‘glasses’ |dm̩ig.ɛel| and other compounds. This type of phenomena is quite rare, as in most cases syllables whose vowels belong to the set in question normally change to the *conjunct* form when followed by another syllable (see §4.2 for a detailed definition of *base* form vs. *conjunct* form). This lengthening only occurs when the following syllable has a fricative initial, or in the exceptional case of /ɲi^H/ ‘eye’ which lack a conjunct form (the expected conjunct form would be */ɲəC-/).

3.4 Suprasegmentals

As mentioned in §3.2, the analysis of the tonal system critically depends on how the vowel system is analyzed. Under the analysis with contrastive vowel length proposed in the previous section, only two tonemes on monosyllables are necessary: a high tone (transcribed ^H) and a low tone (transcribed ^L).⁵

⁵ The analysis of Cone Tibetan has having only two tonemes was first proposed by Sun (2003a:42) using data from Qú (1962).

Table 11: Cone tonal contrasts

| Phonological form | Realization | Meaning | Etymology |
|---------------------|----------------------|---------|-----------|
| /nã: ^H / | [nã: ⁵⁵] | sky | gnam |
| /nã: ^L / | [nã: ¹⁴] | inside | nar |
| /nã ^H / | [nã ⁵¹] | pus | rnag |
| /nã ^L / | [nã ¹²¹] | forest | nags |

The tones are realized as falling on short vowel monosyllables, and level on long vowels. The falling tone on short vowels is slightly more prominent with vowels that have a contrast between long and short vowels (this includes /i//ɪ//u//ʊ//e//o//ɑ/) than with vowels that only have short vowels (/ə//ɛ//ɔ//æ/): the latter can be realized either as level or falling tones, and are not normally realized as falling when they occur in the second syllable of a disyllable (for instance /pɔ^Llɔ/ ‘ball’ |spo.lo| is realized as [pɔ⁵⁵lɔ⁵⁵], whereas /dɔ^Lli/ ‘board’ |rdo.leb| is realized as [dɔ⁵⁵li⁵⁵]).⁶

Given the clear difference in tonal realization between long and short vowels, it is legitimate to envision an alternative analysis with four tones and no contrastive vowel length.⁷

However, this analysis becomes difficult when morphology is taken into account. When any suffix is added (for instance the verbal constative /-Gə/ suffix), the high tone of short-vowel words is realized as 55, and the low tone 11: no final fall is observed anymore. Data from the following table illustrate this phenomenon:

Table 12: The realization of tones in short vowel syllables

| Base form | | Suffixed form | | Meaning | Etymology |
|---------------------|----------------------|------------------------|---------------------------------------|-------------|-----------|
| Underlying | Realization | Underlying | Realization | | |
| /tæ ^H / | [tæ ⁵¹] | /tæ ^H -Gə/ | [tæ ⁵⁵ ɣə ⁵⁵] | to see | lta |
| /tsə ^H / | [tsə ⁵¹] | /tsə ^H -Gə/ | [tsə ⁵⁵ ɣə ⁵⁵] | to count | rtsi |
| /dæ ^L / | [dæ ¹²¹] | /dæ ^L -Gə/ | [dæ ¹¹ ɣə ⁵⁵] | to pursue | bda |
| /zə ^L / | [zə ¹²¹] | /zə ^L -Gə/ | [zə ¹¹ ɣə ⁵⁵] | to be drunk | bzi |

The short-vowel words cannot be analyzed as having falling tones by contrast with level tones for long-vowel words, otherwise the second syllable should have low surface tone (*[tæ⁵¹ɣə¹¹] instead of [tæ⁵⁵ɣə⁵⁵]).

Tone is not contrastive for syllables with aspirated consonants. Such syllables normally have low tone when the vowel is long, and high tone when it is short. Syllables with aspirated onset and high tone in isolation always have low tone when suffixed:

⁶ This synchronic tendency has a historical explanation which will be set out in §3: the short vowels that have long counterparts almost always come from checked syllables, whereas the four without long counterpart come from open syllables.

⁷ This alternative analysis was in fact the author’s first attempt at analyzing the tonal system of Cone Tibetan.

Table 13: Tones in syllables with aspirated onset

| Basic form | | Suffixed form | | Meaning | Etymology |
|---------------------|----------------------|-------------------------|--|----------|-------------------|
| Underlying | Realization | Underlying | Realization | | |
| /tʰɔ ^H / | [tʰɔ ⁵²] | /tʰɔ ^L -Gə/ | [tʰɔ ¹¹ ɣə ⁵⁵] | high | mtʰo |
| /xʰə ^H / | [xʰə ⁵²] | /xʰə ^L -Gə/ | [xʰə ¹¹ ɣə ⁵⁵] | to die | ɕi |
| /tʰɑ ^H / | [tʰɑ ⁵²] | /tʰæk ^L -Gə/ | [tʰɛq ¹¹ qə ⁵⁵] | to weave | ⁿ tʰag |
| /pʰe ^H / | [pʰe ⁵²] | /pʰεC ^L -Gə/ | [pʰεk ¹¹ kə ⁵⁵] | to go | pʰebs |

In disyllabic words, when the first syllable is in the high tone, this tone spreads to the next syllable. For instance /ɲe:^Hŋgɔ/ ‘pillow’ |ɲas.mgo| [ɲe:^Hŋgɔ^H] has high tone on the second syllable in spite of the fact that this syllable, when used in isolation, is in the low tone /ŋgɔ^L/ ‘head’ |mgo|. This rule of rightward tonal spread HL > HH also occurs in nominal compounds. It does not apply to the case markers and some verbal suffixes which are always realized low.

When the first syllable is low tone, the tone of the second syllable is also predictable. It is high when the vowel of the second syllable is short, as in /rə^Lŋgɔ/ ‘top of the mountain’ |ri.mgo| realized as [rə^Lŋgɔ^H] (note that /ŋgɔ^L/ ‘head’ is low-tone when used as an independent word). When the vowel of the second syllable is long, it is generally high when the initial consonant of the second syllable is an voiceless obstruent, and low (phonetically rising) when the consonant is voiced, though free variation is observed. For instance, the disyllable /rə^Lɣu:/ ‘rabbit’ (|ri.boŋ| or perhaps *|ri.woŋ|) can be realized either as [rə¹¹ɣu:⁵⁵] or [rə¹¹ɣu:²⁴].

Since the tone pattern of a word is predictable from the tone of its first syllable (as was already mentioned in Sun 2003a), we only indicate tone on the first syllable, except in for suffixes with inherent low tone like the Genitive /-Gə^L/.

4. Historical phonology

The phonological system of the Conelanguage described in the previous section differs considerably from that of Common Tibetan.⁸ Common Tibetan had more than 210 initial clusters, including clusters with four consonants such as |bsgr-| while Cone has none; Common Tibetan only had five vowels⁹ whereas Cone Tibetan has 23 vowel phonemes; Common Tibetan had nine consonants in coda position (|-m||-n||-ŋ||-b||-d||-g||-r||-l||-s|) and even some final clusters, while Cone only has /-r/ in absolute final position and also /-k/ as well as the archiphonemes /-C/ and /-N/ across syllable boundaries within a word.

As we will see in this section, very regular correspondences can be established between Common Tibetan and Cone, and the phonetic development from Common Tibetan to Cone can be reconstructed in detail.

⁸ For an account of the phonological system of Old Tibetan, see Hill (2010a).

⁹ In Old Tibetan texts there is a sixth vowel (*gi-gu inversé*) but there is no agreement among philologists that it reflects a genuine phonemic distinction (Hill 2010a:116).

As with all Tibetan languages, however, Cone has several layers of vocabulary, including a sizeable portion of loanwords from Amdo Tibetan, which is why several rhymes and onsets have several distinct correspondences between Common Tibetan and Cone. In order to properly study Cone historical phonology, distinguishing these layers of borrowings from the inherited vocabulary is of the utmost importance.

In order to avoid circularity, we will first present all the attested correspondences between Common Tibetan and Cone for the tones (§4.1), the rhymes (§4.2) and the onsets (§4.3), and will analyse the layers of vocabulary (§4.4) only after all correspondences have been sorted out.

4.1 Suprasegmentals

While Common Tibetan is generally considered to have been a non-tonal language, Cone Tibetan, as described in the previous section, has developed a two-tone system. The tonal system of Cone was transphonologized out of phonemic contrasts in the onset.

The following table summarizes the correspondences between Nyinpa Cone and Common Tibetan. The rows indicate the Common Tibetan initial consonant, while the columns indicate the CoT preinitial consonants.¹⁰ Shaded slots indicate combinations unattested in CoT, such as *ms or *NL.

Table 14: Common Tibean origin of Cone tones

| | No preinitial | b- d- g- | m- N- | s- r- l- |
|---|---------------------------|-------------------|---------------------------|------------------------------|
| p t ts te k | H | H | | H |
| s c | H (short V) L (long V) | H | | |
| p ^h t ^h ts ^h te ^h k ^h l ^h hr h | H (short V) L (long V) | | H (short V) L (long V) | |
| b d dz dz g z z | L | L (except dbi-) | L | L (except sbr- and sgr-) |
| m n ŋ ŋ | L | H | H | H |
| r l w ɦ | L | H | | H |

The basic rules are the following:

1. Syllables with voiceless unaspirated stops and affricates initials in Common Tibetan develop high tone in Cone. This correspondence is found in all Tibetan languages that have developed tones.

¹⁰ In Common Tibetan, the structure of the onset was (C¹C²)C³(C⁴)-. We call C³ the initial consonant, C¹ and C² are preinitials and C⁴ is the medial, following Jacques' (2004) terminology.

2. Syllables with aspirated consonants (including fricatives without preinitial, which develop aspiration, as will be shown in §4.3) develop low tone when the vowel is long and high tone when it is short (see Qú 1962; Sun 2003a:42). As described in §1.3, all aspirated onsets with high tone in isolation become low tone when suffixed or as first element of a compound (but no vowel lengthening occurs). This correspondence appears to be quite rare in Tibetan languages (I know of no other example).

3. Syllables with sonorant initials develop low tone when they are without preinitials in Common Tibetan, and high tone when they had preinitials. Clusters in |stop+r| (|br-|, |dr-|, |gr-|) should be analyzed as initial + medial, not preinitial + initial, and fall under case 4 below. |sr-|, on the other hand, is a cluster of the type preinitial + initial, and develops high tone. These correspondences are straightforward and quite common in Tibetan languages.

4. Syllables with voiced stop and fricatives as initials always develop low tones, except isolated cases such as |db^bV-| which becomes /jV^H/ and |sbr-| ~ |sgr-| which become /zV^H/ . Note that in these cases, the initial |b| ~ |g| of Common Tibetan undergoes lenition. These exceptions are also found in other varieties, for instance in Lhasa Tibetan |db^bV-| and |dbV-| develop high tone.

This tonal system differs slightly from the variety of Cone Tibetan described by Qú (1962), where syllables with non-nasal preinitials develop high tone, even when the initial is a voiced stop. For instance, the noun /du:^L/ ‘tree’ |sdoŋ| in Nyinpa Cone has high tone in the variety studied by Qú.

Exceptions to the generalizations presented above can be classed into three groups: sonorant-initial words with unexpected high tone (all monosyllabic forms except /mæC^Hkæ/ [mæq^Hqæ^H] ‘husband’), monosyllabic words with unexpected low tone, and disyllabic words with unexpected low tone. The latter is a larger category, and the list of examples provided in the table is not exhaustive.

Table 15: Irregular tonal correspondences between Cone and Classical Tibetan

| Meaning | Cone | Old Tibetan | Classical Tibetan | Tonal pattern | Expected |
|------------|--|---------------------|-------------------|---------------|----------|
| fire | /ɲɛ ^H / | <m ^e > | <me> | H | L |
| man | /ɲə ^H / | <m ⁱ > | <me> | H | L |
| swallow | /ɲi ^H / | | <mid> | H | L |
| eye | /ɲi ^H / | <dm ⁱ g> | <mig> | H | L |
| name | /ɲi: ^H / | <m ⁱ ŋ> | <miŋ> | H | L |
| husband | /mæC ^H kæ/ [mæq ^H qæ ^H] | | <mag.pa> | HH | LH |
| milk | /ð: ^H wã:/ | | <fo.ma> | HH | LH |
| to believe | /lõ: ^L / | | <brlom> | L | H |
| wrinkled | /ɲer ^L / | | <gner> | L | H |

| | | | | | |
|---------------------|--|--------|---------------------------|----|----|
| to use | /ku: ^L / | | <bkol> | L | H |
| to dream | /ɲə ^L /, /ɲi: ^L / | <rm'i> | <rimi>, <rmis> | L | H |
| lamp | /kær ^L mɛ/ | | <dkar.me> | LH | HH |
| first month | /tɕəC ^L kæ/ [tɕək ^L kæ ^H] | | <gteig.pa> | LH | HH |
| soul | /nã: ^L xhĩ:/ | | <rnam.ees> | LH | HH |
| chimney | /kær ^L ku:/ | | <skar.guŋ> | LH | HH |
| wheel ¹¹ | /pɔ ^L lo ^H / | | <spo.lo> | LH | HH |
| wolf | /ɕæN ^L k ^{hə} / [ɕæŋ ^L k ^{hə}] | | <sp'ang.k ^{hu} > | LH | HH |
| white | /kæ ^L ru:/ | | <dkar.po> | LL | HH |
| camel | /ŋæ ^L wō:/ | | <rŋa.mon> | LL | HH |

The six etyma with simple <m-> initial in Classical Tibetan and a high tone in Cone probably reflect alternative Common Tibetan forms with preinitial. Note that the Old Tibetan form <dm'iŋ> for ‘eye’ is widely attested in pre-tenth century texts (for instance, OT.739, line 02r10, a manuscript preserved at the British Library). As mentioned in §2, <-m'iŋ> is also attested in Old Tibetan, but only in the second syllable of disyllabic compounds.

Comparison with other conservative languages such as Rgyalrong¹² suggest that Cone, as other Tibetan languages, preserves here traces of prefixes not attested in the written corpus of Tibetan. This is a rare case when Common Tibetan forms have to be reconstructed and cannot be inferred from the spelling (*C- in our reconstruction represents any of {d-, r-, s-}):

Table 16: Reconstructed *Cm- clusters in Common Tibetan

| meaning | Classical Tibetan/ Old Tibetan | Common Tibetan forms ancestral to Cone | Japhug Rgyalrong |
|---------|-----------------------------------|---|------------------|
| fire | <me>, <m'ie> | * Cm'ie | smi |
| man | <mi>, <m'i> | * Cm'i | tu-rme |
| eye | <mig>, <dm'iŋ> | dm'iŋ | tu-mɲaɕ < *mjaq |
| name | <miŋ>, <m'iŋ> | * Cm'iŋ | ts-rmi |
| husband | <mag> | * Cmag | tu-nmaɕ < *tmaq |
| swallow | <mid> | * Cm'id | |

For the other examples, the tonal irregularities are not explainable, and could reflect either borrowings from another dialect or non-standard variants (see the discussion in §4.4).

¹¹ This word normally means ‘ball’.

¹² In the Rgyalrong forms in Table 19, only the cluster in *smi* ‘fire’ is secondary (the *s-* is a reduced form of *si* ‘wood, tree’, Jackson T.-S. Sun, p.c.). None of the other initial clusters appear to be recently innovated.

4.2 Rhymes (basic correspondences)

As in many Tibetan languages, many rhymes have double correspondences depending on whether they occur at the end of a phonological word or are followed by another syllable. We call the reflex occurring word-finally the *base form* and the one occurring word-internally the *conjunct form*. For instance, the rhyme /-a/ from Common Tibetan [-ag] and [-eg] has a conjunct form /æq-/ [æq-], in the case of the verb /tæa^H/ ‘to cut’ |bteag| its conjunct form appears in suffixed forms such as /tæak^H-kə^H/ [tæaq^Hqə] |bteag.gi|.

In some rare cases, the base form can be found in the first syllable of a disyllable if the second syllable onset is a prenasalized stop. Note that in the following table our phonological analysis of the prenasalization differs if the onset of the second syllable is voiced or voiceless: for voiced stops/affricates, we analyze them as prenasalized unitary phonemes /mb-/ , /ndz-/ , /ndz-/ , /ŋg-/ (which can appear word-initially), while in the case of voiceless (aspirated) aspirated stops/affricates we analyze the nasality as the archiphoneme /N/, which is phonologically the coda of the first syllable.

Table 17: Traces of prenasalized onsets in the second syllable of a disyllable

| Cone | Etymology | Meaning |
|---|--------------------------|------------------|
| /tʂ ^h a ^L ŋgə/ | * p ^h rag.mgo | shoulder |
| /laN ^L t ^h i:/ [lan ^L t ^h i: ^H] | lag.mt ^h il | palm of the hand |
| /da ^L ndzə/ | * ldag.mdzub | forefinger |

Additionally, as mentioned in the introduction of §2, we find multiple correspondences between Common Tibetan and Cone in the same context due to the presence of several layers of words.

4.2.1 Open syllables

The open syllables of CoT evolve into short vowels in Cone; there is no distinction between base vs. conjunct forms for these rhymes:

Table 18: Reflexes of Common Tibetan open syllables in Cone

| CoT | Cone | Etymology | Example | Meaning |
|-----|------|------------------|----------------------|------------|
| -a | /-æ/ | rta | /tæ ^H / | horse |
| -e | /-ɛ/ | ⁿ dre | /ndzɛ ^L / | ghost |
| -i | /-ə/ | ⁿ bri | /ndzə ^L / | female yak |
| -o | /-ɔ/ | gro | /təɔ ^L / | wheat |
| -u | /-ə/ | ⁿ bu | /mbə ^L / | bug |

These straightforward correspondences have several exceptions.

First, the Common Tibetan suffixes |-ma| and |-mo| generally become /-wā:/ and /-wō:/

respectively in Cone instead of regular /-mæ/ and /-mɔ/, which are however also attested.

Second, in disyllables whose second syllable is /-wā:^H/ from |-ma|, open syllable |-o| undergoes nasal assimilation and becomes /-ō:./.

Table 19: Irregular reflex of the suffix |-ma| in Cone

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|-----------|--------------------------------------|----------------------------|
| -o | /-ō:/ | so.ma | /sō: ^H wā:/ | hemp |
| | | fio.ma | /ō: ^H wā:/ | milk |
| | | sro.ma | /ʂō: ^H wā:/ | nit |
| | | so.ma | /s ^h ō: ^L wā:/ | new |
| | /-ū/ | gro.ma | /teū: ^L wā:/ | <i>Potentilla anserina</i> |

There is no explanation for why we find /ū:/ not /ō:/ in the last word; compare the quasi-homonym /mbə^Lteū:^Lwā:^H/ ‘ant’ *|ⁿbu.grog.ma|.

Third, we find some words with unexpected final /-r/:

Table 20: Words with irregular final /-r/ in Cone

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|--|--|---------|
| -a | /-æ:/ | rma.b ^h a | /mæ: ^H æ:/ | peacock |
| | | r ^h ja | /ŋæ: ^H / | drum |
| -e | /-er/ | ⁿ bied , p ^h ie | /ndzer ^L /, /ɕ ^h er ^H / | to open |

The first two examples evince cases of metathesis, which however do not apply across the board in the whole vocabulary. For instance |rma| ‘wound’ becomes /mæ:^H/ with high tone, not *mæ:^H as would be expected if the metathesis were regular. For ‘to open’, the final /-r/ is mysterious; no other word in the language presents such a correspondence (and no other Tibetan language known to us shares this feature).

Finally, we find unusual correspondences which only apply to only one or two lexical items, usually in the first syllable of a disyllable:

Table 21: Irregular correspondences of CoT open syllables

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|---------------------------|---|----------|
| -e | /-æ/ | b ^h ie.ma | /ɕæ: ^L wæ:/ | sand |
| | | ʂne.ma | /ŋi: ^H wā:/ | spike |
| | | ga.le | /kæ: ^L li:/ | slow |
| | /-r:/ | glaŋ.po.te ^h e | /lā: ^H wō: ^L tehr:/ | elephant |
| | /-e:/ | dge.rgan | /ge: ^L gê:/ | teacher |
| -o | /-æ/ | sgo.ŋa | /gæ: ^L wā:/ | egg |
| | /-ə/ | lo.ma | /lɔ: ^L wā:/ | leaf |

4.2.2 Final stop rhymes

These rhymes exhibit the most complex patterns of alternations between base and conjunct forms. Common Tibetan had three final stops |b| |d| |g| which could additionally combine with |s| in the complex codas |bs| and |gs|. |s| as the second element of a coda does not seem to have left any trace in Cone, so that there is no need to treat |bs| and |gs| separately, and only examples of |b| and |g| will be given. The exact phonetic realization of final stops in Common Tibetan is likely to have been voiceless in word-final position, but we retain the voiced counterparts because of some morphophonological alternations in modern dialects which suggest that these consonants were underlyingly voiced (Sun 1986:35)

For final |g(s)|, the basic correspondences are the following:

Table 22: Cone reflexes of |g| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|--------|--------|-----------|--|--------------------|
| -ag(s) | /-a/ | stag | /tɑ ^H / | tiger |
| | /-æk-/ | stag.pa | /tæk ^H kæ/ [tæq ^H qæ ^H] | birch |
| -eg(s) | /-a/ | sreg | /ʂɑ ^H / | to burn |
| | /-æk-/ | sreg.gi | /ʂæk ^H -Gə/ [ʂæq ^H qə ^H] | to burn (conjunct) |
| -ig(s) | /-i/ | ɕig | /x ^H i ^H / | louse |
| | /-əC-/ | rmig.pa | /ɲəC ^H kə/ [ɲək ^H kə ^H] | hoof |
| -og(s) | /-u/ | dog | /tu ^L / | narrow |
| | /-ɔk-/ | dog.gi | /tɔC ^L -Gə/ [tɔq ^L qə ^H] | narrow (conjunct) |
| -ug(s) | /-u/ | sgug | /gɯ ^L / | to wait |
| | /-əC-/ | sgug.gi | /gəC ^L -Gə/ [gək ^L kə] | to wait (conjunct) |

Common Tibetan |a| and |e| merge before |g|. |-ig| and |-ug| have the same conjunct form /-əC/. We find three groups of exceptions to these correspondences.

First, three examples of |-ag| with an initial nasal have short /-ã/ instead of /-a/; this is the sole diachronic origin of the rare vowel /-ã/:

Table 23: An irregular reflex of |-ag|

| CoT | Cone | Etymology | Example | Meaning |
|-----|------|---------------------|-----------------------|---------|
| -ag | /-ã/ | ⁿ bu.nag | /mbə ^L nã/ | fly |
| | | rnag | /nã ^H / | pus |
| | | nags | /nã ^L / | forest |

We did not find the syllable [nɑ] in our Cone data, suggesting that |nag| > /nã/ could be a regular sound change.¹³ However, we also find cases of sporadic nasality in other rhymes, as

¹³ Nasality is found in these words in other dialects such as Shuiluo Kami /nã^H/ ‘pus’, /nã^L/ ‘woods’ (fieldwork of the author).

will be shown in §4.4.1.

Second, |-ug| corresponds to /-i/ in three lexical items:

Table 24: Irregular reflexes of |-ug|

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|---------------------------------|---|----------------|
| -ug | /-i/ | k ^h a.la.jug | /k ^h æ ^L læ ji ^L / | swallow (bird) |
| -ug | /-i/ | * zabs.gdugs or * zogs.gdugs ? | /xɔŋ ^L di/ | parasol |
| -ug | /-i:/ | sm ^h ug.ma | /ɲi: ^h wã:/ | bamboo |

Third, the noun /ɲi^h/ ‘eye’ |dm^hig|, when used as the first element of a compound never occurs as a conjunct form. Instead, we find the base form with a lengthened vowel:

Table 25: The noun /ɲi^h/ ‘eye’ as first element of a compound

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|--------------------------------------|--------------------------------------|---------|
| -ig | /-i:/ | dm ^h ig.rdzi | /ɲi: ^h dzə/ | eyelash |
| | | dm ^h ig.lpags | /ɲi: ^h pɑ/ | eyelid |
| | | dm ^h ig.te ^h u | /ɲi: ^h teə/ | tears |
| | | dm ^h ig.ɛel | /ɲi: ^h x ^h er/ | glasses |

Finally, the noun /ʂɔk^Lkæ/ [ʂɔq^Lqæ^h] ‘lasso’ seems to come from |zags.pa|, though the vowel correspondence does not fit well.

The rhymes with final -d present the following correspondences:

Table 26: Cone reflexes of |-d| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|-----|--------|-------------------------|--|-----------------------|
| -ad | /-e/ | bsad | /se ^h / | to kill |
| | /-ɛC-/ | bsad.gi | /sɛC ^h -Gə/ [sɛk ^h kə ^h] | to kill (conjunct) |
| -ed | /-i/ | ⁿ ded | /ndr ^L / | to chase |
| | /-ɛC-/ | ⁿ ded.gi | /ndɛC ^L -Gə/ [ndɛk ^L kə ^h] | to chase (conjunct) |
| -id | /-i/ | * Cm ^h id | /ɲi ^h / | to swallow |
| | /-əC-/ | * Cm ^h id.pa | /ɲəC ^h pæ/ [ɲəp ^h pæ ^h] | oesophagus |
| -od | /-i/ | bod | /pɪ ^L / | Tibetan |
| | /-ɛC-/ | p ^h od.pa | /p ^h ɛC ^L pæ/ [p ^h ɛp ^L pæ ^h] | courage |
| -ud | /-i/ | mt ^h ud | /t ^h i ^h / | to connect |
| | /-əC-/ | mt ^h ud.gi | /t ^h əC ^L -Gə/ [t ^h ək ^L kə ^h] | to connect (conjunct) |

The rhymes in mid-high vowels |-od| and |-ed| merge in Cone, as do the rhymes in high vowel |-ud| and |-id|, which also merge with |-ig|.

A recurrent irregular correspondence is Cone /ɔ/ for CoT |-od|:

Table 27: The correspondence |-od| : /-ɔ/

| CoT | Cone | Etymology | Example | Meaning |
|-----|--------|-----------------------|---|---------------|
| -od | /-ɔ/ | de.k ^h rod | /ti: ^L tʂ ^h ɔ ^H / | in the future |
| | /-ɔ/ | ts ^h od.ma | /ts ^h ɔ ^L mæ ^H / | vegetable |
| | /-ɔC-/ | bkod.pa | /kɔC ^H pæ/ [kɔp ^H pæ ^H] | manner |
| | /-ɔC-/ | ⁿ giod.pa | /ndzɔC ^L pæ/ [ndzɔp ^L pæ ^H] | regret |

We also find the following other irregular correspondences (note the effect of the vowel lengthening rule in the first syllable in /ke:^Hwæ/ and /kɜ:^Hwæ/).

Table 28: Irregular reflexes of |-d| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------------|---------------------------------|---|--------------------------|
| -ad | /-ɪ/ | rmad | /ɲɪ ^H / | saddle's crupper |
| | | tɕ ^h u.smad | /tɕ ^h ə ^L mɪ/ | lower reaches of a river |
| -ed | /-e/, /ɛC-/ | brdzed | /dze ^L /, /dzeC ^L -Gə/ [dze ^L kə ^H] | forget |
| | | ⁿ p ^h red | /tʂ ^h e ^H /, /tʂ ^h ɛ ^H re/ | horizontal |
| | | sked.ba | /ke: ^H wæ/ | waist |
| -id | /-u/, /əC-/ | ⁿ k ^h rid | /tʂ ^h u ^H /, /tʂ ^h əC ^L -Gə/ [tʂ ^h ək ^L kə ^H] | to teach |
| -od | /-e/, /ɛC-/ | ^h od | /tɕ ^h e ^H /, /tɕ ^h ɛC ^L -Gə/ [tɕ ^h ək ^L kə ^H] | relaxed |
| -ud | /-u/ | skud.ba | /kɜ: ^H wæ/ | thread |
| -ud | /-u/ | ʔol.mdud | /u: ^H du/ | larynx |

Final |-b| rhymes are less common than the two preceding ones. The rhyme |-ob(s)| is too poorly attested to figure in the following table. The rhyme |-eb(s)| had two common reflexes /ɪ/ and /e/, even in verbal form.

Table 29: Cone reflexes of |-b| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|--------|--------|----------------------|---|---------------------|
| -ab(s) | /-e/ | srab | /ʂe ^H / | thin |
| | /-ɛC-/ | srab.gi | /ʂɛC ^H -Gə/ [ʂɛk ^H kə ^H] | thin (conjunct) |
| -eb(s) | /-ɪ/ | lteb | /tɪ ^H / | to fold |
| | /-e/ | ⁿ debs | /nde ^L / | to plant |
| | /-ɛC-/ | lteb.gi | /tɛC ^H -Gə/ [tɛk ^H kə ^H] | to fold (conjunct) |
| -ib(s) | | ⁿ debs.gi | /ndeC ^L -Gə/ [nde ^L kə ^H] | to plant (conjunct) |
| | /-u/ | zib | /xu ^L / | fine (conjunct) |
| -ub(s) | /-əC-/ | zib.gi | /xəC ^L -Gə/ [xək ^L kə ^H] | fine |
| | /-u/ | gtub | /tu ^H / | to chop |
| | /-əC-/ | gtub.gi | /təC ^H -Gə/ [tək ^H kə ^H] | to chop (conjunct) |

In our Cone data, the only example of $[-ob]$ is $/jɔ^L tɛ̃ː/$ ‘stirrup’ $[jɔb.tɛan]$. We also find the following irregular correspondences:

Table 30: Irregular reflexes of $[-b]$ final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|----------|----------------|------------------|-------------------------------------|--------------|
| $[-ub]$ | $/-i/$ | $[do.nub]$ | $/tɔ^L ni/$ | tonight |
| $[-abs]$ | $/-æ/$ | $[snabs]$ | $/næ^H/$ | snivel, snot |
| $[-abs]$ | $/-i/$ | $[rba.rlabs]$ | $/wæ^L li/$ | wave |
| $[-ab]$ | $/-a/$ | $[rgial.k^h ab]$ | $/dzæ^L k^h a/$ | country |
| $[-ibs]$ | $/-i/, /-əC-/$ | $[rdibs]$ | $/di^L/, /dəC^L-Gə/$ $[dək^L kə^H]$ | collapse |

Finally, we find cases when the conjunct form is resyllabified with a $/-ə/$ or $/-æ/$ suffix: the $/-C/$ surfaces as $[ɣ]$ and the $/-k/$ after $/æ/$ and $/ɔ/$ as $[ɣ]$. This phenomenon regularly occurs in nominal and verbal morphology (see §5), but here are some examples within lexical items:

Table 31: Resyllabification of $/-C/$ and $/-k/$ codas

| CoT | Cone | Etymology | Example | Meaning |
|----------|------------------|--------------------------------|---------------------------------|------------|
| $[-ib]$ | $/-əC-/ > [əɣ-]$ | $*[rtsib.bu]$ | $/tsəC^H-ə/ > [tsə^H ɣə]$ | rib |
| $[-ugs]$ | $/-əC-/ > [əɣ-]$ | $*[ts^h ugs.ba]$ ¹⁴ | $/ts^h əC^L-ə/ > [ts^h ə^L ɣə]$ | appearance |
| $[-og]$ | $/-ɔk-/ > [ɔɣ-]$ | $*[mdog.ba]$ | $/ndɔk^L-ə/ > [ndɔ^L ɣə]$ | colour |

4.2.3 Final nasal rhymes

Common Tibetan had three final nasal consonants $[-m]$, $[-n]$ and $[-ŋ]$. As with the stop coda rhymes, these rhymes present distinct base and conjunct forms, especially $[-m]$ and $[-n]$.

Rhymes with final $[-ŋ]$ show two distinct set of correspondences. In the first set we find no final nasal: a long oral vowel is found instead; they have no distinct conjunct forms.

Table 32: Cone reflexes of $[-ŋ]$ final rhymes, first set

| CoT | Cone | Etymology | Example | Meaning |
|------------|---------|----------------|-----------------|---------------|
| $[-aŋ(s)]$ | $/-a:/$ | $[btean]$ | $/tea^H/$ | to hold tight |
| $[-eŋ(s)]$ | $/-e:/$ | $[t^h o.reŋs]$ | $/t^h ɔ^L re:/$ | tomorrow |
| $[-iŋ(s)]$ | $/-i:/$ | $[riŋ]$ | $/ri^L/$ | long |
| $[-oŋ(s)]$ | $/-u:/$ | $[sdoŋ]$ | $/du^H/$ | tree |
| $[-uŋ(s)]$ | $/-u:/$ | $[rluŋ]$ | $/lu^H/$ | wind |

¹⁴ Spelled $\langle ts^h ugs.ka \rangle$, after lenition of the $[-ba]$ suffix. The spelling $\langle ts^h ugs.ka \rangle$ however is anachronic: it preserves the final $\langle -s \rangle$ while at the same time representing lenition, which could not have occurred while $[-s]$ was pronounced.

In the second set, we have nasal vowels instead:

Table 33: Cone reflexes of |-ŋ| final rhymes, second set

| CoT | Cone | Etymology | Example | Meaning |
|--------|--------|-----------|------------------------|------------------------------|
| -aŋ(s) | /-ã:/ | bʲaŋ | /eãːˀˀ/ | north |
| -eŋ(s) | /-ã:/ | gaŋs.seŋ | /kãːˀˀsʰãː/ | panther |
| -iŋ(s) | /-ĩ:/ | *C mʲiŋ | /ɲĩːˀˀ/ | name |
| -oŋ(s) | /-õ:/ | sa.doŋ | /sʰæˀˀtõː/ | cave |
| -uŋ(s) | /-õ:/ | gsuŋs | /sõːˀˀ/ | to say, honorific |
| | /-ɔN-/ | gsuŋs.gi | /sɔNˀˀ-Gə/ [sɔˀˀŋgəˀˀ] | to say, honorific (conjunct) |

The origin of this split are complex and will be treated in detail in §4.4 on interdialectal borrowing. Only very few words belonging to the second set have a distinct conjunct form, as /sõːˀˀ/, /sɔNˀˀ-ɣə/ [sɔˀˀŋgəˀˀ] above.

Outside of these two sets, we find four exceptions:

Table 34: Irregular reflexes of |-ŋ| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|-----------|------------|--------------|
| -oŋ | /-i:/ | gdoŋ.ma | /diːˀˀwãː/ | beam (house) |
| -oŋ | /-ɔ/ | goŋ.ba | /kɔˀˀŋæ/ | collar |
| -aŋ | /-æ/ | rkaŋ.ba | /kæˀˀwæ/ | foot; leg |
| -uŋ | /-u:/ | pʰuŋ | /pʰuːˀˀ/ | corpse |

Rhymes with a |-ŋ| coda present distinct base and conjunct forms. In Common Tibetan, there was a complex coda |-nd| with the <da.drag>, but these codas do not present any distinct correspondence in Cone.

Table 35: Cone reflexes of |-ŋ| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|--------|--------|-----------|----------------------------|------------------------|
| -an(d) | /-ẽ:/ | ɲan | /ɲẽːˀˀ/ | to hear |
| | /-ɛN-/ | ɲan.gi | /ɲɛNˀˀ-Gə/ [ɲɛˀˀŋgəˀˀ] | to hear (conjunct) |
| -en(d) | /-ẽ:/ | dran | /tʂẽːˀˀ/ | to miss so. |
| | /-ɛN-/ | dran.gi | /tʂɛNˀˀ-Gə/ [tʂɛˀˀŋgəˀˀ] | to miss so. (conjunct) |
| -in(d) | /-ĩ:/ | sprin | /ʂĩːˀˀ/ | cloud |
| | /-əN-/ | mtɛʰin.pa | /tɛʰəˀˀmbæ/ | liver |
| -on(d) | /-ẽ:/ | gon | /kẽːˀˀ/ | to wear |
| | /-ɛN-/ | gon.gi | /kɛNˀˀ-Gə/ [kɛˀˀŋgəˀˀ] | to wear (conjunct) |
| | /-õ:/ | tʰon | /tʰõːˀˀ/ | to arrive |
| | /-ɔN-/ | tʰon.gi | /tʰɔNˀˀ-Gə/ [tʰɔˀˀŋgəˀˀ] | to arrive (conjunct) |
| -un(d) | /-ĩ:/ | ndzind | /ndzĩːˀˀ/ | to take |
| | /-əN-/ | ndzind.gi | /ndzəNˀˀ-Gə/ [ndzəˀˀŋgəˀˀ] | to take (conjunct) |

The rhyme $|-on|$ has two distinct correspondences $/-ē:/$ and $/-ō:/$ which will be further discussed in §4.4.

We also find two irregular examples with rhymes in $|-n|$ corresponding to $/-ε/$. Both have a prefix $/ε^H-/$ whose etymology is unclear.

Table 36: Irregular reflexes of $|-n|$ final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|---------|---------|----------------------|--------------------------|---------------|
| $ -an $ | $/-ε/$ | $ \text{ʔa.ŋan} $ | $/ε^Hŋε/$ | little finger |
| $ -in $ | $/-ε/$ | $ \text{srin} ^{15}$ | $/ε^Hsε/$ | cotton |
| $ -on $ | $/-u:/$ | $ \text{dgon.ma} $ | $/\text{gu}^L\text{mæ}/$ | mare |

The correspondences for rhymes in $|-m|$ are straightforward:

Table 37: Cone reflexes of $|-m|$ final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|------------|----------|------------------------|--|--------------------------|
| $ -am(s) $ | $/-ā:/$ | $ \text{bsams} $ | $/\text{sā}^H/$ | to think |
| | $/-æN-/$ | $ \text{bsams.gi} $ | $/\text{sæN}^H\text{-Gə}/$ $[\text{sæ}^H\text{ŋgə}^H]$ | to think (conjunct) |
| $ -em(s) $ | $/-ē:/$ | $ \text{ᵐtsᵐem} $ | $/\text{tsᵐē}^L/$ | to sew |
| | $/-εN-/$ | $ \text{ᵐtsᵐem.gi} $ | $/\text{tsᵐεN}^L\text{-Gə}/$ $[\text{tsᵐε}^L\text{ŋgə}^H]$ | to sew (conjunct) |
| $ -im(s) $ | $/-ī:/$ | $ \text{zim} $ | $/\text{xī}^L/$ | delicious |
| | $/-əN-/$ | $ \text{zim.gi} $ | $/\text{xəN}^L\text{-Gə}/$ $[\text{xə}^L\text{ŋgə}^H]$ | delicious (conjunct) |
| $ -om(s) $ | $/-ō:/$ | $ \text{skom} $ | $/\text{kō}^H/$ | to be thirsty |
| | $/-ɔN-/$ | $ \text{skom.gi} $ | $/\text{kɔN}^H\text{-Gə}/$ $[\text{kɔ}^H\text{ŋgə}^H]$ | to be thirsty (conjunct) |
| $ -um(s) $ | $/-ō:/$ | $ \text{btsu(m)s} $ | $/\text{tsō}^H/$ | to wink |
| | $/-ɔN-/$ | $ \text{btsu(m)s.gi} $ | $/\text{tsɔN}^H\text{-Gə}/$ $[\text{tsɔ}^H\text{ŋgə}^H]$ | to wink (conjunct) |

We only find three exceptions to these correspondences:

Table 38: Irregular reflexes of $|-m|$ final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|------------|--------------------|---|--|-------------|
| $ -am(s) $ | $/-ī:/$, $/-əN-/$ | $ \text{bsnams} $ | $/\text{nī}^H/$, $/\text{nəN}^H\text{-Gə}/$ $[\text{nə}^H\text{ŋgə}^H]$ | to smell |
| $ -om $ | $/-o:/$ | $ \text{zom} $ | $/\text{so}^L/$ | bucket |
| $ -em $ | $/-ε/$, $/-εC-/$ | $ \text{gjem} $ $(*\text{ \text{gjem.res} })^{16}$ | $/\text{jε}^H\text{ri}:/$, $/\text{jεC}^H\text{-Gə}/$ $[\text{jεk}^H\text{kə}^H]$ | to have sex |

The vowel $/-o:/$ in ‘bucket’ resembles the case of contracted syllables such as $/\text{t}^b\text{o}^L/$ ‘hammer’

¹⁵ From $|\text{srin.bal}|$ ‘demon wool’ = ‘cotton’ or ‘silk’, Japhug Rgyalrong *srun* ‘cotton’.

¹⁶ $/-ri:/$ is a reciprocal suffix in Cone, which perhaps comes from CoT $|\text{res}|$ ‘in turn’, though the vowel correspondence is irregular (one would expect $*/ri:/$).

[^ho.ba] (see §3.2.5). The Cone form perhaps goes back to a Common Tibetan etymon *|zom.ba| with subsequent fusion of the two syllables.

In verbal and nominal morphology, we observe systematic alternations between base and conjunct forms (see §5), but these alternations are morphological rather than phonological: they do have exceptions, such as |grɔŋ.k^hier| ‘city’ which yields /tʂø:^Ltɛ^her/ and not */tʂøN^Ltɛ^her/ [tʂø^Lntɛ^her] as would be expected if the rule was purely phonological.

4.2.4 Other closed syllables

Apart from final stops and nasals, there were three final consonants in Common Tibetan: |-r|, |-l| and |-s|. The first two could co-occur with the <da-drag> in the complex codas |-rd| and |-ld| which however merged with their simple counterparts in Cone.

Final |-r| is the only coda to have been preserved in Cone word-finally. The correspondences are quite simple:

Table 39: Cone reflexes of |-r| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|--------|-------|-----------|----------------------|------------|
| -ar(d) | /-æɾ/ | dar | /tæɾ ^L / | ice |
| -er(d) | /-er/ | gser | /ser ^H / | gold |
| -ir(d) | /-ər/ | btsir(d) | /tsər ^H / | to pinch |
| -or(d) | /-or/ | gtor(d) | /tor ^H / | to scatter |
| -ur(d) | /-ər/ | rmur | /mər ^H / | to gnaw |

The final |-r| is sometimes resyllabified as the initial consonant of the next syllable in some compounds, with loss of the initial labial onset in the following syllable:

Table 40: Resyllabification of final |-r| as the onset of the following syllable

| CoT | Cone | Etymology | Example | Meaning |
|-----|----------|-----------|--------------------------------------|----------------|
| -ar | /-æ.rV/ | dmar.po | /mæ ^H ru:/ | red |
| | | dkar.po | /kæ ^L ru:/ | white |
| | | gsar.bu | /sæ ^H rə/ | young (person) |
| | | mgar.ba | /ŋgæ ^L ræ/ | blacksmith |
| | | dkar.ba | /kæ ^L ræ/ | lime |
| -er | /-e:.rV/ | ser.po | /s ^h e: ^L ru:/ | yellow |
| -or | /-ɔ.rV/ | zor.ba | /sɔ ^L ræ/ | sickel |

The loss of the labial is quite common in Tibetan languages. For instance, in Amdo we also find |zor.ba| as *sora* and |mgar.ba| as *ŋgara* (Huá & Lóngbójiǎ 1993).

We also find a few isolated cases of irregular correspondences, with irregular vowel correspondences and/or loss of final |-r|.

Table 41: Irregular reflexes of |-r| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|--------------------------------------|--|--------------------|
| -er | /-ær/ | gjer.ma | /jær ^H mæ/ | <i>Xanthoxylum</i> |
| | /-ε/ | ser.drag | /s ^h ε ^L tʂɑ/, /ʂ ^h ε ^L tʂɑ/ | hail |
| | /-i/ | zer | /si ^L /, /səC ^L -Gə/ [sək ^L kə ^H] | speak, talk |
| | /-e/ | p ^h al.te ^h er | /hær ^L tce/ | about |
| -ar | /-e:/ | star.ka | /te: ^H kæ/ | walnut tree |
| -ur | /-i/ | ⁿ bur.len | /pi ^L lē:/ | plane |

Note that the final |-r| of Common Tibetan coming from the dative suffix (*la.don*) have entirely distinct correspondences that will be described in detail in §3.

For final |-l|, the most common correspondences are the following:

Table 42: Cone reflexes of |-l| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|--------|-------|-----------|---------------------------------------|-----------|
| -al(d) | /-e:/ | bal | /pe: ^L / | wool |
| | /-ɑ:/ | brgal | /gɑ: ^L / | to stride |
| -el(d) | /-i:/ | brel laŋ | /tʂi: ^L la: ^L / | anxious |
| -il(d) | /-i:/ | bsil | /si: ^H / | cold |
| -ol(d) | /-u:/ | gjol | /ju: ^H / | cover |
| -ul(d) | /-u:/ | sbrul | /zɑ: ^H / | snake |

These correspondences resembles those of rhymes in final |-ŋ|, except for |-el|. For the rhyme |-al|, the reflex /-e:/ is more common but /-ɑ:/ is generally found with verbs. This double correspondence will be discussed in more detail in §2.4. The rhyme |-el| is attested by only seven items, and presents three other correspondences, including one where CoT final |-l| corresponds to /-r/ in Cone:

Table 43: Reflexes of |-el| in Cone

| CoT | Cone | Etymology | Example | Meaning |
|-----|-----------------|--------------------------------|---|------------|
| -el | /-i/ | t ^h el | /t ^h i ^H / | seal |
| | | ⁿ brel | /ndzi ^L / | board game |
| | /-e/, /-εC-/ | ⁿ g ⁱ el | /ndze ^L /, /ndzεC ^L -Gə ^H / [ndzεk ^L kə ^H] | to slip |
| | /-er/ | dm ⁱ g.εel | /pi: ^H x ^h er/ | glasses |

The correspondence of |-l| to |-r| is found in some examples of the rhyme |-al|:

Table 44: Correspondence of |-al| to /æɾ/, /æ.r/

| CoT | Cone | Etymology | Example | Meaning |
|-----|---------|--------------------------------------|------------------------|----------|
| -al | /-æɾ/ | rus.sbal | /ri: ^L pæɾ/ | turtle |
| | | ŋa.rg ^j al | /ŋæ ^L dzæɾ/ | arrogant |
| | | p ^h al.te ^h er | /hæɾ ^L tee/ | about |
| -al | /-æ.rV/ | rg ^j al.po | /dzæ ^L ru:/ | king |

We find two cases where final |-l| is resyllabified following the addition of a (probably diminutive) suffix (originating from |bu| ‘son’), with assimilation of to the preceding coda:

Table 45: Resyllabification of |-l|

| CoT | Cone | Etymology | Example | Meaning |
|-----|---------|-----------|------------------------|---------|
| -el | /-i:IV/ | drel | /tʃi: ^L lə/ | mule |
| -il | /-əIV/ | * gril | /təə ^L lə/ | round |

Finally, the following marginal correspondences are also attested:

Table 46: Marginal Cone reflexes of final |-l| rhymes

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|-----------------------|---|-----------------------|
| -al | /-ã:/ | ɲal | /ɲã: ^L /, /ɲã: ^L -Gə/ | to sleep |
| -ol | /-ũ:/ | ɲol | /ɲũ: ^L / | to sleep (imperative) |
| -ol | /-o:/ | sgo.jol | /gɔ ^L jo:/ | tent fly |
| | | rdo.sol | /dɔ ^L s ^h o:/ | coal |
| -il | /-ɪ:/ | so.rɲil | /s ^h ɔ ^L ɲɪ:/ | gum |
| -al | /-ɛC/ | mk ^h al.ma | /k ^h ɛC ^L mæ/ [k ^h ɛm ^L mæ ^H] | kidney |

The verb /ɲã:^L/ ‘to sleep’ is the only one in /-ã:/ whose conjunct form is not /-æN-/ , and its imperative form is one of the rare words with the vowel /-ũ:/ . The expected reflexes of |ɲal| and |ɲol| would be */ɲɑ:^L/ and */ɲu:^L/ , that is, the exact equivalents of /ɲã:^L/ and /ɲũ:^L/ without nasality. All these facts suggest that nasality is secondary in this verb. This question will be explored in §4.4.1.

The rhymes in final |-s| have the following correspondences:

Table 47: Cone reflexes of |-s| final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|-----|-------|-----------|-----------------------------------|---------------------|
| -as | /-e:/ | bzlas | /dze: ^L / | to speak (past) |
| -es | /-ɪ:/ | ees | /x ^h ɪ: ^L / | to know |
| -is | /-i:/ | dkris | /ɛi: ^H / | to attach |
| -os | /-ɪ:/ | ltos | /tɪ: ^H / | to see (imperative) |
| -us | /-i:/ | bkrus | /tei: ^H / | to wash (past) |

Since Common Tibetan has a past tense $[-s]$ suffix, these rhymes commonly occur in the past tense forms of verbs with open syllable stems. The resulting alternations will be studied in §5. We observe various cases of irregular correspondences for these rhymes.

First, unexpected nasalization occurs in several nouns:

Table 48: Irregular nasalization in $[-s]$ final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|---------|---------|-----------------------------------|--|---------|
| $[-es]$ | $/-ĩ:/$ | $[\text{rnam.ees}]$ | $/\text{nã}^{\text{L}}\text{x}^{\text{h}}\text{ĩ}^{\text{L}}/$ | soul |
| $[-os]$ | $/-ĩ:/$ | $[\text{nal.gos}]$ | $/\text{ɲã}^{\text{L}}\text{ɣ}^{\text{h}}\text{ĩ}^{\text{L}}/$ | quilt |
| | | $[\text{spos}]$ | $/\text{pĩ}^{\text{H}}/$ | incense |
| | | $[\text{ts}^{\text{h}}\text{os}]$ | $/\text{ts}^{\text{h}}\text{ĩ}^{\text{L}}/$ | pigment |

Second, various irregularities in vowel correspondences:

Table 49: Irregular reflexes of $[-s]$ final rhymes

| CoT | Cone | Etymology | Example | Meaning |
|---------|---------|---|--|--------------------|
| $[-es]$ | $/-ə/$ | $[\text{gzes.niŋ.lo}]$ | $/\text{ɣ}^{\text{L}}\text{ə}^{\text{L}}\text{ni}^{\text{L}}\text{lə}^{\text{L}}/$ | the previous year |
| | $/-i:/$ | $[\text{gzes.naŋs}]$ | $/\text{ɣ}^{\text{h}}\text{i}^{\text{L}}\text{nã}^{\text{L}}/$ | in one year |
| | | $[\text{gzes}]$ | $/\text{ɣ}^{\text{h}}\text{i}^{\text{L}}/$ | to eat, honorific |
| | | $[\text{res}]$ | $/-ri:/$ | reciprocal suffix |
| $[-os]$ | $/-ɔ/$ | $[\text{dgos}]$ ($*[\text{dgo}]$) | $/\text{g}^{\text{L}}\text{ɔ}^{\text{L}}/$ | need |
| | $/-i:/$ | $[\text{bios}]$ | $/\text{ei}^{\text{L}}/$ | to do (imperative) |
| $[-is]$ | $/-ə/$ | $[\text{k}^{\text{h}}\text{a.spris}]$ ($*[\text{k}^{\text{h}}\text{a.spri}]$) | $/\text{k}^{\text{h}}\text{e}^{\text{L}}\text{rə}^{\text{L}}/$ | milk skin |

The case of the verb ‘to do’ is particularly puzzling. Its complete paradigm is present $/\text{ei}^{\text{L}}/$, $/\text{e}^{\text{L}}\text{C}^{\text{L}}\text{-}\text{ɣ}^{\text{h}}\text{ə}/$ $[\text{e}^{\text{L}}\text{ək}^{\text{L}}\text{kə}^{\text{H}}]$, past $/\text{e}^{\text{L}}/$ and imperative $/\text{ei}^{\text{L}}/$. From the Common Tibetan paradigm $[\text{bied}]$, $[\text{bias}]$, $[\text{bios}]$ we would expect $*\text{/e}^{\text{L}}/$, $*\text{/e}^{\text{L}}\text{ək}^{\text{L}}\text{kə}^{\text{H}}/$, $/\text{e}^{\text{L}}/$ and $*\text{/e}^{\text{L}}/$. See §5.2 for an explanation (only the past form regularly derives from the inherited paradigm).

The form $/\text{g}^{\text{L}}\text{ɔ}^{\text{L}}/$ for ‘need’ reflects a CoT $*[\text{dgo}]$ without final $[-s]$. Cone is not isolated in reflecting this non-standard etymon; for instance, Labrang Amdo *hgo* instead of expected $*\text{hge}$ (Huá & Lóngbójiǎ 1993).

The noun $/\text{k}^{\text{h}}\text{e}^{\text{L}}\text{rə}^{\text{L}}/$ ‘milk skin’ is particularly interesting, as it attests to resyllabification of the $[-s]$ of the second syllable. It is a compound of $[\text{k}^{\text{h}}\text{a}]$ ‘mouth’ and $[\text{spr}i]$ ‘beastings, milk skin’, in Common Tibetan $*[\text{k}^{\text{h}}\text{a.spr}i]$ without final $[-s]$. This form underwent the change $[\text{spr}i] > *[\text{sr}i]$ (see §3.3.3), then $*[\text{s}r-]$ was reinterpreted as the coda of the first syllable $*[\text{k}^{\text{h}}\text{a.spr}i] > *[\text{k}^{\text{h}}\text{a.sri}] > *[\text{k}^{\text{h}}\text{as.ri}]$, a proto-form which regularly yields $[\text{k}^{\text{h}}\text{e}^{\text{L}}\text{rə}^{\text{L}}]$. Had resyllabification not taken place, a form like $*\text{/k}^{\text{h}}\text{æ}^{\text{L}}\text{ɣ}^{\text{h}}\text{ə}/$ would be expected.

4.2.5 Contracted vowels

Contracted vowels result from the fusion of an open syllable vowel with the suffixes $|-ba|$, $|-bo|$, $|-mo|$ or $|-wu|$ (spelled $\langle -fiu \rangle$). Note that in Common Tibetan, intervocalic $|b|$ was probably already spirantized to $*[w]$. Only nouns present contracted vowels, as the verbal suffixes never merge with the stem vowels. All contracted vowels result in long vowels. Contraction of the $|-mo|$ suffix results in a nasal vowel. These rhymes do not have a distinct conjunct form.¹⁷

Table 50: Reflexes of contracted vowels in Cone

| CoT | Cone | Etymology | Example | Meaning |
|-----------|---------|-------------|------------|----------------|
| $ -a.ba $ | $/-a:/$ | $ zla.ba $ | $/dza:/$ | moon |
| $ -e.ba $ | $/-e:/$ | $ lte.ba $ | $/te^H/$ | navel |
| $ -i.ba $ | $/-e:/$ | $ ldzi.ba $ | $/dze^L/$ | flea |
| $ -o.ba $ | $/-o:/$ | $ glo.ba $ | $/lo^H/$ | lung |
| $ -o.ba $ | $/-u:/$ | $ bzo.ba $ | $/zu^L/$ | carpenter |
| $ -u.ba $ | $/-o:/$ | $ ju.ba $ | $/jo^L/$ | handle |
| $ -e.bo $ | $/-u:/$ | $ sle.bo $ | $/s^hu^L/$ | large basket |
| $ -i.mo $ | $/-õ:/$ | $ ri.mo $ | $/rõ^L/$ | mark |
| $ -o.mo $ | $/-õ:/$ | $ mdzo.mo $ | $/ndzõ^L/$ | hybrid yak cow |
| $ -ewu $ | $/-i:/$ | $ sprewu $ | $/ʃi^H/$ | monkey |
| $ -iwu $ | $/-e:/$ | $ biwu $ | $/œ^L/$ | mouse |

Note that Common Tibetan $|-o.ba|$ can become either $/-o:/$ or $/-u:/$ in Cone, the latter correspondence only attested in one example.

The contracted forms of $|-o.ba|$ and $|-u.ba|$ are the only origins of the long vowel $/-o:/$, which is quite rare in the Cone lexicon.

4.3 Onsets

Common Tibetan had a complex consonantal system with at least 210 distinct possible onsets. The complex clusters of Common Tibetan, presenting in some cases as many as four initial consonants, have been reduced in all Tibetan languages, and are only partially preserved in Western Tibetan and Old Tibetan loanwords in Rgyalrong languages. All initial consonant clusters have disappeared in Cone.

Another major difference between Common Tibetan and all attested Tibetan languages is the status of aspirated obstruents. In Common Tibetan, aspirated and non-aspirated voiceless

¹⁷ In the case of $|-wu|$ it is unclear whether this element was a distinct syllable or maybe a final $|-w|$. In the spelling system it is written as $\langle -fiu \rangle$ without syllable separator ($\langle ts^h eg \rangle$). For this reason we do not indicate a dot to separate syllables in CoT, but this issue needs more research.

stops were in quasi-complementary distribution (see Li 1933). Hill (2007) shows that in Old Tibetan orthography, aspiration was not written consistently, and was still a subphonemic feature, though the basic tendency was that aspirated stops occurred word-initially and after nasal preinitials, while non-aspirated stops occurred after any non-nasal preinitial. Later, non-aspirated voiceless stops were introduced in the systems by loanwords from Chinese or Indic, enclitics, onomatopoeia or dialectal words.

The structure of the syllable in Common Tibetan was the following:

$$(C^H C^L) C^3 (C^4) V (C^f H) (C^f L)$$

Only C^3 and V were obligatory. We call C^3 the true initial (in Tibetan <miŋ.gzi>). C^4 (the medial consonant or <ndogs.tean>) could be any of $\{r||l||w||j|\}$. C^H (the <sŋon-ndzug> preinitial) could be any of $\{b||d||g||m||n|\}$, while C^L (the <mgo.tean> preinitial) could be any of $\{r||l||s|\}$.

4.3.1 Onsets without medials: stops

The basic correspondences of onsets without medials in monosyllables are relatively regular. We will discuss stops, fricatives, nasal and non-nasal sonorants respectively. In the following discussion, the symbol C represents any of $\{b||d||g||r||l||s|\}$, and N any of $\{n||m|\}$ in Common Tibetan. The correspondences set out in this section are not valid for suffixes, which will be studied in a separate section.

For stops, the correspondences are the following:

Table 51: Cone reflexes of initial stops and affricates

| CoT | Cone | Etymology | Example | Meaning |
|-------------------|----------------------|-----------------------|------------------------------------|---------------|
| $(C)Ck-$ | /k ^{-H} / | skor | /kor ^H / | to turn (tr.) |
| k ^{h-} | /k ^{h-} / | k ^h u | /k ^h ə ^H / | soup |
| Nk ^{h-} | /k ^{h-} / | mk ^h ar | /k ^h ær ^H / | wall |
| g- | /k ^{-L} / | gon | /kē: ^L / | to wear |
| $(C)Cg-$ | /g ^{-L} / | dga | /gæ ^L / | to like |
| Ng- | /ŋg ^{-L} / | mgo | /ŋgɔ ^L / | head |
| $(C)Cte-$ | /te ^{-H} / | gteig | /tei ^H / | one |
| te ^{h-} | /te ^{h-} / | te ^h u | /te ^h ə ^H / | water |
| Nte ^{h-} | /te ^{h-} / | mte ^h e.ba | /te ^h e: ^L / | fang |
| dz- | /te ^{-L} / | dza | /teæ ^L / | tea |
| $(C)Cdz-$ | /dz ^{-L} / | rdze | /dzɛ ^L / | to exchange |
| Ndz- | /ndz ^{-L} / | mdze | /ndzɛ ^L / | penis |
| $(C)Ct-$ | /t ^{-H} / | gtam | /tā: ^H / | to talk |
| t ^{h-} | /t ^{h-} / | t ^h uŋ | /t ^h u: ^L / | short |

| | | | | |
|--------------------|----------------------|--------------------------------|-----------------------------------|------------|
| Nt ^h - | /t ^h -/ | ⁿ t ^h uŋ | /t ^h u: ^L / | to drink |
| d- | /t- ^L / | dar | /tær ^L / | ice |
| (C)Cd- | /d- ^L / | rdun | /du: ^L / | to hit |
| Nd- | /nd- ^L / | mdun | /ndu: ^L / | spear |
| (C)Cts- | /ts- ^H / | rtsi | /tsə ^H / | to count |
| ts ^h - | /ts ^h -/ | ts ^h e | /ts ^h ɛ ^H / | life |
| Nts ^h - | /ts ^h -/ | mts ^h o | /ts ^h ɔ ^H / | lake |
| (C)Cdz- | /dz- ^L / | rdzi | /dzə ^L / | to knead |
| Ndz- | /ndz- ^L / | mdzo | /ndzɔ ^L / | hybrid yak |
| (C)Cp- | /p- ^H / | dpun | /pu: ^H / | to stack |
| p ^h - | /p ^h -/ | p ^h ɛbs | /p ^h ɛ ^H / | to walk |
| Np ^h - | /p ^h -/ | ⁿ p ^h ur | /p ^h ər ^H / | to fly |
| b- | /p- ^L / | bal | /pe: ^L / | wool |
| (C)Cb- | /b- ^L / | sbas | /be: ^L / | to bury |
| Nb- | /mb- ^L / | ⁿ bu | /mbə ^L / | worm |

These correspondences explain why voiced stops only occur with the low tone: there is no historical origin for a high tone voiced stop; the tonal contrast is only attested for voiceless non-aspirated stops, where high tone reflects an original voiceless stop, and low tone an original voiced stop without preinitial. For aspirated consonants, we have seen in §3.4 that tone is not contrastive.

In a few examples, preinitial |d-| and |r-| from the second syllable are resyllabified as the coda of the first syllable and preserved:

Table 52: Final /-r/ originating from the preinitial of the second syllable

| CoT | Cone | Etymology | Example | Meaning |
|------|----------|------------------------|---------------------------------------|-----------------|
| rts- | /Vr.ts-/ | sna.rtsɛ | /nær ^H tɛɛ/ | tip of the nose |
| | | k ^h a.rtsaŋ | /k ^h ær ^L tɕa:/ | yesterday |
| | | ma.rtsa | /mær ^L tɕæ/ | capital (money) |
| dg- | /Vr.g-/ | btɕu.dgu | /tɕər ^L gə/ | nineteen |

Another recurrent correspondence is Cone /h-/ for Common Tibetan |p^h-|. We will see in §4.4 that this is a characteristic of Amdo Tibetan borrowings:

Table 53: Correspondence of |p^h-| to /h-/

| CoT | Cone | Etymology | Example | Meaning |
|------------------|------|--------------------------------------|--|-----------------------|
| p ^h - | /h-/ | p ^h og | /hu ^H /, /hək ^L -Gə/ [həq ^L qə ^H] | to hit (the target) |
| | | p ^h ud | /hi ^H / | to take off (clothes) |
| | | p ^h al.te ^h er | /hær ^L tɕe/ | about |

However, the above correspondences are not exceptionless. Cone differs from standard CoT (as evidenced in Classical Tibetan and most dialects) in aspiration in intervocalic position in some (rare) cases:

Table 54: Irregular correspondences of aspiration in the second syllable of disyllabic words

| CoT | Cone | Standard CoT | Etymology | Example | Meaning |
|-------------------|-------------------|--------------------------------------|---------------------------------------|---|------------|
| te- | /tʰe- | r ^w a.teo | * rwa.te ^h o | /ræ ^L te ^h ɔ/ | horn |
| | | sems.tean | * sems.te ^h an | /sʰɛ: ^L te ^h ɛ:/ | wild beast |
| | | nag.te ^h ags | * nag.teags | /næk ^L teɑ/ [næχ ^L teɑ ^H] | wife |
| k ^h - | /ɣ- | sna.k ^h uŋ | * sna.wuŋ | /næ ^H ɣu:/ | nostril |
| te ^h - | /te- | dm ⁱ ig.te ^h u | * dm ⁱ ig.teu | /ɲi: ^H teə/ | tear |
| | | mt ^h e.te ^h en | * mt ^h e.teen | /t ^h e ^L teɛ:/ | thumb |
| k- | /k ^h - | sp ⁱ aŋ.ki | * sp ⁱ aŋ.k ^h i | /cæN ^L k ^h ə/ [cæŋ ^L k ^h ə ^H] | wolf |

These examples are not exceptions *stricto sensu*, they rather reflect the fact that Cone originates from a variety of Common Tibetan slightly different in this respect from the one represented in the classical orthography.

Finally, we find the following isolated exceptions:

Table 55: Irregular reflexes of stop and affricate onsets

| CoT | Cone | Etymology | Example | Meaning |
|-------------------|-------------------|-------------------------------------|--|-----------|
| dp- | /x- | me.dpun | /ɲɛ ^H xɔ: ^H / | torch |
| sb- | /z- ^H | sbom (* sbrom) | /zɔ: ^H /, /zɔ ^{N^H} -Gə/ [zɔ ^H ŋgə ^H] | thick |
| b- | /mb- | buŋ.ba (* ⁿ buŋ.ma) | /mbu: ^L wā:/ | bee |
| ⁿ b- | /p- | ⁿ bur.len | /pi ^L lɛ:/ | plane |
| gte- | /ts- | bteu.gteig | /teə ^L tɕi/ | eleven |
| bts- | /dz- | btsa | /dzæ ^L / | rust |
| ts ^h - | /s ^h - | k ^h u.ts ^h ur | /k ^h ə ^L s ^h ər/ | fist |
| rg- | /ŋg- | rgan | /ŋgā: ^L / | porcupine |

Some of the examples above reflect borrowings from other dialects (such as ‘torch’) and will be studied in §4.4. The case of /zɔ:^H/, /zɔ^{N^H}-Gə/ ‘thick’ however, is different. The Cone initial /z-| with a high tone only has two origins: |sbr-| and |sgr-| in CoT. This shows that the Cone word originates from a Common Tibetan form *|sbrom| instead of the standard form |sbom| attested in other Tibetan languages, with a *|-r-| infix of unknown function. A similar situation is observed for the noun ‘bee’, which must be reconstructed *|ⁿbuŋ.ma| in the dialect of CoT ancestral to Cone. Other dialects have a prenasalized in this word such as Shuiluo Kami Tibetan /mbɔ^L/, a form whose CoT etymon is *|ⁿbuŋ.mo| (personal fieldwork).

4.3.2 Onsets without medials: fricatives and sonorants

Common Tibetan had only six fricatives, the alveolo-palatals /ɕ/ and /ʑ/, the dentals /s/ and /z/ and the laryngeals /h/ and /ɦ/. Cone, as we have seen, has developed a much more complex system of 13 fricative phonemes.

Common Tibetan fricatives remain fricatives in Cone, but alveolo-palatals change to velars:

Table 56: Cone reflexes of fricatives

| CoT | Cone | Etymology | Example | Meaning |
|-----|--------------------|-----------|------------------------------------|---------------------|
| ɕ- | /x ^h -/ | ɕa.ba | /x ^h ɑ: ^L / | deer |
| Cɕ- | /x- ^H / | beags | /xɑ ^H / | to tear |
| z- | /x- ^L / | zo | /xɔ ^L / | curd |
| Cz- | /ɣ- ^L / | gzar | /ɣæ ^L / | to shave |
| s- | /s ^h -/ | so | /s ^h ɔ ^H / | tooth |
| Cs- | /s- ^H / | gso | /sɔ ^H / | to raise |
| z- | /s- ^L / | zo | /sɔ ^L / | to eat (imperative) |
| Cz- | /z- ^L / | bzarŋ | /zɑ: ^L / | good |
| h- | /h- | ha.go | /hæ ^L kɔ ^L / | to understand |
| ɦ- | /j-/, /w- | | | |

Note that there is no origin in Common Tibetan for /ɣ/ and /z/ with a high tone, a fact which explains why these fricatives always occur with a low tone. The other voiced fricatives /z/ and /ʑ/ have other origins.

For Common Tibetan |ɦ|, there is no straightforward correspondence. Here are all the examples in our Cone corpus:

Table 57: Cone reflexes of |ɦ-|

| CoT | Cone | Etymology | Example | Meaning |
|-----|------|-----------|---|---------|
| ɦ- | /w- | fion.pa | /wõ: ^L mbæ/ | deaf |
| ɦ- | /j- | fiog | /jɔ ^L ɰæ/ | below |
| ɦ- | /ɰ/ | fiug.pa | /ɕC ^L kæ/ [ɕk ^L kæ ^H] | owl |
| | | fio.ma | /õ: ^H wã:/ | milk |

Note that the correspondance of |ɦ-| in Common Tibetan to Cone /j-/ suggests an alternative Common Tibetan form [jog-| (with a suffix |-ba|), with a |ɦ-| ~ |j-| alternation as in the verb ‘to come’ which has two forms depending on the dialect |fion| or |jog|.

We find a handful of examples where Common Tibetan alveolo-palatals correspond to Cone alveolo-palatal, retroflex, or dental fricatives, rather than to the expected velar fricatives.

Table 58: Irregular reflexes of fricative onsets

| CoT | Cone | Etymology | Example | Meaning |
|-----|--------------------|-------------|---|------------------|
| bɛ- | /ɛ ^{-H} / | beos | /ɛɪ ^H / | to give birth to |
| bz- | /ɛ ^{-L} / | bzon | /ɛð ^{-L} / | to ride |
| ɛ- | /x ^{h-} / | * rlung.car | /lu ^H ɛ ^h ær/ | to winnow |
| gɛ- | /ʂ ^{-H} / | geog.pa | /ʂɔk ^H kæ/ [ʂɔq ^L qæ ^H] | wing |
| z- | /ʂ ^{-L} / | zags.pa | /ʂɔk ^L kæ/ [ʂɔq ^L qæ ^H] | lasso, noose |

We will see in §4.4 that these are borrowings from other Tibetan dialects. The case of /s^{hi}:Lthu/ ‘fruit’ is complicated: it could well be a case where palatalization of *s before front vowel failed to apply: pre-Tibetan *siC regularly become Common Tibetan |ɛiC| (for apparent exceptions see **Hill to appear**); the root ‘wood’ *siŋ yields |ɛiŋ| (Cone /x^hɪ^{-L}/, either a borrowing or an inherited word with irregular nasalization). The first syllable/s^{hi}:L-/ could originate from a CoT form *|siŋ| with irregular absence of palatalization.

The noun /x^hæ^Lmbæ/ ‘butcher’ |gean.pa| is the only case of an aspirated fricative in Cone corresponding to an initial cluster /stop+fricative/ in Common Tibetan.

For nasals, the segmental and tonal correspondences with CoT are extremely straightforward (C indicates here any consonant, even a nasal):

Table 59: Cone reflexes of initial nasals.

| CoT | Cone | Etymology | Example | Meaning |
|-----|--------------------|-----------|----------------------|------------|
| m- | /m ^{-L} / | mo | /mɔ ^L / | divination |
| Cm- | /m ^{-H} / | dma | /mæ ^H / | low |
| n- | /n ^{-L} / | nub | /nu ^L / | west |
| Cn- | /Cn ⁻ / | rno | /nɔ ^H / | sharp |
| ɲ- | /ɲ ^{-L} / | na | /ɲæ ^L / | fish |
| Cɲ- | /ɲ ^{-H} / | ɲniŋ.ba | /ɲi ^H wæ/ | old |
| ŋ- | /ŋ ^{-L} / | ŋo | /ŋɔ ^L / | face |
| Cŋ- | /ŋ ^{-H} / | dŋul | /ŋu ^H / | silver |

The only major exceptions to the correspondences in the above table involve the tonal irregularities discussed in §4.1. Note that CoT |m| corresponds to /ɲ/ before front vowels, a fact which reflects the general palatalization of labials and velars before front vowel in the variety ancestral to Cone.

Note the exceptional form /ɲe^{-L}/ ‘barley’ |nas| and /ɲe^{-L}ŋgɔ/ ‘pillow’ |sŋas.mgo| with a palatalized initial. Common Tibetan |n-| and |ɲ-| do not normally palatalize before Cone /-e/ from |-as| (for instance /ne^H/ ‘element of the loom’ |snas| still has a dental). We find a similar irregularity in Shuiluo Kami where the reflex of |nas| is /ɲe^{-L}/. It is unclear whether we have to postulate a non-standard etymon *|ɲnas| ‘barley’ in Common Tibetan, or alternatively suppose

that this palatalization is a characteristic of the inherited layer, a hypothesis which would imply that that all cases of non-palatalized nasals before /-e:/ in Cone were borrowed from another Tibetan language.

For non-nasal sonorants, we find the following correspondences:

Table 60: Cone reflexes of non-nasal sonorants

| CoT | Cone | Etymology | Example | Meaning |
|-------------------|---------------------|-------------------|-----------------------------------|------------------|
| r- | /r- ^L / | ri | /rə ^L / | mountain |
| sr- | /ʂ- ^H / | srab | /ʂe ^H / | bridle |
| hr- | /ʂ ^h -/ | hral | /ʂ ^h e: ^L / | coarse |
| l- | /l- ^L / | las | /le: ^L / | fate |
| Cl- | /l- ^H / | rluŋ | /lu: ^H / | wind |
| sl- | /ts- ^H / | bslaŋ | /tsa: ^H / | to beg for money |
| zl- | /dz- ^L / | zla.ba | /dza: ^L / | moon |
| rl- | /l-/ ^L | rlig.pa | /læC ^L kæ/ | testicles |
| l ^h - | /l-/ ^L | l ^h a | /læ ^H / | god |
| j- | /j- ^L / | jaŋ | /ja: ^L / | light (adj) |
| gj- | /j- ^H / | gjag | /ja ^H / | yak |
| f ^h w- | /w-/ ^L | f ^h wa | /wæ ^L / | fox |

We find the following irregular words (see §4.4 for discussion):

Table 61: Irregular reflexes of non-nasal sonorants

| CoT | Cone | Etymology | Example | Meaning |
|------------------|---------------------------------|--------------------------------------|---|---------------------|
| l ^h - | /h-/ ^L | l ^h am. ⁿ grog | /hæ ^L ndzu/ | bootlace, shoelaces |
| | | l ^h am.ŋo | /hæN ^L ŋo/ | sole of boots |
| sl- | /s-/ ^L | sla.ŋa | /sæ ^H ŋæ/ | pan |
| s- | /s ^h -/ ^L | sle.bo | /s ^h u: ^L / | large basket |
| sl- | /l- ^H / | sla , bslas | /læ ^H /, /le: ^L / | to plait |
| zl- | /d-/ ^L | zla. ⁿ dzin | /dæ ^L ndzĩ: ^L / | lunar eclipse |
| sr- | /s-/ ^L | sre.moŋ | /se ^H wō:/ | weasel |
| | | srin | /ε ^H sε/ | cotton |

4.3.3 Onsets with |r-| medial

The consonant clusters with a medial |r-| in Common Tibetan included velar, dental and labial stops + |r|; the cluster |sr-| was treated in §4.3.2.

Velar stops have two sets of correspondences. In the first one, |velar+r| clusters correspond to alveolo-palatals, except for |sgr-|:

Table 62: Cone reflexes of |velar+r| clusters, first set

| CoT | Cone | Etymology | Example | Meaning |
|--------------------|----------------------|---------------------------------|-----------------------------------|------------------|
| (C)Ckr- | /ɕ- ^H / | skra | /ɕæ ^H / | hair |
| k ^h r- | /tɕ ^h -/ | k ^h rag | /tɕ ^h ɑ ^H / | blood |
| Nk ^h r- | /tɕ ^h -/ | ⁿ k ^h rud | /tɕ ^h i ^H / | to wash |
| gr- | /tɕ- ^L / | gro | /tɕɔ ^L / | wheat |
| (C)sgr- | /zɕ ^H / | sgril | /zɕi: ^H / | to cause to roll |
| Ngr- | /ndz- ^L / | ⁿ gram | /ndzã: ^L / | shore, bank |

In the second one, |velar+r| correspond to retroflex affricates instead; note that we have no examples of |(C)kr-| onsets in this set:

Table 63: Cone reflexes of |velar+r| clusters, second set

| CoT | Cone | Etymology | Example | Meaning |
|-------------------|-----------------------|---------------------------------------|--|-------------|
| k ^h r- | /tɕ ^h -/ | k ^h ruŋ.k ^h ruŋ | /tɕ ^h ø: ^L tɕ ^h ø: ^L / | white goose |
| N ^h r- | /tɕ ^h -/ | mk ^h ris.ba | /tɕ ^h i: ^L wæ/ | gallbladder |
| gr- | /tɕ- ^L / | grɔŋ.k ^h er | /tɕø: ^L tɕ ^h er/ | city |
| dgr- | /dzɕ- ^L / | dgra.bo | /dzɕæ ^L wu:/ | enemy |
| (C)sgr- | /dzɕ- ^L / | sgra | /dzɕæ ^L / | sound |
| Ngr- | /ndzɕ- ^L / | ⁿ grul.pa | /ndzɕu: ^L wæ/ | guest |

The origin of these two sets of correspondence will be studied in §4.4. We also have one example of |bkr-| corresponding to /tɕ-/ instead of expected /ɕ-/ (/tɕi:^H/ ‘to wash (past)’ |bkrus|). We will see in §5 that this form underwent analogical leveling with the regular present /tɕ^hi^H/ |ⁿk^hrud|.

For dental and labial stop clusters, the correspondences are the following:

Table 64: Cone reflexes of |labial+r| clusters

| CoT | Cone | Etymology | Example | Meaning |
|--------------------|-----------------------|---------------------------------|--------------------------------------|----------------------|
| dr- | /tɕ- ^L / | dran | /tɕɕ: ^L / | to miss, to think of |
| Ndr- | /ndzɕ- ^L / | ⁿ dre | /ndzɕɛ ^L / | ghost |
| spr- | /ɕ- ^H / | sprin | /ɕi: ^H / | cloud |
| p ^h r- | /tɕ ^h -/ | * p ^h rag.mgo | /tɕ ^h ɑ ^L ŋgɔ/ | shoulder |
| Np ^h r- | /tɕ ^h -/ | ⁿ p ^h rog | /tɕ ^h u ^H / | to rob |
| br- | /tɕ- ^L / | brag | /tɕɑ ^L / | cliff |
| sbr- | /zɕ ^H / | sbrul | /zɕu: ^H / | snake |
| Nbr- | /ndzɕ- ^L / | ⁿ bras | /ndzɕɛ: ^L / | rice |

Note that |sbr-| and |sgr-| both develop into the voiced fricative [zɕ^H] with a high tone (it can be considered synchronically as an allophone of /r/, as [r] only appears in low tone, but we keep the distinction between the two in the transcription). The word /zɕø:^H/ ‘thick’ also belongs

to this set (as we reconstruct Common Tibetan *|sbrom| instead of the more common form |sbom| to account for this word). to account for it. For |spr-| and |sbr-|, we have to suppose intermediate changes:

$$\begin{aligned} |\text{spr-}| &> *|\text{sr-}| > |\text{ʃ-}^{\text{H}}| \\ |\text{sbr-}| &> *|\text{zbr}| > *|\text{zr}| > /z\text{r}^{\text{H}}/ \end{aligned}$$

We find the following irregularities with |labial+r| and |dental+r| clusters:

Table 65: Irregular reflexes of |labial+r| clusters

| CoT | Cone | Etymology | Example | Meaning |
|------------------|--------|-------------------|-------------------------|------------|
| sbr- | /dz-/ | sbraŋ.rtsi | /dzã: ^L tsə/ | honey |
| sbr- | /w-/ | sbra | /wæ ^L / | tent |
| spr- | /tʃ-/ | spri | /tʃə ^L / | beastings |
| spr- | /p-/ | spran.po | /pa: ^H wu:/ | beggar |
| ⁿ br- | /ndz-/ | ⁿ brel | /ndzi ^L / | board game |
| dr- | /r-/ | sŋa.dro | /ŋæ ^L rɔ/ | morning |

In the first three examples, the clusters |spr-| and |sbr-| change into affricates or stops, not into fricatives.

4.3.4 Onsets with |-i-| medial

Common Tibetan clusters with medial |-i-| only included |velar+^j| and |labial+^j|. The correspondences between Common Tibetan and Cone are the following:

Table 66: Cone reflexes of |stop+^j| clusters

| CoT | Cone | Etymology | Example | Meaning |
|-----------------------|----------------------|-------------------------------------|---|-------------------|
| ((C)Ck ⁱ - | /e ^{-H} / | bsk ⁱ al | /eɑ: ^H / | to send |
| k ^h i- | /te ^h -/ | k ^h ij | /te ^h ə ^L ɣə ^H / | dog |
| Nk ^h i- | /te ^h -/ | ⁿ k ^h iags.pa | /te ^h æk ^L kæ/ [te ^h æq ^L qə ^H] | ice |
| ((C)Cg ⁱ - | /dz ^{-L} / | rg ⁱ ab | /dze ^L / | back |
| Ng ⁱ - | /ndz ^{-L} / | mg ⁱ ogs.po | /ndzɔk ^L kɔ/ [ndzɔq ^L qɔ ^H] | quick |
| sp ⁱ - | /e-/ ? | sp ⁱ ang.ki | /eæN ^L k ^h ə/ [eæŋ ^L k ^h ə ^H] | wolf |
| p ^h i- | /e ^h -/ | p ^h ijis | /e ^h i: ^L / | to wipe (past) |
| Np ^h i- | /e ^h -/ | ⁿ p ^h i.ba | /e ^h e: ^L / | marmot |
| bi- | /e ^{-L} / | bi | /eæ ^L / | bird |
| dbi- | /j ^{-H} / | db ⁱ ar.ka | /jær ^H kæ/ | summer |
| sbi- | /z ^{-L} / | sb ⁱ ar | /zær ^L / | to paste |
| Nbi- | /ndz ^{-L} / | ⁿ biəd | /ndzer ^L / | to open (present) |

Note that the clusters [labial+j] are the only regular origins of alveolo-palatal fricatives. This explains the absence of /z/ with high tone, which would have no origin in Common Tibetan.

We find the following isolated exceptions to the correspondences set out above:

Table 67: Irregular reflexes of [stop+j] clusters

| CoT | Cone | Etymology | Example | Meaning |
|-------------------------------|---------------------|--------------------------------------|---|-------------------|
| sk ⁱ - | /tɕ-/ | sk ⁱ a.sga | /tɕæ ^H gæ/ | ginger |
| | | sk ⁱ ag.ka | /tɕæk ^H kæ/ [tɕæq ^H qæ ^H] | excrement |
| sk ⁱ - | /j-/ | spun.sk ⁱ a | /pĩ: ^H jæ/ | brother |
| rk ⁱ - | /tɕ-/ | rk ⁱ al | /tɕe: ^H / | to swim |
| sb ⁱ - | /ɣ-/ | sb ⁱ in | /ɣĩ: ^L / | to give |
| b ⁱ - | /z-/ | b ⁱ in.paʔ | /zəC ^L pæ ^H / [zəp ^L pæ ^H] | calf (of the leg) |
| sp ⁱ - | /tɕ-/ | p ^h al.tɕ ^h er | /hær ^L tɕe/ | about |
| p ^h _i - | /x ^h -/ | p ^h iʔ | /x ^h ə ^L zə/ | outside |
| p ^h _i - | /tɕ ^h -/ | p ^h iu.ra | /tɕ ^h ə ^L ræ/ | cheese |

Of the four medials of Common Tibetan, only |-r-| and |-j-| need to be specially discussed; the clusters with |-l-| as a second element have been treated in §3.3.2 and the medial |-w-| (<wa-zur>) has not left any trace in Cone (on the nature of the <wa-zur>, see Hill 2006 and Jacques 2009a).

4.4 The layers of vocabulary

Sections 4.2 and 4.3 have shown that the correspondences between Common Tibetan and Cone present irregularities and that in some cases we even seem to have a split between two sets of correspondences. The most important cases are:

Table 68: Two correspondence sets between Cone and Common Tibetan

| | | Set 1 | Set 2 |
|---|--------------------------------|---|---|
| A | -Vŋ | long vowel /-ɑ://-e://-i://-u://-u:/ | Nasalized long vowel /-ã://-ĩ://-õ:/ |
| B | -al | /-ɑ:/ | /-e:/ |
| C | p ^h - | /p ^h -/ | /h-/ |
| D | l ^h - | /l-/ | /h-/ |
| E | alveolo-palatals fricatives | velars | alveolo-palatals |
| F | velar+r | alveolo-palatal affricates /tɕ-//tɕ ^h -//dz-//ndz-/ /ndz _r -/ | retroflex affricates /tʂ-//tʂ ^h -//dz _r -/ /ndz _r -/ |
| G | Ck ⁱ - , [labial+j] | /ɕ-/ , /ɕ ^h -/ | /tɕ-/, /tɕ ^h -/ |
| H | final -l | long vowel | /r-/ |

Although Cone comes from a dialect of Common Tibetan that had non-standard forms (cf. §7), we have no reason to postulate that these split correspondences originate from pre-Common Tibetan contrasts lost in the written corpus but preserved in Cone. Instead, One way to account for this is to conclude that these reflect distinct layers of vocabulary, one inherited from Common Tibetan, and the other ones borrowed from neighbouring Tibetan dialects.

We cannot assume that the most common correspondence always reflect the inherited layer. Instead, the following criteria can be used:

- a) Since nouns are more easily borrowed than verbs, we should expect that only few verbs should appear in a borrowed layer of vocabulary. In other words, if layer A only contains nouns while layer B contains both nouns and verbs, everything else being equal, layer B is more likely to be the inherited layer and A the borrowed layer.
- b) The borrowed layers should contain more cultural, religious and honorific vocabulary, as opposed to basic vocabulary (body parts, basic action verbs etc).
- c) Any form that reflect an etymon different from that of the written corpus of Old and Classical Tibetan (such as /zḡ:^H/ ‘thick’ *|sbrom| noted above) is not likely to have been borrowed.

Besides, if we accept Sagart & Xu’s (2001) idea (concerning Chinese dialects) that the onset and the rhyme of any syllable must belong to the same layer of vocabulary, this implies that by linking the correspondences of onsets and rhymes, we can systematically analyse the layers of borrowing and study the ordering of the sound changes (see the last paragraph of §4.4.1 for a more detailed account of Sagart & Xu’s work and its application to concrete examples).

We will discuss mainly sets A, B and F, for which we have an important quantity of examples. C, D and H will be studied in §4.4.2 alongside the B set, and E and G will be discussed in §4.4.4.

4.4.1 Rhymes with velar nasals

The rhymes with velar nasals of Old Tibetan correspond either to long vowels or nasal vowels.

The long-vowel correspondence set includes too many examples to be cited here exhaustively. We find many verbs in this layer (nouns are also present):

Table 69: Examples of verbs in set 1 correspondence

| CoT | Cone | Etymology | Example | Meaning |
|--------|-------|--------------------|-----------------------------------|-----------------|
| -aŋ(s) | /-ɑ:/ | gdaŋ | /dɑ: ^L / | to open (mouth) |
| | | bteaŋ(s) | /tɛɑ: ^H / | to hold tight |
| -iŋ(s) | /-i:/ | btiŋ(s) | /ti: ^H / | to spread |
| | | sriŋ | /ʃi: ^H / | to stretch out |
| -oŋ(s) | /-u:/ | btsoŋ(s) | /tsu: ^H / | to sell |
| | | mt ^h oŋ | /t ^h u: ^L / | to see |
| -uŋ(s) | /-ʌ:/ | nt ^h uŋ | /t ^h ʌ: ^L / | to drink |
| | | rdun | /dʌ: ^L / | to hit |

The rare rhyme |-eŋ(s)| is only attested in the word /t^hɔ^Lre:/ ‘tomorrow’ |t^ho.reŋs| in this layer.

Here is the list of all words with nasal vowels:

Table 70: Correspondence of rhymes in |-ŋ| to nasal vowels in Cone

| CoT | Cone | Etymology | Example | Meaning |
|--------|-------|------------------------|---|-------------|
| -aŋ(s) | /-ã:/ | ha.jaŋ | /hæ ^L jã:/ | aluminium |
| | | b ^h aŋ | /ɛã: ^L / | north |
| | | naŋ | /nã: ^L / | inside |
| | | mdaŋ.(nub) | /ndã: ^L / | last night |
| | | rgaŋ | /ŋgã: ^L / | porcupine |
| | | ŋaŋ.ba | /ŋã: ^L wæ/ | swan, goose |
| | | lteaŋ.ma | /tɛã: ^H wã:/ | willow |
| | | mi.snaŋ | /mɔ ^L nã:/ | not to be |
| | | ldzaŋ.ku | /dzã: ^L kə/ | yellow |
| | | gjaŋ.gzar | /jã: ^H zær/ | steep cliff |
| | | sbraŋ.rtsi | /dzã: ^L tsə/ | honey |
| | | * saŋ.gnam | /s ^h ɑ: ^L nã:/ | next year |
| | | maŋ | /mã: ^L /, /mɑ: ^L -Gə/ | many |
| | | draŋ | /tʃã: ^L wō:/, /tʃɑ: ^L -Gə/ | straight |
| -eŋ(s) | /-ã:/ | gaŋs.seŋ | /kã: ^L s ^h ã:/ | leopard |
| -iŋ(s) | /-ã:/ | ⁿ dzam.gliŋ | /ndzã: ^L lã:/ | world |
| | | rdziŋ.bu | /dzã: ^L wə/ | pool |
| -iŋ(s) | /-ĩ:/ | tɛ ^h u.ziŋ | /tɛ ^h ɔ ^L xĩ:/ | field |
| | | ɛiŋ | /x ^h ĩ: ^L / | timber |
| | | miŋ | /pi: ^H / | name |
| -oŋ(s) | /-ō:/ | grog.roŋ | /tɛɔk ^L rō:/ [tɛɔk ^L rō: ^L] | valley |
| | | sa.doŋ | /s ^h æ ^L tō:/ | cave |

| | | | | |
|--------|-------|--------------------|--|-------------------------|
| | | roj.ba | /rõ: ^L wæ/ | farmer |
| | | k ^h oŋ | /k ^h õ: ^L wæ/ | pocket |
| | | sre.moŋ | /sɛ ^H wõ:/ | weasel |
| -uŋ(s) | /-õ:/ | me.dpun | /ŋɛ ^H xõ:/ | torch |
| | | k ^h ruŋ | /tʂ ^h õ: ^L tʂ ^h õ:/ | wild goose |
| | | gsuŋs | /sõ: ^H / | speak, talk (honorific) |

Only one verb is found in this list (/sõ:^H/ |gsuŋs|) and it is an honorific form. This mere fact strongly suggests that the nasal vowel correspondence reflects the borrowed layer. This is confirmed by the presence of recent words such as ‘aluminium’,¹⁸ of literary words such as ‘world’ (half-borrowed from Sanskrit *Jambudvīpa-*) and the important proportion of disyllables.

We notice that the rhyme |-iŋ| corresponds either to /-ã:/ or /-ĩ:/, a feature which reflects different layers of borrowings. The correspondence |-iŋ| to /-ã:/ must reflect recent loanwords from Amdo Tibetan, where Common Tibetan |-iŋ| changes to /-aŋ/ (|ⁿdzam.gliŋ| is Labrang *ndzamhlaŋ*, Huá & Lóngbójiǎ 1993).

The words /sɛ^Hwõ:/ ‘weasel’, /ŋɛ^Hxõ:/ ‘torch’ and /tʂ^hõ:^Ltʂ^hõ:/ ‘wild goose’ likewise present additional correspondences characteristic of loanwords: |sr-| > /s/ (instead of regular /ʂ/), |dp-| > /x-/ (which reflects the Amdo sound change |dp-| > |x^w-|, the labiality being lost before a rounded vowel /õ/) and |k^hr-| > /tʂ^h-/ (see §4.4.3).

However, not all words with nasal vowels corresponding to velar nasal rhymes are borrowed. The two adjectives /mã:^L/ ‘much’ and /tʂã:^Lwõ:/ ‘straight’ have exceptional conjunct forms in /-ɑ:/ (/ -ã:/ normally alternates with /-æN-/), /mɑ:^Lɣə/ and /tʂɑ:^Lɣə/ respectively. The nasality here might be secondary: we have seen that many lexical items, such as /ŋã:^L/ ‘to sleep’ |ŋal|, /pĩ:^H/ ‘incense’ |spos| have non-etymological nasality, which probably results from the fusion with a suffix in nasal. This is also the case for /mã:^L/ and /tʂã:^Lwõ:/: in the latter, nasality most probably spread from the suffix /-wõ:/.

Other monosyllabic nouns with nasal vowel may also belong to the inherited layer. First, /ŋĩ:^H/ ‘name’ from a Common Tibetan form *|Cmⁱŋ| which differs from the form reflected in Classical and Old Tibetan <miŋ> and <mⁱŋ>: the irregular high tone would not be expected if it were a borrowing. Second, /ŋgã:^L/ ‘porcupine’, which ought to come from *|ⁿgaŋ| rather than attested |rgaŋ|. Third, |x^hĩ:^L| ‘wood’ |eiŋ| could also potentially belong to the inherited layer, though this remains uncertain. The regular reflex of *|ⁿgaŋ| and |eiŋ| in the inherited layer would normally be */ŋga:/ and */x^hi:/ without nasal vowel: nasality here, as in /pĩ:^H/ |spos|, is secondary and could be due to fusion with a nasal suffix.

The bisyllabic word /s^hɑ:^Lnã:/ ‘next year’ goes back to an unattested compound *|saŋ.gnam| rather than |saŋ.gnaŋs| ‘tomorrow and after tomorrow’. According to Sagart & Xu’s (2001) *Extended principle of coherence*, both syllables of a disyllable belong to the same layer, unless it is not inherited and has been recreated from each syllable at a later period. Although

¹⁸ A shortened compound from |ha.teŋ jaŋ.po| ‘very light’ (Gong Xun, p.c.).

this principle was formulated about Chinese data, it is still generally valid when dealing with other Sino-Tibetan languages. Under this principle, the Common Tibetan rhyme [-aŋ] cannot correspond to both the inherited layer /-a:/ and the borrowed layer /-ã:/ in the same word.

4.4.2 The rhyme [-al]

In the case of the rhyme [-al], it is slightly more difficult to determine which layer is borrowed and which is inherited.

The correspondence [-al] to Cone /-e:/ is the most common one, and appears in the following examples:

Table 71: Correspondence of Cone /-e:/ to Common Tibetan [-al]

| Etymology | Example | Meaning |
|--|--|---------------|
| bal | /pe: ^L / | wool |
| gsal | /se: ^H / | bright |
| ⁿ dza | /ndze: ^L / | to compensate |
| hral | /ʂ ^h e: ^L / | coarse, crude |
| ⁿ ts ^h ol ; btsal | /ts ^h e: ^L /, /tse: ^H / | to search |
| mdza | /ndze: ^L / | to worship |
| ral.ba | /re: ^L wæ/ | plait |
| rgial | /dze: ^L / | to win |
| rkial | /tee: ^H / | to swim |
| sba.pa | /be: ^L wæ/ | frog |
| sgal.rus | /ge: ^L ri:/ | backbone |
| sos.dal | /s ^h r: ^L de:/ | slow, late |
| t ^h al | /t ^h e: ^L / | ashes |

The correspondence [-al] : /-a:/, on the other hand, is only attested in a handful of examples:

Table 72: Correspondence of Cone /-a:/ to Common Tibetan [-al]

| Etymology | Example | Meaning |
|-----------------|--|--------------|
| bskial | /ɕa: ^H /, /ɕu: ^H / | to send |
| ⁿ ba | /mba: ^L /, /pa: ^L /, /pu: ^L / | to pluck out |
| brgal , brgol | /ga: ^L /, /gu: ^L / | to stride |

We find verbs in both sets: this criterion cannot be used to determine which layer is inherited.

We propose here that the correspondence [-al] : /-a:/ reflects the inherited layer, in spite of being less common than the other one. The evidence for this idea is the following.

First, the verb /mba:^L/, /pa:^L/, /pu:^L/ ‘to pluck out’ ⁿba|, |ba|, |bo| is a denominative verb from |ba| ‘wool’, whose original meaning is ‘to pluck wool/feathers’. In Cone, this verb can

be used for anything, including plants, and its original narrow meaning was considerably extended. Since this verb does not exist with this meaning in Amdo Tibetan, it is unlikely that it is a loanword.

Second, the verb /tɛ:^H/ ‘to swim’ |rkial| presents the correspondence |Cki-| : /tɛ-/ , which we will show is a characteristic of loanwords in §4.4.4, while |ɕɑ:^H/ ‘to send’ has the inherited |Cki-| : /ɕ-/.

Third, some of the verbs in the first set have a semantics that is clearly non-basic: ‘to swim’ is not an everyday activity in Cone, and ‘to worship’ belongs to the Buddhist vocabulary.

Finally, the Common Tibetan rhymes |-il|, |-ol| and |-ul| evolve like their counterpart in velar nasal to /-i:/, /-u:/ and /-o:/ respectively. An evolution |-al| > /-ɑ:/ merging with |-aŋ| is therefore more likely for the inherited vocabulary than |-al| > /-e:/. This argument is weakened however by the fact that /-e:/ is not a reflex of Cone |-el|.

The correspondence |-al| to /-e:/ occurs in one compound with |-aŋ| to |-al| : /zɑ:^Htɛ:/ ‘maggot’ *|sbraŋ.t^hal|. In view of the extended principle of coherence (henceforth ECP, see §4.4.1), this form can be interpreted in three ways. First, the compound was created in proto-Cone and inherited; this would imply that |-al| : /-e:/ instead of |-al| to /-ɑ:/ is the inherited correspondence, an idea which we have already rejected. Second, this word was borrowed from another Tibetan dialect after the change |-al| > /-ɑ:/ but before |-aŋ| > /-ɑ:/. In this view, the loss of |-l| and |-ŋ| did not occur at the same time in proto-Cone. Third, this compound was created in a later stage in Cone from an inherited root and a borrowed one, and constitutes an exception to the EPC. This last hypothesis is the most probable; the compound *|sbraŋ.t^hal| is not attested in Old or Classical Tibetan and it is still analysable synchronically as ‘fly ash’, perhaps to be understood as ‘fly dirt’.

We find an additional correspondence of Common Tibetan final |-l| to Cone /-r/. The examples are the following:

Table 73: Common Tibetan |-l| to Cone /-r/

| Etymology | Example | Meaning |
|--------------------------------------|--------------------------------------|------------|
| dm ⁱ ig.eel | /ɲi: ^H x ^h er/ | eyeglasses |
| rus.sbal | /ri: ^L pær/ | turtle |
| ŋɑ.rgial | /ŋæ ^L dzær/ | arrogant |
| p ^h al.tɛ ^h er | /hær ^L tɛe/ | about |

This represents a second layer of borrowing more recent than |-al| to /-e:/. It includes both recent technical innovations (glasses) which did not exist before the 20th century in Tibetan areas, and the word ‘about, approximately’. This word is especially interesting, as it also presents the correspondence |p^h-| to /h-/, a feature of Amdo Tibetan, which confirms its status as a loanword. The correspondence |-er| to /-e/ was not mentioned in §4.3, but it is not exceptional: it is the regular form of the dative of Common Tibetan |-e| stems, and will be described in §5.1.

4.4.3 |stop+r|

The clusters |velar+r| of Common Tibetan can correspond either to alveolo-palatals or retroflex affricates. The former is by far the most common, and we cannot provide an exhaustive list of all the examples. Here is a representative list with verbs:

Table 74: Correspondence of |velar+r| clusters to alveo-palatal affricates and fricatives

| CoT | Cone | Etymology | Example | Meaning |
|--------------------------------|----------------------|---------------------------------|-----------------------------------|--------------|
| skr- | /ɕ ^H / | skrag | /ɕa ^H / | to be afraid |
| ⁿ k ^h r- | /tɕ ^h -/ | ⁿ k ^h rid | /tɕ ^h i ^H / | to lead |
| gr- | /tɕ ^L -/ | grags | /tɕa ^L / | to growl |
| ⁿ gr- | /ndz ^L -/ | ⁿ gro | /ndzɔ ^L / | to go |

The correspondences to retroflex affricates are slightly less common. Here are all the attested examples:

Table 75: Correspondence of |velar+r| clusters to retroflex affricates and fricatives

| CoT | Cone | Etymology | Example | Meaning |
|--------------------------------|----------------------|---------------------------------------|--|----------------|
| k ^h r- | /tɕ ^h -/ | k ^h ruŋ.k ^h ruŋ | /tɕ ^h ɔ̃ ^L :tɕ ^h ɔ̃ ^L / | wild goose |
| | | de.k ^h rod | /ti ^L :tɕ ^h ɔ̃/ | in the future |
| ⁿ k ^h r- | /tɕ ^h -/ | ⁿ k ^h rid | /tɕ ^h u ^H /, /tɕ ^h ək ^L -Gə/ [tɕ ^h ək ^L kə ^H] | to teach |
| mk ^h r- | /tɕ ^h -/ | mk ^h ris.pa | /tɕ ^h i ^L :wæ/ | gallbladder |
| gr- | /tɕ ^L -/ | grŋ.k ^h ier | /tɕɔ̃ ^L :N ^L te ^h er/ [tɕɔ̃ ^L :n ^L te ^h er] | town |
| | | gr ^w a.ba | /tɕæ ^L :wæ/ | monk |
| dgr- | /dz ^L -/ | dgra.bo | /dzæ ^L :wu:/ | enemy |
| sgr- | /dz ^L -/ | sgra | /dzæ:/ | sound |
| ⁿ gr- | /ndz ^L -/ | ⁿ grig | /ndzək ^L -Gə/ [ndzək ^L kə ^H] | correct, right |
| | | ⁿ gril | /ndzi ^L :/ | to roll |
| | | ⁿ gran.sdur | /ndzɕ̃ ^L :dər/ | to compete |
| | | * ⁿ grel.log | /ndzi ^L :lu/ | to roll |
| sgr- | /z ^H -/ | sgril | /zi ^H / | to roll (tr) |

The correspondence of clusters to retroflex affricates is obviously the one which represents the borrowed layer (except in the case of the group |sgr-| when it becomes /z^H/). Three pieces of evidence support this idea.

First, words with retroflex affricates corresponding to /velar+r/ clusters also present the correspondence of rhymes with final velar nasal in Common Tibetan to nasal vowel in Cone, which we have shown in §4.4.1 to be a characteristic of words borrowed from another Tibetan language.

Second, this layer contains cultural words such as ‘monk’ and ‘town’, which could easily be borrowed.

Third, we observe exceptional vowel correspondences with the words ‘to teach’ and ‘guest’, not found with the rest of the vocabulary and suggestive of a special layer of borrowing.

Two clusters with labial stops, |spr-| and |sbr-|, also present divergent correspondences:

Table 76: Reflexes of |spr-| and |sbr-| in Cone

| CoT | Cone | Etymology | Example | Meaning |
|------|----------------------------------|-------------|---|-----------|
| spr- | /ʂ ^{-H} / | sprewu | /ʂi: ^H / | monkey |
| | | sprin | /ʂi: ^H / | cloud |
| | | spra.ba | /ʂa: ^H / | tinder |
| | /p ^{-H} / | spran̄.po | /pa: ^H wu:/ | beggar |
| sbr- | /tʂ ^{-H} / | spri | /tʂə ^H / | beastings |
| | /z _ɕ ^{-H} / | sbrid.gi | /zə ^{C^H} -Gə/ [zək ^H kə ^H] | pungent |
| | | sbrul | /zɸ: ^H / | snake |
| | | sbran̄ | /zɸ: ^H / | fly |
| | /dz _ɕ ^{-L} / | sbran̄.rtsi | /dzã: ^L tsə/ | honey |
| | /w ^{-L} / | sbra | /wæ ^L / | tent |

The inherited forms here are those where the clusters correspond to retroflex fricatives /ʂ^{-H}/ and /z_ɕ^{-H}/. The correspondences to retroflex affricates are borrowings, in view of the fact that /dzã:^Ltsə/ |sbran̄.rtsi| exemplifies the borrowed correspondence |-aŋ| : /-ã:^L/ (see §4.4.1). |spr-| : /p-/ and |sbr-| to /w-/ represent another layer of borrowing.

4.4.4 Alveolo-palatals

Most of the alveolo-palatal fricatives of Cone Tibetan come from |dkr-|, |skr-| or |stop^{+j}| clusters (see §4.3.4), while ancient alveolo-palatals became velar fricatives (examples are too numerous to list exhaustively).

We observe however two examples where they correspond to Cone alveolo-palatals instead: /ɛi:^H/ ‘to give birth to’ |bɛos| and /eð:^L/ ‘to ride’ |bzon|. Although both are verbs, we have a piece of evidence showing that these are loanwords: the fact that ‘to ride’ also presents the otherwise unattested correspondence |-on| : /-ð:^L/ which runs counter to the fact that Common Tibetan rhymes with final |-n| evolve into front vowels in Cone.

Additionally, we find two examples of nouns with Common Tibetan alveolo-palatals corresponding to retroflex instead (/ʂək^Hkæ/ [ʂəq^Hqæ^H] ‘wing’ |geog.pa| and /ʂək^Lkæ/ [ʂəq^Lqæ^H] ‘lasso’ |zags.pa|). This reflects an even more recent set of borrowings, perhaps from another Cone dialect (the data in Qú 1962 and Yáng 1996 show that other Cone dialects have retroflex fricatives corresponding to Common Tibetan alveolo-palatal fricatives).

Clusters such as |Cki-| and |Cpi-| normally give an voiceless alveolo-palatal fricative in Cone. Only four counterexamples are found:

Table 77: Correspondence of |Cki-| and |Cpi-| to /tɛ/

| CoT | Cone | Etymology | Example | Meaning |
|------|-------|-------------------------------------|---|-----------|
| ski- | /tɛ-/ | sk ⁱ a.sga | /tɛæ ^H gæ/ | ginger |
| | | sk ⁱ ag.ka | /tɛæk ^H kæ/ [tɛæq ^H qæ ^H] | excrement |
| rki- | /tɛ-/ | rk ⁱ al | /tɛe: ^H / | to swim |
| spi- | /tɛ-/ | p ^h al.tɛ ^{her} | /hær ^L tɛe/ | about |

This list includes the disyllable ‘about’, which we have shown is clearly a borrowing from Amdo due to the correspondence of the first syllable |p^h-| : /h-/. This shows that this set of correspondences clearly reflect a borrowed layer. It also contains ‘to swim’, which has the correspondence |-al| to /-e:/, characteristic of a borrowed layer according to our discussion in §4.4.2. However, since we have already used this example as one of the arguments to show that |-al| to /-e:/ is not the inherited layer, it would be circular to use it here to show the same of |Cki-| : /tɛ/. The first example ‘about’ is sufficient for this purpose.

4.5 The inherited layer

In the preceding §4.4, we have shown how to distinguish inherited words from borrowings in Cone by using phonetic correspondences. We did not provide principled arguments for minor correspondences only attested by one or two examples.

We will assume in the present section that whenever a Common Tibetan rhyme or initial has two or more correspondences, any counterexample either reflects a borrowed layer or a non-standard Common Tibetan form. In the case of a few rhymes where examples are few, the borrowed vs. The inherited layers will be distinguished on the basis of the nature of the words belonging to each layer (verbs vs. nouns, as nouns are more easily borrowable, and cultural vocabulary vs. Non-cultural vocabulary).

4.5.1 Rhymes

Based on this assumption and the discussion in §4.4 into account, the correspondences of Common Tibetan rhymes in the regular inherited vocabulary of Cone in the last syllable of a word (not including the conjunct forms) are the following (row indicate the CoT vowels and columns the final consonants):

Table 78: Rhyme correspondences between Cone and Common Tibetan

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|------|------|------|------|------|------|-------|-------|-------|-------|
| -a- | /-æ/ | /-e/ | /-e/ | /-a/ | /-ã/ | /-ẽ/ | /-ɑ:/ | /-æɾ/ | /-ɑ:/ | /-e:/ |
| -e- | /-ɛ/ | /-ɪ/ | /-ɪ/ | /-a/ | /-ẽ/ | /-ẽ/ | /-e:/ | /-er/ | /-i:/ | /-ɪ:/ |
| -i- | /-ə/ | /-u/ | /-i/ | /-i/ | /-ĩ/ | /-ĩ/ | /-i:/ | /-ər/ | /-i:/ | /-i:/ |
| -o- | /-ɔ/ | | /-ɪ/ | /-u/ | /-õ/ | /-ẽ/ | /-u:/ | /-or/ | /-u:/ | /-ɪ:/ |
| -u- | /-ə/ | /-u/ | /-i/ | /-u/ | /-õ/ | /-ĩ/ | /-u:/ | /-ər/ | /-u:/ | /-i:/ |

For [-eb|, |-ob| and |-el| (indicated with shading in the table), examples are too few in our corpus, and some doubts remain as to which correspondence is the inherited one. Short and nasal vowels have conjunct forms when followed by a syllable:

Table 79: Correspondences between base forms and conjunct forms in Cone

| Base form | Conjunct form |
|-----------|---------------|
| /-ɑ/ | /-æk-/ |
| /-e/ | /-εC-/ |
| /-ɪ/ | /-εC-/ |
| /-i/ | /-əC-/ |
| /-u/ | /-ɔk-/ |
| /-ʉ/ | /-əC-/ |
| /-ã:/ | /-æN-/ |
| /-ẽ:/ | /-εN-/ |
| /-ĩ/ | /-əN-/ |
| /-õ:/ | /-ɔN-/ |

These conjunct forms are almost always predictable. The only exception are some stems in /-ã:/ without distinct conjunct form or with irregular conjunct forms in /-ɑ:/. The final consonants /-k/, /-C/ and /-N/ of the conjunct forms represent preservation of the Common Tibetan final consonants at syllable juncture. Note that except for /-ag/, /-eg/ and /-og/, all stops merge as /-C/, and all vowels merge as /ε/, /ə/ or /ɔ/ in conjunct forms.

These final consonants have the following reflexes depending on the onset of the next syllable (some of the evidence will be provided in §5.1):

Table 80: Phonetic realizations of clusters occurring across syllable boundaries (columns indicate the type of onset of the following syllable)

| | voiceless stop/affricate | voiced stop/affricate | nasal | vowel |
|------|-------------------------------------|-------------------------------------|----------------------------------|-------|
| /-k/ | [χp], [χt], [χk] | [ɸb], [ɸd], [ɸg] | [ɸm], [ɸn] | [ɸ] |
| /-C/ | assimilation [pp], [tt], [kk] | disappears | assimilation [mm], [nn], [ŋŋ] | [ɥ] |
| /-N/ | prenasalization [mp], [nt], [ŋk] | prenasalization [mb], [nd], [ŋg] | assimilation [mm], [nn], [ŋŋ] | [n] |

The first syllable does not undergo any change to conjunct form if the second syllable has a fricative or non-nasal sonorant initial. The base form > conjunct form alternation is a *morphological* rule, not a phonological one: unpredictable exceptions, though uncommon, do occur word-internally. For instance, [groŋ.k^her] ‘city’ and [k^hruŋ.k^hruŋ] ‘wild goose’ (two words from the borrowed layer) become /tʂõ:^Ltɕ^her/ and /tʂ^hõ:^Ltʂ^hõ:/ respectively and not

*/tʂʊN^Ltɕ^her/ *[tʂʊN^Ltɕ^her] and */tʂ^hʊN^Ltʂ^hð:/ *[tʂ^hʊN^Ltʂ^hð:] as would be expected if the /-ð:/ > /-ʊN-/ alternation rule was purely phonological.

In order to account for the changes from Common Tibetan to attested Cone, we propose the following line of evolution in eight major steps. The changes C and D could be interverted, and change E could have happened at any time before stage F.

A. (i) Loss of final |-l| and |-ŋ| with compensatory lengthening of the preceding vowel: |-Vl|, |-Vŋ| > /-V:/ (ii) At the same time, |-ab| merges with |-ad| (perhaps also |-eb|with |-ed|). In the following tables, we represent the final stops at intermediate stage as voiceless (unlike in Common Tibetan where they are represented as voiced) but this should not be interpreted as a phonetic change: rather, all forms in intermediate stages are given in their reconstructed surface phonetic rather than underlying form. These forms should all be interpreted as reconstructions (we omit the * in the tables however for better readability).

Table 81: Evolution of the Cone vowel system, stage A

| | -∅ | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----|----|----|----|----|----|----|----|----|----|
| -a- | | at | | | | | a: | | a: | |
| -e- | | | | | | | e: | | e: | |
| -i- | | | | | | | i: | | i: | |
| -o- | | | | | | | o: | | o: | |
| -u- | | | | | | | u: | | u: | |

B. Fronting of vowels before dental finals (not including |-r|). (B) occurred after (A), as rule (A.i) bleeds (B) (otherwise |-al| would become /-e:/) and (A.ii) feeds (B) (otherwise |-ab| and |-ad| would not merge).

Table 82: Evolution of the Cone vowel system, stage B

| | -∅ | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----|----|----|----|----|----|----|----|----|----|
| -a- | | ɛt | ɛt | | | ɛn | a: | | a: | ɛs |
| -e- | | | | | | | e: | | e: | |
| -i- | | | | | | | i: | | i: | |
| -o- | | | et | | | en | o: | | o: | es |
| -u- | | | it | | | in | u: | | u: | is |

C. Loss of final nasals and nasalization of the preceding vowels. (C) occurred after (B), as the contrast between |-n| and |-m| is lost, and after (A), otherwise final |-ŋ| would have caused nasalization of the vowel.

Table 83: Evolution of the Cone vowel system, stage C

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----|----|----|----|----|----|----|----|----|----|
| -a- | | ɛt | ɛt | | ã: | ẽ: | a: | | a: | ɛs |
| -e- | | | | | ẽ: | ẽ: | e: | | e: | |
| -i- | | | | | ĩ: | ĩ: | i: | | i: | |
| -o- | | | et | | õ: | ẽ: | o: | | o: | es |
| -u- | | | it | | ũ: | ĩ: | u: | | u: | is |

D. Loss of |-s| and vowel lengthening. The original *e: from stage (C) (from |-eŋ| and |-el|) merged with *-ɛs rather than with *-es. (D) occurred after (B), otherwise |-as|, |-us| and |-os| would not have become front vowels. It could however have occurred before (C).

Table 84: Evolution of the Cone vowel system, stage D

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----|----|----|----|----|----|----|----|----|----|
| -a- | | ɛt | ɛt | | ã: | ẽ: | a: | | a: | ɛ: |
| -e- | | | | | ẽ: | ẽ: | ɛ: | | ɛ: | e: |
| -i- | | | | | ĩ: | ĩ: | i: | | i: | i: |
| -o- | | | et | | õ: | ẽ: | o: | | o: | e: |
| -u- | | | it | | ũ: | ĩ: | u: | | u: | i: |

E. Labialization of |-ip| to *-up and backing of |-eg| to *-ak. This change could have occurred any time before (F).

Table 85: Evolution of the Cone vowel system, stage E

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----|----|----|----|----|----|----|----|----|----|
| -a- | | ɛt | ɛt | | ã: | ẽ: | a: | | a: | ɛ: |
| -e- | | | | ak | ẽ: | ẽ: | ɛ: | | ɛ: | e: |
| -i- | | up | | | ĩ: | ĩ: | i: | | i: | i: |
| -o- | | | et | | õ: | ẽ: | o: | | o: | e: |
| -u- | | | it | | ũ: | ĩ: | u: | | u: | i: |

F. Final stops shift to glottal stop (columns 2, 3 and 4). Change (F) occurred after (E) and after (B) but could have preceded (C) and (D).

Table 86: Evolution of the Cone vowel system, stage F

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----|----|----|----|----|----|----|----|----|----|
| -a- | | ɛʔ | ɛʔ | aʔ | ã: | ẽ: | a: | | a: | ɛ: |
| -e- | | eʔ | eʔ | aʔ | ẽ: | ẽ: | ɛ: | | ɛ: | e: |
| -i- | | uʔ | iʔ | iʔ | ĩ: | ĩ: | i: | | i: | i: |
| -o- | | oʔ | eʔ | oʔ | õ: | ẽ: | o: | | o: | e: |
| -u- | | uʔ | iʔ | uʔ | ũ: | ĩ: | u: | | u: | i: |

G. At that stage, there was a contrast between three series of vowels, plain, long and glottalized. Plain vowels (in open syllables and before *-r*) became lax. This caused the merger of **i* and **u* to **ə*. The non-high vowels **a*, **e* and **o* became centralized and realized as [æ], [ɛ], [ɔ] in open syllables. This change occurred after stage (F), although it could be possible to reformulate it in such a way that it occurred before stage (F) but after the creation of series of long vowels (changes (A) and (D)).

Table 87: Evolution of the Cone vowel system, stage G

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----|----|----|----|----|----|----|----|----|----|
| -a- | æ | ɛʔ | ɛʔ | aʔ | ã: | ẽ: | a: | | a: | ɛ: |
| -e- | ɛ | eʔ | eʔ | aʔ | ẽ: | ẽ: | ɛ: | | ɛ: | e: |
| -i- | ə | uʔ | iʔ | iʔ | ĩ: | ĩ: | i: | ər | i: | i: |
| -o- | ɔ | oʔ | eʔ | oʔ | õ: | ẽ: | o: | | o: | e: |
| -u- | ə | uʔ | iʔ | uʔ | ũ: | ĩ: | u: | ər | u: | i: |

At stage (G), **aʔ* preceded by **n-* becomes nasalized as **ãʔ*. This is the only rhyme that is both nasalized and glottalized.

H. Two major vowel shifts occurred everywhere except in lax (open) syllables and before **-r*. First, the front vowels **e* > **i* and **ɛ* > **e*. Second, the back vowels **u* > **ɯ* and **o* > **u*.

Additionally, **ũ* merged with **õ* and **ẽ* with **ẽ*; these last changes could have occurred any time after (C).

Table 88: Evolution of the Cone vowel system, stage H

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----|----|----|----|----|----|----|----|----|----|
| -a- | æ | eʔ | eʔ | aʔ | ã: | ẽ: | a: | | a: | e: |
| -e- | ɛ | iʔ | iʔ | aʔ | ẽ: | ẽ: | e: | | e: | ɪ: |
| -i- | ə | uʔ | iʔ | iʔ | ĩ: | ĩ: | i: | ər | i: | i: |
| -o- | ɔ | uʔ | iʔ | uʔ | õ: | ẽ: | u: | | u: | ɪ: |
| -u- | ə | ɯʔ | iʔ | ɯʔ | õ: | ĩ: | ɯ: | ər | ɯ: | i: |

With the loss of the glottal stop, the distinction between [æ], [ɛ], [ɔ] on the one hand and [a], [e], [o] on the other hand became phonemic, and three more vowel phonemes were created.

The relative order of the eight stages can be represented as follows, with arrows indicating relative chronological order:

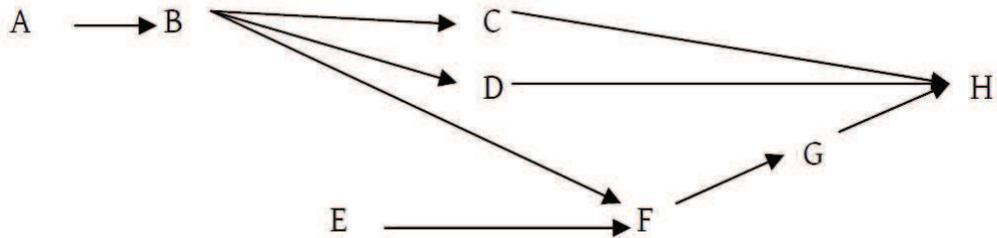


Figure 1: Relative ordering of changes A-H

This scenario yields the attested system of Cone after the loss of the final glottal stop. According to this model, /-ɪ/, /-u/ and /-e:/ should be the real reflexes of |-eb|, |-ob| and |-el| respectively.

Here are the attested origins of each Cone vowel:

Table 89: Common Tibetan origins of Cone vowels

| | Inherited | Borrowed / Non-standard form | Dative |
|-------|---|--|-------------------|
| /-i/ | -id , -ud , -ig | -il , -ab , -ug , -ub , -ib , -el | |
| /-ɪ/ | (-eb), -ed | -ad | |
| /-e/ | -ab , (-eb), -ad | -ed , -od , -el | -ar , -er |
| /-ɛ/ | -e | -in , -an | |
| /æ/ | -a | | |
| /-u/ | -ib , -ub , -ug | -ud , -id | |
| /-ə/ | -i , -u | | |
| /-u/ | -og | -ud | |
| /-o/ | | | -ur , -ir , -or |
| /-ɔ/ | -o | -od | |
| /-ɑ/ | -ag , -eg | -ab | |
| /-i:/ | -iŋ , -il , (-el), -is , -us , -ewu | -e , -es | |
| /-ɪ:/ | -es , -os | -e | |
| /-e:/ | -eŋ , -as , -e.ba , -i.ba | -al | |
| /-u:/ | -uŋ , -ul | | |
| /-o:/ | -oŋ , -ol , -e.bo | -on , -o.ba | |
| /-ɑ:/ | -o.ba , -u.ba | -ol | |
| /-ɑ:/ | -aŋ , -al , -a.ba | | |
| /-ã/ | -ag (in -nag-) | | |
| /-ĩ:/ | -in , -un , -im | -am | |
| /-ẽ:/ | -an , -en , -on , -em | | |

| | | |
|-------|--------------------------------|------------|
| /-ã:/ | -am | -aŋ , -eŋ |
| /-õ:/ | -om , -um , -i.mo , -o.mo | -oŋ , -on |
| | -o (followed by nasal suffix) | |
| /-æ:/ | -ar | -al , -er |
| /-er/ | -er | -el |
| /-or/ | -or | |
| /-ər/ | -ir , -ur | |

In this table, we have not included conjunct forms or correspondences only attested in the first syllable of a disyllable. The regular dative forms corresponding to Common Tibetan |vowel+r| have distinct correspondences, which will be presented in §5.

4.5.2 Onsets

The origins of Cone consonants are the following word-initially (not including the correspondences in intervocalic position):¹⁹

Table 90: Common Tibetan origins of Cone onsets

| Cone | Inherited vocabulary | Borrowed / irregular |
|----------------------|--|---|
| /p ^{-H} / | ((C)Cp- | spr |
| /p ^{-L} / | b- | ⁿ b |
| /p ^{h-} / | (ⁿ)p ^{h-} - | |
| /b ^{-L} / | ((C)Cb- | |
| /mb ^{-L} / | ⁿ b- | b |
| /t ^{-H} / | ((C)Ct- | |
| /t ^{-L} / | d- | |
| /t ^{h-} / | ((N)t ^{h-} - | |
| /d ^{-L} / | ((C)Cd- | |
| /nd ^{-L} / | Nd- | |
| /ts ^{-H} / | ((C)Cts- , (b)sl- | gte |
| /ts ^{h-} / | ((N)ts ^{h-} - | |
| /dz ^{-L} / | ((C)Cdz- , (b)zl- | bts |
| /ndz ^{-L} / | Ndz- | |
| /tɕ ^{-H} / | ((C)Ctɕ- | bkr , ((C)Ck ^j - , dp ^j |
| /tɕ ^{-L} / | dɕ- , gr- | |
| /tɕ ^{h-} / | ((N)tɕ ^{h-} - , ((N)k ^h r- , ((N)k ^h j- | p ^h j |

¹⁹ Note that apart from a few loanwords and enclitics, there are no words with plain voiceless unaspirated stops |p-|, |t-|, |tɕ-|, |k-| and no words with initial voiced affricates |dz-|, |dɕ-| in Common Tibetan (see Hill 2007).

| | | |
|-----------------------------------|---|--|
| /dz ^{-L} / | (C)Cdz- , (C)Cgi- | |
| /ndz ^{-L} / | Ndz- , Ngr- , Ngi- , ⁿ bi- | |
| /tʂ ^{-L} / | dr- , br- | gr , spr |
| /tʂ ^{h-} / | ⁽ⁿ⁾ p ^h r- | (N)k ^{hr} |
| /dz _ɕ ^{-L} / | | Cbr , Cgr |
| /ndz _ɕ ^{-L} / | ⁿ br- , Ndr- | ⁿ gr |
| /k ^{-H} / | (C)Ck- | |
| /k ^{-L} / | g- | |
| /k ^{h-} / | (N)k ^{h-} | |
| /g ^{-L} / | (C)Cg- | |
| /ŋg ^{-L} / | Ng- | rg |
| /m ^{-H} / | Cm- | |
| /m ^{-L} / | m- | |
| /n ^{-H} / | Cn- | |
| /n ^{-L} / | n- | |
| /ɲ ^{-H} / | Cɲ- , Cm ⁽ⁱ⁾ e- , Cm ⁽ⁱ⁾ i- | |
| /ɲ ^{-L} / | ɲ- | n- , ŋ- / _ -as (perhaps inherited) |
| /ŋ ^{-H} / | Cŋ- | |
| /ŋ ^{-L} / | ŋ- | |
| /s ^{-H} / | Cs- | sl- , sr- |
| /s ^{-L} / | z- | |
| /s ^{h-} / | s- | sl- |
| /z ^{-L} / | Cz- | |
| /ɕ ^{-H} / | (C)Ckr- , (C)Ckri- , Cp ⁱ⁻ | Cɕ- |
| /ɕ ^{-L} / | bi- | Cz- , spi- |
| /ɕ ^{h-} / | ⁽ⁿ⁾ p ^{hi-} | ɕ- |
| /z ^{-L} / | sb ⁱ⁻ | b ⁱ⁻ , Cz- |
| /ʂ ^{-H} / | sr- , spr- | Cɕ- |
| /ʂ ^{-L} / | | Cz- |
| /ʂ ^{h-} / | hr- | s(Vr) |
| /z _ɕ ^{-H} / | sbr- , sgr- | |
| /x ^{-H} / | Cɕ- | dp- |
| /x ^{-L} / | z- | |
| /x ^{h-} / | ɕ- | Cɕ- |
| /χ ^{-L} / | Cz- | sb ⁱ⁻ |
| /r ^{-L} / | r- | |
| /l ^{-H} / | bl- , kl- , gl- , rl- | sl- |
| /l ⁻ / | l- | |
| /l ^{h-} / | l ^{h-} | |

| | | |
|--------------------|-------------|--------------------------------------|
| /j ^{-H} / | gj- , dbi- | |
| /j ^{-L} / | j- | fi- |
| /w ^{-H} / | ? db- | |
| /w ^{-L} / | w- | sbr- , rb- |
| /h-/ | h- | p ^h - , l ^h - |

We observe a lot of gaps in the distribution of initials with regards to the tones. Many consonants only appear in the low tone (all voiced obstruents as well as /tʂ-/) and some never occur in the low tone (/ts-/). The initial /w^{-H}/ in the high tone is only attested in the word /wær^H/ ‘scold’, the etymology of which is unclear. It is likely that |db-| word-initially would give /w^{-H}/. In our data however, this onset is only attested in the second syllable of the compound /k^hæ^Lwæ/ |k^ha.dbugs| ‘breath’, so that we have no way of confirming this idea for the moment.

The changes in the initial are much less intricate than those of the vowels, but still involve several series of chain shifts, especially in the case of the fricatives.

A. The general transphonologization of voicing contrast to a tonal contrast occurs; non-prefixed fricatives become aspirated. All preinitials turn to *h- or *fi-, except in |spr-| and |sbr-| which change to *sr- and *zr-.

Table 91: Evolution of fricatives from Common to Cone, stage A

| CoT dentals | CoT alveolo-palatal | CoT stop+j/r clusters | other |
|--------------------------|--------------------------|---|--------------|
| s- > *s ^h - | ç- > *ç ^h - | | spr- > *sr- |
| Cs- > *hs ^{-H} | Cç- > *hç ^{-H} | Ck ⁱ - > *hk ⁱ -, Cp ⁱ - > *hp ⁱ - | |
| z- > *s ^{-L} | z- > *ç ^{-L} | gi- > *k ⁱ - ^L , bi- > *p ⁱ - ^L | |
| Cz- > *fz ^{-L} | Cz- > *fz ^{-L} | Cgi- > *fgi ^{-L} , Cbj- > *fjb ⁱ ^L | sbr- > *zr- |

B. Alveolo-palatal fricatives become retroflex fricatives (column 2). This shift is followed by a series of sound changes which fill the gaps and create new alveolo-palatal fricatives (column 3).

Table 92: Evolution of fricatives from Common to Cone, stage B

| CoT dentals | CoT alveolo-palatal | CoT stop+j/r clusters |
|-------------------|---------------------------------------|--|
| *s ^h - | *ç ^h - > *ʂ ^h - | *(m)p ^h j- > *ç ^h - |
| *hs ^{-H} | *hç ^{-H} > *hʂ ^{-H} | *hkr ^{-H} , *hkj ^{-H} , *hpj ^{-H} > *hç ^{-H} |
| *s ^{-L} | *ç ^{-L} > *ʂ ^{-L} | *pj ^{-L} > *ç ^{-L} |
| *fz ^{-L} | *fz ^{-L} > *fz ^{-L} | *fjb ^{-L} > *fz ^{-L} |

C. Loss of the preinitials (all columns).

Table 93: Evolution of fricatives from Common to Cone, stage C

| CoT dentals | CoT alveolo-palatal | CoT stop+j/r clusters |
|-------------------|---------------------|-----------------------|
| *s ^h - | *ʃ ^h - | *ç ^h - |
| *s ^{-H} | *ʃ ^{-H} | *ç- |
| *s ^{-L} | *ʃ ^{-L} | *ç ^{-L} |
| *z ^{-L} | *ʒ ^{-L} | *z ^{-L} |

D. Retroflex fricatives (from CoT alveolo-palatals) become velar fricatives, and the gap is filled by various onsets.

Table 94: Evolution of fricatives from Common to Cone, stage D

| CoT dentals | CoT alveolo-palatal | CoT stop+j/r clusters | other |
|--------------------|--|-----------------------|---------------------------|
| /s ^h -/ | *ʃ ^h - > /x ^h -/ | /ç ^h -/ | *ʧ- > /ʃ ^h -/ |
| /s ^{-H} / | *ʃ ^{-H} > /x ^{-H} / | /ç ^{-H} / | *sr- > /ʃ ^{*H} / |
| /s ^{-L} / | *ʃ ^{-L} > /x ^{-L} / | /ç ^{-L} / | |
| /z ^{-L} / | *ʒ ^{-L} > /y ^{-L} / | /z ^{-L} / | *zr- > /z ^{-L} / |

This evolution in four steps accounts for the origin of the four series of fricatives in Nyinpa Cone. Change B must have occurred before D, but A and C could be placed in a different order without affecting the outcome of these phonetic laws.

4.6 Cone dialects

Previous to our work, three sources of data were available on Cone: Qú (1962) on the Lcang-tshal dialect, Yáng (1996) on Gtsang.pa.ba and Rnam.rgyal (2008) on several varieties including Nyinpa. The purpose of this section is to compare their data with Nyinpa Cone based on our insight about historical phonology. The transcriptions from other authors are put in italics, not between // as our own Cone data.

4.6.1 Lcang-tshal

Qú's (1962) data were collected from an informant from Lcang-tshal (柳林 Liùlín), the seat of the government of Cone county. The main purpose of that paper was to explain the origin of tones in that variety of Cone, and the data provided in his short article is rather limited (only 138 words), insufficient to reconstruct the evolution of the vowel and consonant systems from Common Tibetan to the Lcang-tshal dialect.

Here are the rhyme correspondences as we can recover them (Qú's transcription has been slightly adapted; rows indicate the CoT vowels and columns the final consonants):

Table 95: Vowel correspondences between Common Tibetan and Cone in Qú (1962)

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----------------|-------------|----------|-------------|-----------|-----------------|--------------------|------------------|-------------------|---------------|
| -a- | <i>a, ə</i> | | <i>ə</i> | <i>a, ə</i> | <i>o:</i> | <i>a:n, e:</i> | <i>a:, o:, a:ŋ</i> | <i>ə:, e:, ə</i> | <i>e:, i:, a:</i> | <i>ə:, e:</i> |
| -e- | <i>e</i> | | <i>e</i> | | | <i>e:n</i> | | | <i>i</i> | <i>e:</i> |
| -i- | <i>i, ə</i> | | | | | <i>ə:n</i> | <i>ə:</i> | | | <i>i:</i> |
| -o- | <i>o, u, e</i> | | | <i>o</i> | | <i>o:n, a:n</i> | <i>u:, o:, o:ŋ</i> | <i>o:</i> | | <i>e:, i:</i> |
| -u- | <i>u</i> | <i>o, u</i> | | <i>u</i> | | <i>i:n</i> | <i>u:, o:ŋ</i> | <i>ə</i> | <i>u, i, u:</i> | <i>u:</i> |

The differences with Nyinpa Cone are extensive (assuming that Qú's transcriptions are reliable) in Lcang-tshal:

- |-u| did not centralize and merge with |-i| (stage G).
- The chain shift |-o| > /-u/, |-u| > /-u/ (stage H) did not occur.
- |-r| was lost in most words (though Qú mentions some final |-r| are preserved in the literary layer).
- The plain vowels tend to merge with ancient checked syllables: |-a| and |-ag| merge as *a/ə*, |-o| and |-og| as *o*, |-u|, |-ub| and |-ug| as *u*. This is unlike Nyinpa Cone where these rhymes have different reflexes.
- The vowels |-a|, |-o| and |-u| of Common Tibetan fail to become front vowels in many syllables with final dental |-n|, |-s| in Lcangtshal. It is unclear whether this reflects borrowing from other dialects and whether Nyinpa Cone's stage (B) did not occur in some instances in Lcangtshal Cone.

Common Tibetan |-Vŋ| rhymes generally become long vowels in Lcangtshal Cone as in Nyinpa Cone as in 'tree' |sdoŋ|, Nyinpa /du:^L/, Lcangtshal *du:^L*. However, exceptions are more common in Lcangtshal than in Nyinpa. For instance, 'go.IMP' |soŋ| is /s^hu:^L/ in Nyinpa and *so:^ŋ^L* in Qú's data. Preservation of nasality in these words can reflect a borrowed layer or secondary nasalization.

Qú's -Vŋ probably stand for nasal vowels, otherwise transcriptions such as *dzua:^ŋ^H* 'intestine' |rgü.ma| corresponding to Nyinpa /dzə^Lwā:^L/ would be difficult to interpret if Lcangtshal has preserved the Common Tibetan final |-ŋ|: one would not expect the syllable |-ma| to change to a velar final stop.

For initial consonants, the main differences are the following:

- Common Tibetan prenasalized voiced stops always lose the prenasalization in Lcangtshal Cone, for instance |ⁿbu| 'worm' becomes *bu^L* (Nyinpa /mbə^L/).
- Common Tibetan alveolo-palatal affricates and fricatives becomes retroflex in Lcangtshal, while |k+j| clusters become alveolo-palatal. For instance, |gzɯ| 'bow' yields Lcangtshal *zɯ^L* (Nyinpa /ndæ^Lγə/ |mda.gzu|).

- h) Non-prefixed fricatives do not become aspirated. Common Tibetan |so| ‘tooth’ becomes Lcangtshal *so^H* (Nyinpa /s^ho^H/).

In other words, the separation of Nyinpa and Lcangtshal occurred before the changes A-D described in §4.5.2.

4.6.2 Gtsang.pa.ba

Yáng (1996) includes more than 2000 words from six varieties of Tibetan, arranged by the Tibetan etymon. One of which is Cone. The Cone data was collected from an informant from Gtsangpaba (藏巴哇 Zàngbāwá).

The data is much more extensive than in Qú’s short article, but is non-phonemicized; the same word is sometimes transcribed in two different ways in two places. For instance, Tibetan |p^habs| ‘yeast’ appears both as *t^sʰa³⁵p^hie⁵³* ‘yeast to make wine’ |t^haŋ.p^habs| and as *p^hei³⁵* ‘yeast’ |p^habs|.

For the rhymes, the correspondences between Gtsang.pa.ba and Common Tibetan are the following:

Table 96: Vowel correspondences between Common Tibetan and Cone in Yáng (1996)

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|--------------------|----------------------|--------------------|-----------------|-------------------|----------------------|----------------|--------------------|-----------------------|--------------------|
| -a- | <i>a/ə</i> | <i>ie, ei, ei, e</i> | <i>i, ei, ε, ə</i> | <i>a</i> | <i>ou, un, oŋ</i> | <i>e, ε</i> | <i>a, oŋ</i> | <i>a, ei, ε, ə</i> | <i>ei, ie</i> | <i>ei, ε, e, a</i> |
| -e- | <i>e, i, ei, i</i> | <i>i</i> | <i>i, e</i> | <i>a</i> | <i>i, ei, ən</i> | <i>ən</i> | <i>i</i> | <i>i, ei, a</i> | <i>i, ei</i> | <i>ie, i</i> |
| -i- | <i>i</i> | <i>u</i> | <i>i</i> | <i>i, (ai)</i> | <i>ən, i, in</i> | <i>i</i> | <i>i, ən</i> | <i>i</i> | <i>i</i> | <i>i</i> |
| -o- | <i>o, ou, ʊ</i> | <i>o, e</i> | <i>i</i> | <i>u, ou, ʊ</i> | <i>un, oŋ, u</i> | <i>i, un, ou, ən</i> | <i>u, ʊ, o</i> | <i>ʊ, o, i, ʰ</i> | <i>u, ou, ʊ, i, o</i> | <i>i, o</i> |
| -u- | <i>ʊ, u, ou</i> | <i>o, u, i</i> | <i>i</i> | <i>ʊ, u</i> | <i>un</i> | <i>i, u</i> | <i>u, un</i> | <i>u, ən</i> | <i>i, ən, u</i> | <i>u</i> |

Yáng’s transcription deserves some comment: final *-n* and *-ŋ* probably represent nasalization, the apparent *a/ə* split for rhymes in *-a* is likely to represent an attempt at transcribing a vowel like [ɐ] or [æ].

Given the uncertainty with the transcription, it is difficult to compare it fruitfully to our Nyinpa Cone data. The following differences between Gtsangpaba and Cone are however obvious:

- Common Tibetan |-i| and |-u| (as in Lcangtshal) do not centralize (stage (G)).
- Common Tibetan |-r| is not preserved.
- Rhymes with final |-n| seem to lose nasality in most cases.
- In a few examples, rhymes with final *-s* are not fronted.
- |-al| corresponds to a front vowel in all examples.

Nevertheless, we find an important similarity with Nyinpa Cone: $[-ib]$, $[-ub]$ and $[-ug]$ all correspond to the vowel $-u$ (labialisation of $[-ib]$, stage (E)). This innovation is not shared by any other known form of Tibetan except Taku (Jackson T.-S. Sun, p.c.), where $[-ib]$ and $[-ub]$ merge as $-u$?

As for the consonants, the transcription of the voicing and aspiration contrasts does not seem to be reliable. Words with Common Tibetan $[s+\text{voiceless stop}]$ groups are transcribed with voiced initials in some words, for instance ‘thread’ $[skud.pa]$ appears as $gi^{55}pə^{53}$. The outcome of Common Tibetan voiced fricatives without preinitial are transcribed in some words as aspirated fricatives, such as ‘mother’s brother’ $[ʔa.zaŋ]$ which appears as $A^{35}ʂ^{hə}a^{31}$. It is extremely unlikely that these peculiarities reflect genuine local pronunciations, and it seems more probable that these are inconsistencies.

The dialect investigated by Yáng presents however genuine differences with Nyinpa regarding the consonants: as with the Lcang-tshal dialect, the Common Tibetan alveolo-palatals generally correspond to retroflex fricatives and affricates, except in ‘deer’ $[əa.ba]$ < $ə^w a.ba$ > where we find $x^h a^{35}$, a form identical to Nyinpa Cone $/x^h a:l/$. The clusters $[gz-]$ and $[bz-]$ correspond to $r-$ in Yáng’s transcription, as in ‘four’ $[bzi]$ ri^{35} .

The clusters $[spr-]$ and $[sbr-]$ correspond to the affricates $tʂ-$ and $dʂ-$ as in ‘cloud’ $[sprin]$ $tʂi^{53}$, compare Nyinpa $/ʂi^H/$. It is interesting to note that the word ‘thick’ appears as $dʂun^{35}$ in this dialect,²⁰ which suggests a Common Tibetan form $*[sbrom]$ instead of standard $[sbom]$, like Nyinpa Cone $/z̥o^H/$.

A few other irregularities similar to Nyinpa Cone include ‘Xanthoxylum’ $[gjer.ma]$ $zə^{35}mə^{53}$ with an open vowel (Nyinpa $/jær^H mæ/$ instead of expected $*jer^H mæ^H$) and ‘open’ $[bied]$ ein^{35} with irregular nasality is reminiscent of Nyinpa forms $/ndzer^L/$, $/e^h er^H/$ ‘open’ with irregular final $/-r/$.

4.6.3 Rnam.rgyal Tshe.bstan

Rnam.rgyal’s (2008) work is a general overview of Cone, which focuses on the Byargodtshang and Gtsangbapa varieties, though some data on the Nyinpa dialect are also given. Tones are not systematically given in Rnam.rgyal’s work, and we will neglect them here.

Byargodtshang, the main variety described in Rnam.rgyal’s work, has the following correspondences with Common Tibetan:

²⁰ The entry is labelled with the erroneous written Tibetan form $*\langle smom \rangle$, probably a typo.

Table 97: Vowel correspondences between Common Tibetan and Cone in Rnam.rgyal (2008)

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|--------------|--------------|--------------|----------------------|--------------|----------------------|----------------------|--------------|-----------------|---------------|
| -a- | <i>a, aʔ</i> | <i>ei</i> | <i>ε, əi</i> | <i>aʔ, a, ak, a:</i> | <i>aŋ</i> | <i>an, ε</i> | <i>a, a:, aŋ, in</i> | <i>ar</i> | <i>ε, e, ei</i> | <i>ei, æ</i> |
| -e- | <i>e, ei</i> | <i>e, ei</i> | <i>ei, ε</i> | <i>aʔ</i> | <i>en, æ</i> | <i>en</i> | <i>en</i> | <i>i, er</i> | | <i>əi, ei</i> |
| -i- | <i>ə</i> | | | <i>i, əu, ə</i> | <i>oŋ</i> | <i>in</i> | <i>i, in</i> | <i>i, ar</i> | <i>i</i> | <i>i, ei</i> |
| -o- | <i>o</i> | | <i>əi</i> | <i>o, əu, ok</i> | <i>oŋ</i> | <i>on, oŋ, an, ε</i> | <i>əu</i> | <i>or</i> | <i>o</i> | <i>əi, in</i> |
| -u- | <i>ə</i> | <i>ə, əu</i> | <i>əu</i> | <i>əu, u, ək</i> | <i>oŋ</i> | <i>in, ən</i> | <i>əu, oŋ, i, əŋ</i> | <i>ər</i> | <i>əu</i> | <i>ə</i> |

Again, the vowels do not seem to be always transcribed in a systematic way. Nevertheless, this table of correspondences is enough to show that the Byargod dialect, though spoken in Lcangtshal, considerably differs from the dialect studied by Qú Āitáng, and seems closer to the Nyinpa dialect studied in the present paper. If we apply the following correspondences:

Table 98: Correspondences between Rnam.rgyal's (2008) transcription and the present work

| Rnam.rgyal's transcription | Our transcription |
|----------------------------|-------------------|
| <i>-ei</i> | <i>/-e/</i> |
| <i>-e</i> | <i>/-ε/</i> |
| <i>-o</i> | <i>/-ɔ/</i> |
| <i>-əi</i> | <i>/-i/</i> |
| <i>-əu</i> | <i>/-u/</i> |
| <i>-Vŋ</i> | <i>/-Ũ/</i> |

We obtain a system almost identical to that of the Nyinpa dialect, except for the fact that Common Tibetan |-u| and |-i| do not become centralized. Unlike the two previous dialects, final |-r| is well-preserved in Byargodtshang. However, the definite proof that these dialects are quite close is the fact that they share irregular correspondences for specific lexical items:

Table 99: Common irregularities between Nyinpa and Byargodtshang Cone

| Meaning | Common Tibetan | Nyinpa | Byargodtshang | Irregularity |
|----------------|---|-----------------------------------|-------------------------|--------------|
| thread | skud.pa | /kʰu: ^H wæ/ | <i>kəu wa</i> | -ud |
| thick | sbom * sbrom | /zõ: ^H / | <i>roŋ mbo</i> | sbr- |
| milk | fio.ma | /õ: ^H wã:/ | <i>fioŋ waŋ</i> | -o |
| you (ABS, GEN) | k ^{hi} od * k ^{hi} o , | /te ^h ɔ ^H / | <i>te^ho</i> | -od , |
| | k ^{hi} od-k ^{hi} i | /te ^h u ^H / | <i>te^həu</i> | -od.kyi |

Rnam.rgyal (2008) also provides some data from Nyinpa, and the rhyme correspondences are quite similar to those of Byargodtshang:

Table 100: Vowel correspondences between Common Tibetan and Nyinpa Cone in Rnam.rgyal (2008)

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|----------|-----------|--------------|-----------|----|-----------|---------------|-----------|----|----|
| -a- | <i>a</i> | <i>ei</i> | <i>ei</i> | <i>a</i> | | <i>an</i> | <i>aŋ, in</i> | <i>ar</i> | | |
| -e- | | | <i>əi</i> | | | | | | | |
| -i- | | | | <i>i</i> | | | <i>i</i> | | | |
| -o- | <i>o</i> | | <i>i, əi</i> | <i>əu</i> | | | | <i>or</i> | | |
| -u- | | | | | | | <i>əu</i> | <i>ər</i> | | |

In Rnam.rgyal’s data, the main difference between Nyinpa and Byargodtshang seems to be the initial consonants, in particular the treatment of alveolo-palatals: Nyinpa has velar fricatives while Byargodtshang has retroflex ones. For instance, the initial |z-| corresponds to *ʒ-* in Byargodtshang and *x-* in Nyinpa; |ziŋ| ‘field’ is *ʒin* in Bya-rgod and *xin*¹³ in Nyinpa according to Rnam.rgyal. Compare with /tɕʰə˥˥xi˥˥/ |tɕʰu.ziŋ| in our data.

The Gtsang.ba.pa dialect is somewhat more divergent from Nyinpa. In particular, it lost the final |r| and does not share the fronting of |-ab| (unlike in the Gtsangbapa data from Yáng):

Table 101: Vowel correspondences between Common Tibetan and Gtsangbapa Cone

| | -Ø | -b | -d | -g | -m | -n | -ŋ | -r | -l | -s |
|-----|--------------|----------|-----------|-------------|-----------|--------------|-----------------------|----------|----------|-------------|
| -a- | <i>a</i> | <i>ə</i> | <i>ei</i> | <i>a</i> | <i>uŋ</i> | <i>ɛ</i> | <i>aː, in, aŋ, oŋ</i> | <i>a</i> | | <i>ei</i> |
| -e- | <i>ei, i</i> | <i>ə</i> | | <i>a</i> | | | | | | |
| -i- | <i>ə</i> | | | <i>ə, u</i> | | <i>ən</i> | <i>i, ə</i> | <i>e</i> | | <i>i, ə</i> |
| -o- | <i>o, əu</i> | <i>o</i> | | <i>əu</i> | <i>əŋ</i> | <i>on, i</i> | <i>əu, oŋ</i> | | | <i>əi</i> |
| -u- | <i>u, ə</i> | <i>u</i> | <i>i</i> | <i>u</i> | <i>oŋ</i> | <i>ən</i> | <i>u, o</i> | <i>u</i> | <i>u</i> | |

The initial consonants also present distinct similar developments for some clusters, and we do not find the irregularities shared between Nyinpa and Byargodtshang:

Table 102: Absence of shared irregularities between Nyinpa Cone and Gtsangbapa Cone

| Meaning | Common Tibetan | Nyinpa | Byargodtshang | Gtsangbapa |
|---------|----------------|-------------|---------------|--------------|
| snake | sbrul | /zɕʰ˥˥/ | <i>rəu</i> | <i>dzu</i> |
| cloud | sprin | /ʃi˥˥˥/ | <i>ʒʰin</i> | <i>tʂən</i> |
| thread | skud.pa | /kɕʰ˥˥wæ˥˥/ | <i>kəu wa</i> | <i>ki pa</i> |

4.6.4 Summary

Given the limited evidence from other sources, it is premature to attempt at a dialectological survey of Cone, but the available data seem to indicate that at least two quite distinct Tibetan dialects are spoken in Cone county. It is not even clear whether all dialectal varieties in this county present any exclusive common innovation that would allow us to classify them together.

5. Morphophonology

Describing in detail the nominal and verbal morphophonology is necessary to provide a complete account of Cone synchronica and historical phonology, as the alternations observed in paradigms reveal important clues useful to properly analyze the system and account for irregular developments due to analogical leveling.

5.1 Nominal morphology

As other Tibetan languages, Cone has a system of case marking. Cone case is marked by a combination of suffixes, and vowel and consonant alternations. Although the system in itself is fairly regular, the alternations are quite opaque synchronically. The case suffixes, unlike lexical morphemes, are always realized in a low pitch. When the (monosyllabic) noun has a high tone, the suffix is low: the high tone cannot spread onto it. When the noun has a low tone, the suffix is realized extra-low, lower than the tone of the noun stem.

In this section, we will study four cases, which illustrate all the attested alternations: Genitive (<ⁿbrel.sgra>: |-gi|, |-gʲi|, |-ki|, |-ji| (<hi> or <ji>) depending on the context), Ergative (<^bied.sgra>: |-gis|, |-gʲis|, |-kʲis| or |-s|), Dative (<la.don>: |-la|, |-r|) and Comitative (|daŋ|). The latter is not recognized as a case in its own right in traditional Tibetan grammar, various authors have recently argued that it should be analyzed this way (Hill 2004; Tournadre 2010).

5.1.1 Plain vowel stems

Plain vowel stems are the ones that correspond to Common Tibetan open syllables. This includes the nouns ending in /-æ/, /-ɛ/, /-ɔ/ and /-ə/, the four short vowels which have no long counterpart.

The following examples illustrate case formation of various nouns:

Table 103: Cone declension (open syllable stem)

| meaning | CoT | ABS | GEN | ERG | DAT | COM |
|---------|---------------------|-----------------------|-----------------------|------------------------|-----------------------|---|
| horse | rta | /tæ ^H / | /te ^H / | /te: ^H / | /te ^H / | [tæ ^H ræ ^L] |
| goat | ra | /ræ ^L / | /re ^L / | /re: ^L / | /re ^L / | [ræ ^L ræ ^L] |
| parrot | ne.tso | /nɛ ^L tso/ | /nɛ ^L tsu/ | /nɛ ^L tsɪ:/ | /nɛ ^L tso/ | [nɛ ^L tso ^H ræ ^L] |
| demon | ^ɲ dre | /ndzɛ ^L / | /ndzɪ ^L / | /ndzɪ: ^L / | /ndzɛ ^L / | [ndzɛ ^L ræ ^L] |
| fire | * Cm ⁱ e | /ɲɛ ^H / | /ɲɪ ^H / | /ɲɪ: ^H / | /ɲɛ ^H / | [ɲɛ ^H ræ ^L] |
| bug | ^ɲ bu | /mbə ^L / | /mbu ^L / | /mbi: ^L / | /mbo ^L / | [mbə ^L ræ ^L] |
| man | * Cm ⁱ | /ɲə ^H / | /ɲu ^H / | /ɲɪ: ^H / | /ɲo ^H / | [ɲə ^H ræ ^L] |

These alternations are fairly regular. The comitative is always formed by adding a suffix /-Dæ^L/, realized [-ræ] after these vowels (one of the few low-tone suffixes), and the three other cases present the following series of vowel alternation:

Table 104: Vowel alternations in Cone declension

| ABS | GEN | ERG | DAT |
|------|------|-------|------|
| /-æ/ | /-e/ | /-e:/ | /-e/ |
| /-ɔ/ | /-u/ | /-ɪ:/ | /-o/ |
| /-ɛ/ | /-ɪ/ | /-ɪ:/ | /-e/ |
| /-ə/ | /-u/ | /-ɪ:/ | /-o/ |

Note that the short /-o/ only occurs in Cone in the dative forms of /-ɔ/ and /-ə/ stem nouns.

The forms of the ergative are clearly inherited from Common Tibetan, where this case is marked by a suffix |-s| in open syllable stems. The ergative undergoes the regular changes:

Table 105: The Common Tibetan origin of Cone ergative forms

| Cone ABS | CoT ABS | Cone ERG | CoT ERG |
|----------|---------|----------|---------|
| /-æ/ | -a | /-e:/ | -as |
| /-ɔ/ | -e | /-ɪ:/ | -es |
| /-ɛ/ | -o | /-ɪ:/ | -os |
| /-ə/ | -i | /-ɪ:/ | -is |
| /-ə/ | -u | /-ɪ:/ | -us |

The forms of the dative and of the genitive, however, cannot be explained as retention from CoT. We will first discuss the origin of the genitive, and then that of the dative.

In genitive forms, the vowels involved if reconstructed back to CoT, have the following possible origins:

Table 106: Possible Common Tibetan origins for Cone genitive forms

| Cone ABS | CoT ABS | Cone GEN | Possible CoT origins of GEN forms |
|----------|---------|----------|-----------------------------------|
| /-æ/ | -a | /-e/ | -ab , -ad |
| /-ɔ/ | -e | /-ɪ/ | (-eb), -ed |
| /-ɛ/ | -o | /-u/ | -og , (-ob ?) |
| /-ə/ | -i | /-u/ | -ib , -ub , -ug |
| /-ə/ | -u | /-u/ | -ib , -ub , -ug |

We have therefore two possible scenarios to explain the origin of the Cone Genitive. First, we could reconstruct a Genitive suffix *|-b|: this would yield exactly the expected forms for all the stems. The drawback of this hypothesis is that no genitive *|-b| is found in any other Tibetan language.

An alternative possibility would be to reconstruct a suffix *|-g| (a reduced form of Common Tibetan |gi|, |gʷi|, |kʷi|). However, this solution yields the correct forms only for /-ɔ/ and /-ə/ stems, and one has to suppose analogical levelling in favour of /-u/ in the genitive of /-ə/ stems, as */-i/, not /-u/ would be expected for the Cone genitive of Common Tibetan |-i| stems (|-ig| > /-i/). In this hypothesis, the genitive of |-a| and |-e| stems must have a different origin (either a *|-b| or a *|-d| suffix).

The first hypothesis seems more likely in view of Cone historical phonology, even if the Common Tibetan origin of the suffix *|-b| remains unclear.

The dative forms in Cone are not inherited from those of Common Tibetan, as open syllable nouns formed their dative by the addition of a |-r| suffix, which ought to be preserved in Cone. The reconstruction of the dative form is difficult in that the vowel /-o/ is not found in the normal vocabulary and its origin is unknown. A special phonological process, involving either vowel fusion or vowel harmony, should be supposed. We propose that the dative was derived from the genitive forms at stage F or G of the evolution of Cone vowels (see §4.5.1). The following table presents the relevant data, including our reconstruction of the rhymes of the genitive and dative forms of Cone plain vowel stems:

Table 107: Cone Genitive and Dative forms in stages F and G

| Cone ABS | CoT ABS | Cone GEN | Cone GEN (stage F/G) | Cone DAT | Cone DAT (stage F/G) |
|----------|---------|----------|-------------------------|----------|-------------------------|
| /-æ/ | -a | /-e/ | *ɛ? | /-e/ | *ɛ? |
| /-ɛ/ | -e | /-ɪ/ | *e? | /-e/ | *ɛ? |
| /-ɔ/ | -o | /-u/ | *o? | /-o/ | *ɔ? |
| /-ə/ | -i | /-u/ | *u? | /-o/ | *ɔ? |
| /-ə/ | -u | /-u/ | *u? | /-o/ | *ɔ? |

Although modern Cone /o/ has no clear origin in Common Tibetan, at stages F/G, one could reconstruct it back as *ɔʔ, a rhyme that was not included in our reconstruction model. Since at stage H all *ɛʔ > *eʔ, *eʔ > *ɪʔ, *oʔ > *uʔ and *uʔ > *ʉʔ, it is logical to suppose also that *ɔʔ is raised to *oʔ, with subsequent loss of glottal stop.

The dative form for short vowel, long vowel and nasal stems is marked by a suffix /-e/, as we will see in the following section. This suffix /-e/ would have been *ɛʔ at stages F/G. We propose that the dative forms were created out of the genitive ones at stage F or G by addition of this suffix *-ɛʔ and subsequent vowel harmony: all vowels shifted to their corresponding mid-low counterpart. This had no influence on the genitive form *ɛʔ of ancient -a stems, which was already a mid-low vowel at that stage, but all other vowels shifted, and then underwent the regular changes at stage H.

Other equally logical explanations could doubtlessly be proposed to account for the Cone dative, but the fact that the vowels are short militates against a hypothesis in terms of vowel fusion, which always give long vowels.

We found only two irregular forms with plain vowel stem. First, some nouns with the suffix |-wæ| such as /k^hæ^Lwæ/ ‘house’ (from |k^haŋ.ba| with irregular vocalism) or /ts^hə^Lwæ/ ‘household’ have a genitive form in /-u/: /k^hæ^Lwu/, /ts^hə^Lwu/ instead of expected */k^hæ^Lwe/, */ts^hə^Lwe/. The ergative and dative are regular (/k^hæ^Lwe:/, /k^hæ^Lwe/ respectively). Second, the first and second person singular pronouns, whose paradigms are presented in the following table:

Table 108: Declension of pronouns in Cone

| CoT | ABS | GEN | ERG | DAT |
|--|-----------------------------------|-----------------------------------|------------------------------------|-----------------------------------|
| ŋa | /ŋæ ^L / | /ŋə ^L / | /ŋe:/ | /ŋã: ^L / |
| * k ^h io , standard k ^h iod | /tɛ ^h ɔ ^H / | /tɛ ^h ʉ ^H / | /tɛ ^h ɪ: ^L / | /tɛ ^h o ^H / |

Only the ergative is regular, genitive and dative have idiosyncratic forms that cannot be explained by known CoT morphology. For the second person, even the absolutive must derive from a non-standard form such as *|k^hio|.

5.1.2 CoT stop final stems

Stems ending with the vowels /-a/ /-e/ /-i/ /-ɪ/ /-u/ /-ʉ/ correspond to CoT rhymes ending in stops; unlike plain vowel stems, they present alternations between free vs. conjunct forms.

The attested alternations are illustrated by the following examples. Despite the fact that most of the vowels have several CoT origins, the oblique case forms are always predictable from the absolutive: the contrasts from CoT have been neutralized. For instance, we could have expected an alternation such as */ɪ/ ~ /ɔC-/ for words with a rhyme /-ɪ/ coming from |-od|, while the alternation /ɪ/ ~ /ɛC-/ would have been restricted to words in /-ɪ/ originating from |-ed|.

However, only the second alternation /i/ ~ /ɛC-/ is attested. It is possible that an alternation such as */i/ ~ /ɔC-/ used to exist, but that it was leveled by analogy at a later stage. Further studies on other varieties of Cone and neighbouring dialects might provide examples of dialects preserving synchronically opaque alternations of this type.

Table 109: Declension of CoT stop final syllables in Cone (surface forms)

| Meaning | CoT | ABS | GEN/ERG | DAT | COM |
|---------|---------------------------|--------------------------------------|---|--|---|
| tiger | stag | /tɑ ^H / | [tæq ^H qə ^L] | [tæ ^H ɰe ^L] | [tæχ ^H tæ ^L] |
| needle | k ^h ab | /k ^h e ^H / | [k ^h ɛk ^L kə ^L] | [k ^h ɛ ^L ye ^L] | [k ^h ɛ ^L tæ ^L] |
| Tibetan | bod | /pɪ ^L / | [pɛk ^L kə ^L] | [pɛ ^L ye ^L] | [pɛ ^L tæ ^L] |
| louse | ɛig | /x ^h i ^H / | [x ^h ək ^L kə ^L] | [x ^h ə ^L ye ^L] | [x ^h ə ^L tæ ^L] |
| people | dmanʃ.ts ^h ogs | /mã: ^L ts ^h u/ | [mã: ^L ts ^h ɔq ^H qə ^L] | [mã: ^L ts ^h ɔ ^H ɰe ^L] | [mã: ^L ts ^h ɔχ ^H tæ ^L] |
| sheep | lug | /lu ^L / | [lək ^L kə ^L] | [lə ^L ye ^L] | [lə ^L tæ ^L] |

These alternations can be analyzed as follows:

Table 110: Morphophonological analysis of Cone case marking alternations (CoT final stop words)

| ABS | GEN/ERG | | DAT | | COM | |
|-----|----------------------|------------|---------------------|------------|----------------------|------------|
| | Surface | underlying | Surface | underlying | Surface | underlying |
| /ɑ/ | [æqqə ^L] | /æk.Gə/ | [æɰe ^L] | /æk.ə/ | [æχtæ ^L] | /æk.Dæ/ |
| /e/ | [ɛkkə ^L] | /ɛC.Gə/ | [ɛye ^L] | /ɛC.e/ | [ɛttæ ^L] | /ɛC.Dæ/ |
| /i/ | [ɛkkə ^L] | /ɛC.Gə/ | [ɛye ^L] | /ɛC.e/ | [ɛttæ ^L] | /ɛC.Dæ/ |
| /i/ | [əkkə ^L] | /əC.Gə/ | [əye ^L] | /əC.e/ | [əttæ ^L] | /əC.Dæ/ |
| /u/ | [ɔqqə ^L] | /ɔk.Gə/ | [ɔɰe ^L] | /ɔk.e/ | [ɔχtæ ^L] | /ɔk.Dæ/ |
| /u/ | [əkkə ^L] | /əC.Gə/ | [əye ^L] | /əC.e/ | [əttæ ^L] | /əC.Dæ/ |

In all oblique cases, the regular conjunct form of the short vowels emerge. The surface [ɰ] and [χ] found in dative forms are the realizations of final /-k/ and /-C/ followed by a vowel (see in §4.5.1). /D/ and /G/ represent morpho-phonemes that are realized variously as voiceless stops, voiced stops or spirants [ɰ]/[ɾ] depending on the preceding syllable. After /-k/, /-C/ and /-ɾ/, they are realized as voiceless stops.

There is one stem in /-ə/ whose declension belongs to the short vowel type rather than to the plain vowel type: the determiner /zə^L/ ‘a’, whose genitive/ergative is /zəC^L-Gə^L/ [zək^Lkə^L] and dative /zəC^L-e^L/. If reconstructed back directly to CoT the possible origins of /zə^L/ would be *|{b,g}z{i,u}| and those of /zəC^L-/ *|{b,g}z{i,u}{g,b}|. The presence of a voiced fricative here, however, is not necessarily indicative of a CoT cluster, as enclitics would not be expected to follow the same phonetic laws as the first syllable of independent words. This determiner is thus probably related to CoT |zig|, though the expected reflex of this etymon would have been

*xi^L. We could propose to reconstruct CoT *|zi|, *|zik|, but the absence of palatalization of |z| before |i| would be anomalous (see Hill 2013 on this particular topic).

The declension of stems in final /-r/ in Cone is a variant of short vowel stem declension:

Table 111: Declension of CoT |-r| final syllables in Cone (surface forms)

| Meaning | CoT | ABS | GEN/ERG | DAT | COM |
|---------|------|---------------------|-------------------------------------|------------------------------------|-------------------------------------|
| ice | dar | /tær ^L / | [tær ^L kə ^L] | [tæ ^L re ^L] | [tær ^L tæ ^L] |
| gser | gser | /ser ^H / | [ser ^H kə ^L] | [se ^H re ^L] | [ser ^H tæ ^L] |

/G/ and /D/ are realized as voiceless stops after final /-r/.

5.1.3 Nasal vowel stems

Cone nasal vowel stems come from CoT rhymes ending in |-m| and |-n| and in some cases in |-ŋ| (in borrowings from other Tibetan languages).

The following examples illustrate the regular declension of the nouns in nasal vowel stems; as short vowel stems, they do not distinguish between genitive and ergative.

Table 112: Declension of CoT nasal final syllables in Cone (surface forms)

| Meaning | CoT | ABS | GEN/ERG | DAT | COM |
|---------|----------|-----------------------------------|--|---|--|
| otter | sram | ʂã: ^H | [ʂæ ^H ŋgə ^L] | [ʂæ ^H ne ^L] | [ʂæ ^H ndæ ^L] |
| bear | dom | tō: ^L | [tō ^L ŋgə ^L] | [tō ^L ne ^L] | [tō ^L ndæ ^L] |
| teacher | dge.rgan | ge: ^L gē: ^L | [ge: ^L ge ^L ŋgə ^L] | [ge: ^L ge ^L ne ^L] | [ge: ^L ge ^L ndæ ^L] |
| tree | eiŋ | x ^H ī: ^L | [x ^H ə ^L ŋgə ^L] | [x ^H ə ^L ne ^L] | [x ^H ə ^L ndæ ^L] |

The principle here is identical with short vowel stems: the suffixes /-Gə^L/, /-e^L/ and /-Dæ^L/ respectively are added to the conjunct form of the noun stem:

Table 113: Declension of CoT nasal final syllables in Cone (underlying forms)

| ABS | GEN/ERG | | DAT | | COM | |
|-----|----------------------|-----------------------|---------------------|----------------------|----------------------|-----------------------|
| | Surface | underlying | Surface | underlying | Surface | underlying |
| ã: | [æŋgə ^L] | /æN.Gə ^L / | [æne ^L] | /æN.e ^L / | [ændæ ^L] | /æN.Dæ ^L / |
| ō: | [oŋgə ^L] | /oN.Gə ^L / | [one ^L] | /oN.e ^L / | [ondæ ^L] | /oN.Dæ ^L / |
| ē: | [eŋgə ^L] | /eN.Gə ^L / | [ene ^L] | /eN.e ^L / | [endæ ^L] | /eN.Dæ ^L / |
| ī: | [iŋgə ^L] | /iN.Gə ^L / | [ine ^L] | /iN.e ^L / | [indæ ^L] | /iN.Dæ ^L / |

The morphophoneme /N/ is realized [n] in intervocalic position, while /D/ and /G/ merge with /N/ as voiced prenasalized stops [nd] and [ŋg].

The short nasal vowel nouns /nã^H/ ‘pus’ |mag| and /nã^L/ ‘forest’ |nags| are not treated as nasal stems, their oblique forms follow the declension of a /-a/ short vowel stem.

The noun /nã:^L/ ‘inside’ |naŋ| has no conjunct form, and its oblique forms are similar to a long vowel stem [nã:^Lɣə^L], [nã:^Lŋe^L], [nã:^Lræ^L]. This strongly supports the idea that nasalization is secondary in this noun; it is an inherited form whose regular reflex should be */na:^L/ but became nasalized because of a nasal suffix, or possibly due to spread of nasality from the initial.

5.1.4 Long vowel stems

As plain vowel stems, long vowel stems have no conjunct forms. These stems come from syllables with final |-ŋ], |-l] and |-s] in CoT.

The regular declension patterns for these nouns is quite straightforward:

Table 114: Declension long vowel stems in Cone (surface forms)

| Meaning | CoT | ABS | GEN/ERG | DAT | COM |
|---------|------------------------------|-----------------------------------|---|---|---|
| deer | ɕa.ba <e ^w a.ba> | /x ^b ɑ: ^L / | [x ^b ɑ: ^L ɣə ^L] | [x ^b ɑ: ^L ŋe ^L] | [x ^b ɑ: ^L ræ ^L] |
| rabbit | ri.boŋ | /rə ^L ɣu:/ | [rə ^L ɣu: ^L ɣə ^L] | [rə ^L ɣu: ^L ŋe ^L] | [rə ^L ɣu: ^L ræ ^L] |
| monkey | sprewu | /ʃi: ^H / | [ʃi: ^H ɣə ^L] | [ʃi: ^H ŋe ^L] | [x ^b ɑ: ^L ræ ^L] |

The morphophonemes /D/ and /G/ are realized as [r] and [ɣ] between vowels, which is why the suffixes /-Dæ^L/ and /-Gə^L/ appear as [ɣə^L] and [ræ^L] with long vowel stems.

The suffix /-e^L/ cannot form a hiatus with the preceding vowel, and an epenthetic [ŋ] is inserted. This segment only appears with long vowel stems; with all other stem types the conjunct form is used and since it is always consonant-final it prevents the hiatus.

Some nouns in /-u:/ coming from a suffix |-bo| |-po| in CoT have alternative ergative and dative forms similar to plain vowel stem. For instance, /dzæ^Lru:/ ‘king’ |rgjal.po| has two possible dative forms [dzæ^Lru:^Lŋe^L] or [dzæ^Lro^L]; /pɑ:^Hwu:/ ‘beggar’ has [pɑ:^Hwɪ:^H] in the ergative and [pɑ:^Hwo^H] in the dative. The genitive and comitative forms of these nouns is regular ([pɑ:^Hwu:^Hɣə^L] and [pɑ:^Hwu:^Hræ^L]). This is also true of the plural suffix /-te^bu:/ (genitive /-te^br:/, dative /-te^bo/), which might be indirectly related to the common |-ts^bo| suffix found in various Tibetan languages.

This section has described the morphophonological alternations found in the Cone case marking system. Similar alternations are also found in the verbal morphology, as we will see.

5.2 Verbal morphology

This section will describe how verbal stem alternations in Cone relate to Common Tibetan ones. As we will see, some of these alternations are inherited, and some are innovated by analogy or sound changes.

In Classical Tibetan, verbs had up to four distinct stems, traditionally called present (<da.lta>), past (<ⁿdas.pa>), future (<ma.fioŋ.pa>) and imperative (<skul.ts^big>). Although

these labels are misleading, we will nevertheless keep the traditional terminology, as the focus of this paper is not the functions of these categories in modern Cone. It is possible that Common Tibetan (and Old Tibetan) had more stems, but this question is only marginally relevant to Tibetan dialectology: as in all modern Tibetan languages, no verb in Cone has more than three stems. However, the stem alternations as attested in Classical Tibetan (and nearly all dictionaries) are in some cases quite different from those of Old Tibetan and Common Tibetan. When data is available, Common Tibetan stem alternations are based on Old Tibetan evidence, as will be discussed in this section.

The Cone present stem corresponds to both Common Tibetan present and future, while past and imperative correspond to their Common Tibetan counterparts. The Cone present stem sometimes appears in the conjunct stem, as we will see.

5.2.1 Vowel alternations

Verbs with vowel alternations in Cone can all be considered to be irregular, as most verbs have no alternations, including verbs whose vowel belongs to the vowels of the alternating series. Fifteen categories are attested:²¹

Table 115: Cone verb stem alternations (rhymes)

| | PRS | PST | IMP | nb | Cone example | CoT | Meaning |
|----|-----|-----|-----|----|--|----------------------------------|-----------|
| 1 | æ | e: | ɪ: | 3 | /tæ ^H /, /te: ^H /, /tɪ: ^H / | lta , bltas , lto | see |
| 2 | ɔ | ɪ: | ɪ: | 5 | /kɔ ^H /, /kɪ: ^H / | rko , brkos | dig |
| 3 | ɛ | ɪ: | ɪ: | 3 | /dzɛ ^H /, /dzɪ: ^H / | rdze , brdzes | change |
| 4 | ə | i: | i: | 13 | /ɛə ^H /, /ɛi: ^H / | skʲi , bskʲis | borrow |
| 5 | æ | ɪ: | ɔ | 1 | /sæ ^L /, /sɪ: ^L /, /sɔ ^L / | za , zos , zo | eat |
| 6 | ɑ | ɑ | u | 7 | /ndzɑ ^L /, /tʃɑ ^L /, /tʃu ^L / | ⁿ dreg , breg | cut, mow |
| 7 | u | ɑ | u | 3 | /ndzu ^L /, /ɣɑ ^L /, /ɣu ^L / | ⁿ dzog , bzag , zog | put |
| 8 | i | e: | i: | 1 | /ɛi ^L /, /ɛe: ^L /, /ɛi: ^L / | bʲed , bʲias , bʲios | do |
| 9 | ɪ | ɪ: | ɪ: | 1 | /gɪ ^L /, /gɪ: ^L / | bgod , bgos | share |
| 10 | ã: | ã: | õ: | 3 | /dã: ^L /, /dõ: ^L / | bsdams , sdoms | tie |
| 11 | ã: | ã: | ũ: | 1 | /ɲã: ^L /, /ɲũ: ^L / | ɲal , ɲol | sleep |
| 12 | ẽ: | ɑ: | u: | 3 | /lẽ: ^L /, /la: ^H /, /lu: ^H / | lend , blaŋs , loŋs | pick up |
| 13 | ĩ: | ʊ: | ʊ: | 1 | /ndzĩ: ^L /, /zu: ^L / | ⁿ dzind , bzun | hold |
| 14 | ɑ: | ɑ: | u: | 9 | /mbɑ: ^L /, /pɑ: ^L /, /pu: ^L / | ⁿ bal , bal | pluck out |
| 15 | æɾ | æɾ | or | 4 | /ŋgæɾ ^L /, /kæɾ ^H /, /kor ^H / | dgar , bkar | chop |

These fifteen categories can be further divided into four main categories: plain vowels, short vowels, nasal/long vowels and [-Vr].

²¹ The abbreviation ‘nb’ denotes ‘number of examples in our data’.

Apart from these categories, we find a limited number of verbs that exhibit suppletion.

5.2.1.1 Plain vowel stems

The plain vowel stem alternations are the most common cases of irregular verbs in Cone. The present tense of these verbs is one of $\{/æ/, /ɔ/, /ɛ/, /ə/\}$, the vowels corresponding to CoT open syllables. The alternations observed for these stems result from the addition of an $|-s|$ suffix in the past and imperative stems, and from the $|a| > |o|$ ablaut in the imperative.

Table 116: Alternations in CoT open syllable verb stems

| | PRS | CoT | PST | CoT | IMP | CoT |
|---|------|----------|-------|------------|-------|------------|
| 1 | /-æ/ | -a | /-e:/ | -as | /-ɪ:/ | -os |
| 2 | /-ɔ/ | -o | /-ɪ:/ | -os | /-ɪ:/ | -os |
| 3 | /-ɛ/ | -e | /-ɪ:/ | -es | /-ɪ:/ | -es |
| 4 | /-ə/ | -u , -i | /-i:/ | -us , -is | /-i:/ | -us , -is |

The Cone alternations here faithfully reflect the CoT paradigms. The verb ‘eat’ present a unique alternation: PRS $/sæ^L/$, PST $/sɪ^L/$, IMP $/sɔ^L/$. These forms exactly reflect CoT $|za|$, $|zos|$, $|zo|$, an irregular paradigm, which I argued to be the only trace of verbal agreement in Tibetan (Jacques 2010a). Cone seems to be one of the rare languages to preserve the $|a| \sim |o|$ ablaut in the past stem. Most other Tibetan languages, such as Lhasa, have replaced $|zos|$ by an analogical form as if from CoT $|bzas|$.

5.2.1.2 Stop final stems

The short vowel stems $/-a/$, $/-e/$, $/-ɪ/$, $/-i/$, $/-u/$ and $/-u/$ originate from stop final syllables in Common Tibetan. Unlike plain vowel stems, the stop final stems have a distinct conjunct form. It appears when the present stem is suffixed with the present $/-Gə/$ suffix. The same range of alternations as with genitive/ergative of nouns is observed:

Table 117: Conjunct forms in CoT stop final verb stems

| Base form | Suffixed form | Example | Etymology | Meaning |
|-----------|---------------------|--|-----------|------------|
| /-a/ | $/æk-Gə/$ $[æq̄qə]$ | $/te^H/$, $/tæk^H-/$ $[tæq̄^Hqə^H]$ | $ bteag $ | break |
| /-e/ | $/ɛC-Gə/$ $[ɛkkə]$ | $/se^H/$, $/sɛC^H-/$ $[sɛk^Hkə^H]$ | $ bsad $ | kill |
| /-ɪ/ | $/ɛC-Gə/$ $[ɛkkə]$ | $/tɪ^H/$, $/tɛC^H-/$ $[tɛk^Hkə^H]$ | $ lteb $ | fold |
| /-i/ | $/əC-Gə/$ $[əkkə]$ | $/tsi^H/$, $/tsəC^H-/$ $[tsək^Hkə^H]$ | $ rtsig $ | lay bricks |
| /-u/ | $/ɔk-Gə/$ $[ɔq̄qə]$ | $/ndzu^L/$, $/ndzək^L-/$ $[ndzəq̄^Lqə^H]$ | $ ndzɔg $ | put |
| /-u/ | $/əC-Gə/$ $[əkkə]$ | $/gʊ^L/$, $/gəC^L-/$ $[gək^Lkə^H]$ | $ sgug $ | wait |

However, these regular neo-alternations are unrelated to the CoT ablaut.

The final $[-s]$ suffix found in the past and imperative, which caused most of the alternations in plain vowel stems, left no trace after stops: $[-Vbs]$ and $[-Vgs]$ rhymes merge with their $[-Vb]$ and $[-Vg]$ counterparts.

The attested alternations are the following; categories 8 and 9 are highly irregular, attested by only one example each.

Table 118: Inherited alternations in CoT stop final verb stems

| | PRS | CoT | PST | CoT | IMP | CoT |
|---|------|-------|-------|-----|-------|------|
| 6 | /-ɑ/ | ag | /-ɑ/ | ags | /-u/ | -ogs |
| 7 | /-u/ | og(s) | /-ɑ/ | ags | /-u/ | -ogs |
| 8 | /-i/ | ? | /-e:/ | as | /-i:/ | ? |
| 9 | /-ɪ/ | od | /-ɪ:/ | -os | /-ɪ:/ | -os |

There is only one source of vowel alternation for the types 6 and 7: $[a] \sim [o]$ ablaut in CoT. This ablaut takes place regularly in the imperative, and in some verb stems in the present (type 7). We would expect verbs from CoT stems in $[-ab]$ and $[-ad]$ to present the alternation between $/-e/$ and $/-u/$ (reflecting CoT $[-ab] \sim [-obs]$) and $/-e/$ and $/-ɪ/$ (reflecting CoT $/ad/ \sim /od/$).

Besides, in Common Tibetan some verbs also had $[a] \sim [e]$ ablaut in the present stem. Since $[-ag]$ and $[-eg]$ both become $/-ɑ/$ in Cone, this distinction is lost for $[-g]$ final verbs (for instance CoT $^{[n]}dreg|$ ‘cut’ regularly becomes $/ndzɑ^L/$, indistinguishable from a protoform $^{[n]}brag|$). For $[-ab]$ and $[-ad]$ stem verbs however, we should expect present stems in $/-ɪ/$ (from $[-eb]$) and $/-i/$ (from $[-id]$) alternating with $/-e/$ (from $[-ab]/[-ad]$). There is one type 6 verb with $/-e/$ in the past tense instead of $/-ɑ/$: the auxiliary $/dza^L/$ $|rgiag|$, past $/dze^L/$ $|rgiab|$. This irregular vowel alternation directly reflects an CoT irregular final stop alternation.

The expected paradigms of the verbs $/tse^H/$ ‘cut off’ $|gtsab|$, $/tee^H/$ ‘cut’ $|btead|$ and the $[a] \sim [e]$ ablaut verb ‘fold’ $/tr^H/$ $|lteb|$ should be:

Table 119: Expected paradigms of CoT final stop verb stems in Cone

| Meaning | PRS | PST | IMP |
|---------|---------------|--------------|-----------------|
| cut off | $ gtsab $ | $ btsabs $ | $ gtsobs $ |
| | $/tse^H/$ | $/tse^H/$ | $^{*}/tsu^H/$ |
| cut | $ gteod $ | $ btead $ | $ te^h od $ |
| | $^{*}/teɪ^H/$ | $/tee^H/$ | $^{*}/te^hɪ^H/$ |
| fold | $ lteb $ | $ bltabs $ | $ ltobs $ |
| | $/tr^H/$ | $^{*}/te^H/$ | $^{*}/tu^H/$ |

Instead of preserving these alternations, these verbs became invariable in Cone, having generalized either the present or the past stem (the forms that underwent analogical levelling are shaded in grey).

Another origin for alternating short vowel stems is the present tense $[-d]$ suffix of CoT. Only two verbs ($/\epsilon i^L/$ ‘do’ $|b^i\epsilon d|$ and $/g i^L/$ ‘share’ $|bgod|$) in our data preserve a trace of this suffix. The verb ‘share’ straightforwardly reflects CoT present $|bgod|$, past/imperative $|bgos|$ which regularly yield the Cone paradigm $/g i^L/$, $/g r^L/$.

On the other hand, the verb ‘do’ presents irregular correspondences with CoT. The past $/\epsilon \epsilon^L/$ can be accounted for with the CoT past stem $|b^i\alpha s|$, but the present $/\epsilon i^L/$ and imperative $/\epsilon i^L/$ are unexplained: $|b^i\epsilon d|$ and $|b^i\alpha s|$ should have become $*/\epsilon i^L/$ and $*/\epsilon r^L/$. Since the contrast between $[-i/]$ and $[-r/]$ is difficult to perceive, this seems to raise the question whether these forms are correctly transcribed. However, the fact that the conjunct of $/\epsilon i^L/$ is $[\epsilon \text{ək}^L \text{kə}^H]$ can dissipates this doubt: had the present stem been $*/\epsilon r^L/$, its conjunct form should have been $*/[\epsilon \text{ək}^L \text{kə}^H]$.

To explain these discrepancies, we propose that the present and imperative stems are not the result of irregular development, but that the paradigm of ‘do’ is suppletive, taking some forms from the CoT verb $|b^i\epsilon d|$ and other from $|bg^i\epsilon d|$ which also means ‘do’. The regular outcome of the present, past and imperative stems of these two verbs are presented in the following table:

Table 120: The CoT of the Cone verb ‘do’

| | PRS | PST | IMP |
|------|--|--|---------------------------------------|
| do 1 | $ b^i\epsilon d $ $*/\epsilon i^L/$ | $ b^i\alpha s $ $/\epsilon \epsilon^L/$ | $ b^i\alpha s $ $*/\epsilon r^L/$ |
| do 2 | $ bg^i\epsilon d $ $*/d z i^L/$ | $ bg^i\epsilon s $ $/d z i^L/$ | $ g^i\epsilon s $ $/\epsilon i^L/$ |

The correspondence of CoT $|g^i-|$ to Cone $/\epsilon-|$ in the low tone is not attested by any other example, as this initial is quite rare in OT; it is based on the hypothesis that in the native vocabulary (not borrowed from other Tibetan varieties) $|g^i-|$ evolves in a way parallel to $|Ck^i-|$. Based on this phonetic law, the imperative $/\epsilon i^L/$ can be the regular outcome of the imperative stem $|g^i\epsilon s|$. The verb ‘do’ in Cone has taken its past stem from the verb $|b^i\epsilon d|$, and its imperative stem from $|bg^i\epsilon d|$.

The present stem $/\epsilon i^L/$, however, resembles neither the present $*/\epsilon i^L/$ $|b^i\epsilon d|$ nor $*/d z i^L/$ $|bg^i\epsilon d|$. It points perhaps to an CoT form $*/g^i\epsilon d|$ for the present tense rather than $|bg^i\epsilon d|$.

Given the fact that the present stem $|bg^i\epsilon d|$ is quite irregular in having a $|b-|$ prefix, it is possible that at an intermediate stage after Common Tibetan the paradigm of this verb was renewed as $*/g^i\epsilon d|$, $|bg^i\epsilon s|$, $|g^i\epsilon s|$, with the new present $*/g^i\epsilon d|$ analogically remade on the model of more common verbs where $|b-|$ is restricted in the past. However, the expected present stem should be $*/n^g^i\epsilon d|$ with a nasal prefix. An alternative possibility is that this stem is a blend of the two forms $*/\epsilon i^L/$ and $*/d z i^L/$, merging the initial of the former with the rhyme of the latter.

5.2.1.3 Nasal vowels and long vowel stems

The nasal stems come from CoT rhymes in |-m| and |-n| (and |-ŋ| in rare cases). Like short vowel stems, they present conjunct forms with the present /-Gə/ suffix, as in the following table:

Table 121: Conjunct forms of nasal vowel verb stems

| Base form | Suffixed form | Example | Etymology | Meaning |
|-----------|----------------|--|--------------------|----------------|
| /ã:/ | /æN-Gə/ [æŋgə] | /dã: ^L /, /dæN ^L -Gə/ [dæ ^L ŋgə ^H] | bsdams | tie |
| /ẽ:/ | /ɛN-Gə/ [ɛŋgə] | /ndẽ: ^L /, /ndɛN ^L -Gə/ [ndɛ ^L ŋgə ^H] | ⁿ don | read |
| /õ:/ | /ɔN-Gə/ [ɔŋgə] | /k ^h õ: ^L /, /k ^h ɔN ^L -Gə/ [k ^h ɔ ^L ŋgə ^H] | k ^h om | have free time |
| /ĩ:/ | /əN-Gə/ [əŋgə] | /yĩ: ^L /, /yəN ^L -Gə/ [yə ^L ŋgə ^H] | sb ⁱ in | give |

The verb /ɲã:^L/ ‘sleep’ [ɲal] has no special conjunct form, and appears as [ɲã:^Lyə^H] with the present suffix. The adjectives /mã:^L/ ‘many’ [maŋ] and /tʂã:^L/ ‘straight’ [draŋ] have present forms without nasality [ma:^Lyə^H] and [tʂa:^Lyə^H]. In these irregular forms, nasality is clearly a secondary feature.

Long vowel stems have no distinct conjunct form with the present suffix, as in /ka:^H/ ‘fill up’ [skaŋ], present [ka:^Hyə^H].

Five patterns of vowel alternation are attested with nasal and long vowel stems, including two mixed category with nasal vowel in the present stem and long vowel in the past and imperative:

Table 122: Inherited alternations in CoT nasal final and |-al| verb stems

| | PRS | CoT | PST | CoT | IMP | CoT |
|----|-------|------------|-------|------------|-------|-------------|
| 10 | /-ã:/ | -am | /-ã:/ | -ams | /-õ:/ | -oms |
| 11 | /-ã:/ | -al | /-ã:/ | -al | /-ũ:/ | -ol |
| 12 | /-ẽ:/ | -en(d) | /-ɛ:/ | -aŋ | /-u:/ | -oŋs |
| 13 | /-ĩ:/ | -in(d) | /-ɯ:/ | -uŋ | /-ɯ:/ | -uŋs |
| 14 | /-ɔ:/ | -aŋ , -al | /-ɔ:/ | -aŋ , -al | /-u:/ | -oŋs , -ol |

Pattern 11 is a variant of 14 with secondary nasalization, as explained above. Patterns 10 and 14 reflect the |a| ~ |o| ablaut of CoT in |-m| coda and |-ŋ| or |-l| coda stems respectively. Syllable with final codas |-n| and |-s| in CoT become nasal and long vowels respectively in Cone, but with vowel fronting the paradigm would be:

Table 123: Expected paradigms of |-an| and |-as| stem CoT verbs

| PRS | CoT | PST | CoT | IMP | CoT |
|-------|-----|-------|-----|-------|-----|
| /-ě:/ | -an | /-ě:/ | -an | /-ě:/ | -on |
| /-e:/ | -as | /-e:/ | -as | /-ɪ:/ | -os |

In the case of CoT |-an| stems, give the fact that CoT |-an| and |-on| merge as /-ě:/ in Cone, sound change alone makes these verb become invariable. For |-as| stems, we would expect a /-e:/ ~ /-ɪ:/ alternation between past and imperative, but no other example has been found.

The mixed patterns 12 and 13 represent inheritance from CoT alternations between |-n| (more exactly |-nd| with <da.drag>) with vowel fronting in the present and |-ŋ| in the past and imperative. The Cone forms are the direct reflexes of the CoT paradigm.

5.2.1.4 |-r|

Cone preserves the CoT coda |-r|, and |a| ~ |o| ablaut is maintained in some verbs:

Table 124: Vowel alternations in CoT |-ar| verb stems

| PRS | CoT | PST | CoT | IMP | CoT |
|----------|-----|-------|-----|-------|-----|
| 15 /-æɾ/ | -ar | /-æɾ/ | -ar | /-or/ | -or |

Since the final consonant did not disappear, no complex vowel alternation has been created in these verbs.

5.2.2 Initial consonants

Verbal stem alternation in CoT was not limited to vowel ablaut and addition of suffixes. Extensive initial consonant alternation was also observed.

The following patterns are attested in our Cone data:

Table 125: Cone verb stem alternations (onset)

| | PRS | PST | IMP | Cone Example | CoT | Meaning |
|---|----------------------|---------------------|---------------------|--|---|-----------|
| 1 | /mb-/ | /p ^L -/ | /p ^L -/ | /mba: ^L /, /pa: ^L /, /pu: ^L / | ⁿ bal , bal , bol | pluck out |
| 2 | /ndz _r -/ | /tʂ ^L -/ | /tʂ ^L -/ | /ndzə ^L /, /tʂi: ^L / | ⁿ dri , bris | write |
| 3 | /ŋg-/ | /k ^L -/ | /k ^L -/ | /ŋge ^L /, /ke ^L / | gad | blossom |
| 4 | /mb-/ | /p ^H -/ | /p ^H -/ | /mbu ^L /, /pu ^H / | ⁿ big s , p ^h ug | drill |
| 5 | /nd-/ | /t ^H -/ | /t ^H -/ | /ndu ^L /, /ta ^H /, /tu ^H / | ⁿ dog , btags | hang |
| 6 | /ndz-/ | /ts ^H -/ | /ts ^H -/ | /ndzu ^L /, /tsu ^H / | ⁿ dzugs , btsugs | insert |
| 7 | /ndz-/ | /te ^H -/ | /te ^H -/ | /ndzu ^L /, /tea ^H /, /teu ^H / | ⁿ giog , bkiags | raise |
| 8 | /ŋg-/ | /k ^H -/ | /k ^H -/ | /ŋge ^L /, /ke ^H / | ⁿ gebs , bkab | cover |

| | | | | | | |
|----|--------|-------|-------|-----------------------|----------------------------------|----------|
| 9 | /ndz-/ | /z-/ | /z-/ | /ndziːˀ/, /zɛːˀ/ | ⁿ dzind , bzuj | hold |
| 10 | /ndz-/ | /ɕʰ-/ | /ɕʰ-/ | /ndzerˀ/, /ɕʰerˀ/ | ⁿ bied , pʰje | open |
| 11 | /ndz-/ | /ɣ-/ | /ɣ-/ | /ndzuˀ/, /ɣaˀ/, /ɣuˀ/ | ⁿ dzog , bzag , zog | put |
| 12 | /tʰ-/ | /t-/ | /t-/ | /tʰorˀ/, /torˀ/ | gtor | separate |
| 13 | /tsʰ-/ | /ts-/ | /ts-/ | /tsʰɛːˀ/, /tsɛːˀ/ | ⁿ tsʰem , btsems | sew |
| 14 | /tɕʰ-/ | /tɕ-/ | /tɕ-/ | /tɕʰiˀ/, /tɕiˀ/ | ⁿ kʰrud , bkruˀ | wash |

These patterns can be divided into four classes: prenasalized/low tone voiceless stop alternation, prenasalized/high tone voiceless stop alternation, prenasalized/fricative alternation and aspirated/unaspirated alternation. All of these patterns have clear CoT origins.

5.2.2.1 Prenasalized/voiceless (low tone)

Cone verbs with prenasalized/voiced alternation originate from two classes of CoT verbs: the non-alternating verbs with nasal prefix in the present, and the verbs with voiced/voiceless stop alternation which will be treated in the next section.

The first class simply had a nasal prefix in CoT. Since voiced unprefixes stops became voiceless stops in Cone, regular phonetic laws yield the following alternations:

Table 126: Expected paradigms of CoT voiced stop initial verbs

| PRS | CoT | PST | CoT | IMP | CoT |
|----------|---------------------------------------|--------|------------|--------|------------|
| /mb-ˀ/ | ⁿ b | /p-ˀ/ | b- | /p-ˀ/ | b- |
| /nd-ˀ/ | ⁿ d | /t-ˀ/ | d- | /t-ˀ/ | d- |
| /ndzɕ-ˀ/ | ⁿ dr- , ⁿ br- | /tɕ-ˀ/ | dr- , br- | /tɕ-ˀ/ | dr- , br- |
| /ŋg-ˀ/ | ⁿ g- | /k-ˀ/ | g- | /k-ˀ/ | g- |

Past and imperative stems have low tone like the present stem. The dental stop alternation /nd-ˀ/ ~ /tˀ/ has not yet been found, but the other three patterns are well attested in Cone.

The /ndzɕ-ˀ/ ~ /tɕ-ˀ/ alternation has several distinct origins. As in many Tibetan languages, |dr-| and |br-| merge as /tɕ-ˀ/ in Cone, so that three conjugations merge into one:

Table 127: Expected paradigms of CoT *|r-| verb stems in Cone

| | PRS | CoT | PST | CoT | IMP | CoT |
|-----------|----------|------------------|--------|-----|--------|-----|
| br- stem | /ndzɕ-ˀ/ | ⁿ br- | /tɕ-ˀ/ | br- | /tɕ-ˀ/ | br- |
| dr- stem | /ndzɕ-ˀ/ | ⁿ dr- | /tɕ-ˀ/ | dr- | /tɕ-ˀ/ | dr- |
| r- stem | /ndzɕ-ˀ/ | ⁿ dr- | /tɕ-ˀ/ | br- | /tɕ-ˀ/ | r- |

|r-| stem verbs have been discovered by Hill (2005b), who pointed out on the basis of a detailed philological study that the real OT paradigm of ‘write’ was |ⁿdri|, |bris|, |bri|, |ris|. Jacques (2010b) showed that a few other verbs presented the same alternations, in particular

‘cut’ $^n\text{breg|}$, $|\text{breg|}$. In all known forms of Tibetan except Old Tibetan texts, the present and imperative stems was remodelled after the $|\text{b-}|$ prefix of the past stem suffix has been reanalyzed as a part of the stem.

Cone is no exception to this trend. Sound change has deprived us of any way of determining whether the present stem $|\text{ndz-}|$ of the verbs ‘ask’ $|\text{ndz}^{\text{L}}|$ $^n\text{dri|}$ and ‘cut’ $|\text{ndz}^{\text{L}}|$ $^n\text{dreg|}$ comes from the original CoT forms or from analogized forms such as $^n\text{bri|}$ and $^n\text{breg|}$. On the other hand, the imperative of those verbs has been remodeled as $|\text{t}\text{ṣ-}|$ after $|\text{br-}|$ stems, otherwise $^*/\text{r-}|$ should be found in Cone.

5.2.2.2 Prenasalized/voiceless (high tone)

A large class of volitive verbs in CoT presented an alternation between voiced stops in the present and future stems, and voiceless in the past and imperative (Coblin 1976; Jacques 2012a). Present forms generally had $|\text{a}| \sim |\text{o}|$, $|\text{a}| \sim |\text{e}|$ or $|\text{u}| \sim |\text{i}|$ ablaut in the verbs, and a nasal $^n\text{-}|$ prefix. Verbs with $|\text{a}| \sim |\text{e}|$ and $|\text{u}| \sim |\text{i}|$ ablaut in the present had either an $|\text{-s}|$ suffix in the present or presented $|\text{-n(d)}| \sim |\text{-ŋ}|$ alternation between present and past forms. The past form had the regular $|\text{b-}|$ prefix (but not the $|\text{-s}|$ suffix), and the future the $|\text{d-}| \sim |\text{g-}|$ prefix. The basic paradigm can be illustrated by the following examples:

Table 128: CoT verb paradigms with voicing alternation

| | PRS | PST | FUT | IMP |
|----------|------------------|-----------------|-----------------|----------------------------------|
| cover | $^n\text{gebs }$ | $ \text{bkab }$ | $ \text{dgab }$ | $ \text{k}^{\text{h}}\text{ob }$ |
| take out | $^n\text{don }$ | $ \text{bton }$ | $ \text{gdon }$ | $ \text{t}^{\text{h}}\text{on }$ |
| insert | $^n\text{debs }$ | $ \text{btab }$ | $ \text{gdab }$ | $ \text{t}^{\text{h}}\text{ob }$ |

The imperative was prefixless. Since voiceless stops were realized as aspirated when in absolute initial position, the aspiration was originally non-phonemic in this context (see Li 1933; Coblin 1976; Hill 2007), but became subsequently phonologized in all Tibetan languages, including Cone. An explanation for the origin of the voicing alternation in Common Tibetan has been proposed by Jacques (2012a).

The expected Cone paradigms would then be the following ones:

Table 129: Expected Cone paradigms of verbs with voicing alternation in CoT

| PRS | CoT | PST | CoT | IMP | CoT |
|-------------------|---------------------------|------------------------------------|---------------------------|------------------------------------|-------------------------------------|
| $^*/\text{mb-} $ | $^n\text{b-} $ | $^*/\text{p}^{\text{h-}} $ | $ \text{p}^{\text{h-}} $ | $^*/\text{p}^{\text{h-}} $ | $ \text{p}^{\text{h-}} $ |
| $^*/\text{nd-} $ | $^n\text{d-} $ | $^*/\text{t}^{\text{H-}} $ | $ \text{bt-} $ | $^*/\text{t}^{\text{h-}} $ | $ \text{t}^{\text{h-}} $ |
| $^*/\text{ndz-} $ | $^n\text{dz-} $ | $^*/\text{ts}^{\text{H-}} $ | $ \text{bts-} $ | $^*/\text{ts}^{\text{h-}} $ | $ \text{ts}^{\text{h-}} $ |
| $^*/\text{ndz-} $ | $^n\text{dz-} $ | $^*/\text{t}\text{ḗ}^{\text{H-}} $ | $ \text{bt}\text{ḗ-} $ | $^*/\text{t}\text{ḗ}^{\text{h-}} $ | $ \text{t}\text{ḗ}^{\text{h-}} $ |
| $^*/\text{ndz-} $ | $^n\text{g}^{\text{i-}} $ | $^*/\text{ḡ}^{\text{H-}} $ | $ \text{bk}^{\text{j-}} $ | $^*/\text{t}\text{ḗ}^{\text{h-}} $ | $ \text{k}^{\text{h}^{\text{j-}}} $ |
| $^*/\text{ŋg-} $ | $^n\text{g-} $ | $^*/\text{k}^{\text{H-}} $ | $ \text{bk-} $ | $^*/\text{k}^{\text{h-}} $ | $ \text{k}^{\text{h-}} $ |

However, no Cone verb exactly has any of these paradigms. The attested forms are the following:

Table 130: Attested Cone paradigms of verbs with voicing alternation in CoT

| | PRS | CoT | PST | CoT | IMP | CoT |
|---|----------------------|------------------------------|---------------------|------------------|---------------------|-------------------|
| 4 | /mb ^{-L} / | ⁿ b ⁻ | /p ^H / | p ^h - | /p ^H / | p ^h - |
| 5 | /nd ^{-L} / | ⁿ d ⁻ | /t ^{-H} / | bt ⁻ | /t ^{-H} / | t ^h - |
| 6 | /ndz ^{-L} / | ⁿ dz ⁻ | /ts ^{-H} / | bts ⁻ | /ts ^{-H} / | ts ^h - |
| 7 | /ndz ^{-L} / | ⁿ dz ⁻ | /tɕ ^{-H} / | btɕ ⁻ | /tɕ ^{-H} / | tɕ ^h - |
| 8 | /ŋg ^{-L} / | ⁿ g ⁻ | /k ^{-H} / | bk ⁻ | /k ^{-H} / | k ^h - |

We always find a non-aspirated in the imperative: the imperative stem has clearly been remodeled after the past stem, even when |a| ~ |o| vowel alternation is preserved. For instance, for the verb ‘attach, hang’, CoT past |btags|, imperative |t^hogs|, we should have in Cone past /tɑ^H/ (the attested form) and imperative */t^hu^H/. Instead, the imperative is /tu^H/, preserving the |a| ~ |o| alternation but generalizing the unaspirated stop.

For labial stems, the past stem |b-| prefix could not be added in CoT, so that the past form was prefixless, yielding an aspirated stop. Here again, Cone innovates in generalizing the voiceless stop on the model of the other conjugations. The verb ‘drill, bore’ illustrates this evolution (see Jacques 2012a for the Pre-Tibetan reconstructions):

Table 131: Expected vs. attested paradigm of |b-| ~ |p-| stem verbs

| | PRS | PST | IMP |
|---------------|--------------------------------|-------------------------------------|-----------------------------------|
| CoT | ⁿ big < *nVN-puk-t | p ^h ug < *puk < *bV-puk | p ^h ug |
| expected Cone | */mbi ^L / | */p ^h u ^H / | */p ^h u ^H / |
| attested Cone | /mbu ^L / | /pu ^H / | /pu ^H / |

In this verb, none of the attested form are inherited. The *u/i* ablaut in the present tense and aspiration in the past and imperative were lost by analogical leveling.

Verbs with |gⁱ-|/|kⁱ-| stems also present analogical leveling. Since |bkⁱ-| regularly becomes /ɕ^{-H}/, the expected paradigm of verbs such as ‘raise’ should be:

Table 132: Expected vs. attested paradigm of |gⁱ-|/|kⁱ-| stem verbs

| | PRS | PST | IMP |
|---------------|----------------------|---------------------|------------------------------------|
| CoT | ⁿ giogs | bkiags | k ^h iog |
| expected Cone | /ndzu ^L / | */ɕɑ ^H / | */tɕ ^h u ^H / |
| attested Cone | /ndzu ^L / | /tɕɑ ^H / | /tɕu ^H / |

The conjugation of this kind of verbs has been remodeled after |dz-| ~ |tɕ-| stems, where /tɕ-| is found in the past and imperative stems.

5.2.2.3 Prenasalized/fricative

A few verbs in CoT had an alternation between prenasalized affricates in the present stem and voiced fricatives in the other stems. Two patterns were observed, one with dentals and the other with alveolo-palatals.

Table 133: CoT verb paradigms with affricate/fricative alternation

| | PRS | PST | FUT | IMP |
|-------|-------------------|----------------|----------------|----------------|
| seize | ⁿ dzin | bzuj < *bdzuj | gzuj < *gdzuj | zuj < *dzuj |
| put | ⁿ dzog | bzag < *bdzak | gzag < *gdzak | zog < *dzak-o |

As Li (1933), Coblin (1976) and Jacques (2012a) point out, the fricatives here come from voiced affricates in proto-Tibetan. Note that the affricates |dz-| and |dz-| never appear in word-initial position (except in loanwords and expressives) or after |g-| and |b-|. In fact, the voiced fricatives |z-| and |z-| are in quasi-complementary distribution with the corresponding voiced affricates, and should be reconstructed as affricates²² since they correspond to voiced/prenasalized affricates in Rgyalrong, Lolo-Burmese and other languages, as the following table illustrates:

Table 134: Comparison of Tibetan voiced fricatives to Rgyalrong and LB affricates

| | Tibetan | Japhug Rgyalrong | Lolo-Burmese |
|---------------|----------------|---------------------------------------|---|
| eat | za < *dza | <i>ndza</i> | *dza ^L (Bradley 1979) |
| bridge | zam < *dzam | <i>ndzom</i> < *ndzam | *dzam ^H |
| dew | zil < *dzil | | *ʔ-dzi ^L (Matisoff 2003:187) |
| burning smell | gzob < *kdzop | <i>yndzɿβ</i> < *kndzɿp ²³ | |

There were no voiced fricatives in proto-Tibetan. The expected paradigms in Cone should be:

Table 135: Expected vs. attested paradigm of voiced fricative stem verbs

| | PRS | PS | IMP |
|---------------|----------------------|--------------------|---------------------|
| CoT | ʰdz- | bz- | z- |
| expected Cone | /ndz- ^L / | /z- ^L / | */s- ^L / |
| attested Cone | /ndz- ^L / | /z- ^L / | /z- ^L / |
| CoT | ⁿ dz- | bz- | z- |
| expected Cone | /ndz- ^L / | /ɣ- ^L / | */x- ^L / |
| attested Cone | /ndz- ^L / | /ɣ- ^L / | /ɣ- ^L / |

²² Of course, |z-| also originates from laterals in words such as |zim| ‘sweet’ < *lim; concerning the palatalization before |i| in Common Tibetan, see [Hill \(to appear\)](#).

²³ This noun meaning ‘burning fire’ is an irregular nominal form of *ndzɿβ* ‘burn’, the anticausative of *tɛɿβ* < *tɛɿp ‘burn TR’

We should find voiceless fricatives with low tone in the imperative forms, as imperative stems were not prefixed in CoT. However, the imperative was renewed in analogy to the past stem.

A third category of prenasalized stop / fricative alternation is found in Cone, but it is unrelated to these CoT alternations. It is in fact a variant of the prenasalized / high tone voiceless alternation. In alternating by-stems, the expected paradigm would be:

Table 136: Expected paradigm of /bⁱ-/ ~ /pⁱ-/ verb stems

| | PRS | PS | IMP |
|---------------|-------------------------------|--------------------|--------------------|
| CoT | ⁿ b ⁱ - | p ^{hi} - | p ^{hi} - |
| expected Cone | /ndz-/ | /ɕ ^h -/ | /ɕ ^h -/ |

This is exactly the paradigm observed for the verb ‘open’, in |ⁿbⁱed|, |p^{hi}e|, |p^{hi}ies|, Cone /ndzer^L/, /ɕ^{herH}/, /ɕ^{erH}/. Although the final /-r/ cannot be explained, the consonantal alternation is entirely regular.

5.2.2.4 Aspirated/unaspirated

This category of verbs had a nasal prefix in the present stem and a |b-| prefix in the past stem. The regular evolution from CoT should be:

Table 137: Expected paradigms of verbs with aspiration alternation in CoT

| PRS | CoT | PST | CoT | IMP | CoT |
|----------------------|---|----------------------|---------------------------|----------------------|--|
| */t ^h -/ | ⁿ t ^h - | */t ^{-H} / | bt- | */t ^h -/ | t ^h - |
| */ts ^h -/ | ⁿ ts ^h - | */ts ^{-H} / | bts- | */ts ^h -/ | ts ^h - |
| */tɕ ^h -/ | ⁿ tɕ ^h - | */tɕ ^{-H} / | btɕ- | */tɕ ^h -/ | tɕ ^h - |
| */tɕ ^h -/ | ⁿ k ^{hi} - , ⁿ k ^{hr} - | */ɕ ^{-H} / | bk ⁱ - , bkr- | */tɕ ^h -/ | k ^{hi} - , k ^{hr} - |
| */k ^h -/ | ⁿ k ^h - | */k ^{-H} / | bk- | */k ^h -/ | k ^h - |

The attested forms are:

Table 138: Attested Cone paradigms of verbs with aspiration alternation in CoT

| | PRS | CoT | PST | CoT | IMP | CoT |
|----|---------------------|---|---------------------|--------------------------------------|---------------------|--|
| 12 | /t ^h -/ | ⁿ t ^h - | /t ^{-H} / | bt- | /t ^{-H} / | t ^h - |
| 13 | /ts ^h -/ | ⁿ ts ^h - | /ts ^{-H} / | bts- | /ts ^{-H} / | |
| 14 | /tɕ ^h -/ | ⁿ tɕ ^h - , ⁿ k ^{hi} - , ⁿ k ^{hr} - | /tɕ ^{-H} / | btɕ- , bk ⁱ - , bkr- | /tɕ ^{-H} / | tɕ ^h - , k ^{hi} - , k ^{hr} - |

Here again, the imperative forms have been entirely renewed. The expected |tɕ^h-| ~ |ɕ^H-| alternation of |kⁱ-| and |kr-| stem verbs has also been levelled out, as illustrated by the paradigm of the verb ‘wash’:

Table 139: The effect of analogy in |kr-| stem verbs

| | PRS | PST | IMP |
|---------------|-----------------------------------|----------------------|------------------------------------|
| CoT | ⁿ k ^h rud | bkrus | k ^h rus |
| expected Cone | /te ^h i ^H / | /ei: ^H / | /te ^h i: ^L / |
| attested Cone | /te ^h i ^H / | /tɛi: ^H / | /tɛi: ^H / |

5.3 Suppletive stems

In the previous sections, we have seen that the verb ‘do’ /ei^L/ was in fact an innovative suppletive verb in Cone. It is not the only suppletive verb in Cone. We also find the following three examples:

Table 140: Suppletive verb paradigms in Cone

| PRS | CoT | PST | CoT | IMP | CoT |
|-----------------------|------------------|-----------------------------------|-------|-----------------------------------|------|
| /ndu: ^L / | ⁿ dug | /de: ^L / | bsdad | /di: ^L / | sdod |
| /ju: ^L / | jon | /pi: ^L / | bud | /x ^h u: ^H / | eog |
| /ndzɔ: ^L / | ⁿ gro | /s ^h u: ^L / | son | /s ^h u: ^L / | son |

The patterns of suppletion observed in these verbs are quite common across Tibetan languages, especially Amdo Tibetan.

5.4 Summary

The analysis of Cone nominal and verbal paradigms offer good examples of analogical leveling, which could be of use for a cross-linguistic study on analogy, since the ancestral stage (Common Tibetan) is well understood, we can determine with a good degree of confidence which forms are inherited and which are innovated.

In the verb system, it is interesting to notice that whenever a verb undergoes analogy, the imperative form is always affected, while the present or past forms may or may not be affected depending on the conjugation class.

6. Vocabulary

Most of the Cone vocabulary originates from CoT, either directly inherited or borrowed from some other Tibetan languages. We find however three categories of words which cannot be directly compared with their CoT or Classical Tibetan equivalent: semantic innovations of standard Tibetan words, words inherited from an CoT dialect distinct from literary CoT, and words without clear Tibetan etymology.

6.1 Semantic innovations

We find in Cone words whose meaning has undergone innovation with regards to their usage in CoT or even Classical Tibetan, and compounds made of well-known Tibetan root but unattested as such in the written language. We provide here a list of the most significant forms:

/dze:^L/ |bzlas| ‘speak, say’. The meaning of the verb |zlo| (past |bzlas|) in Classical Tibetan is ‘repeat, recite’ as in:

- (1) *syags k'iaŋ bzlas-pa bia-ste/ de skad teig gis*
 mantra also recite.PST-NMLZ AUX-CONV DEM instant one ERG
sm'o-ba-r "g'ur-zij zag bdun g'is "te^{hi}-ho/
 mad-NMLZ-DAT change.PRS-CONV day seven ERG die.PRS-ASSERTIVE
 He recites the mantra and that person will instantly go insane and then die within seven days (Siklos 1993:73).

The Tibetan dictionary Zhāng (1985) records the meaning ‘talk’ (as in <gtam zlo.ba> ‘talk’) but it is clearly not the common meaning of |zlo|, |bzlas| in most varieties of Tibetan. Cone however is not isolated in having selected this root as the basic verb ‘say’. Other outlier eastern Tibetan languages also do, as Zhongu (Sun 2003b:823), Baima (Chirkova 2008) and even some Amdo dialects (Jackson T.-S. Sun, p.c.). This could potentially be a common innovation relevant to language subgrouping.

/tʰɔ^Lre:/ ‘tomorrow’ [tʰo.reŋs]. The original meaning of this root, as attested in Classical Tibetan for instance, is ‘dawn’. The semantic change ‘dawn, morning’ > ‘tomorrow’ is well-attested cross-linguistically. The same innovation is found in Zhongu and some Amdo dialects such as Hongyuan (Sun 2003b:836), but not in Baima. This innovation could either be a common innovation of Amdo and Cone, or a parallel development.

/tʂ^ha^Lŋgɔ/ ‘shoulder’. This word goes back to an unattested compound *|p^hrag.mgo|, literally ‘head of shoulder’.

/næk^Lteɑ/ [næχ^Lteɑ^H] ‘wife’. Reconstructed back to CoT, this word would be *|nag.te^hags|, a colorful *bahuvrīhi* whose literal meaning is ‘one who has dark desires’. Compare the standard term |nag.mo| ‘black one’ for ‘woman’.

/sa:^Lŋgɔ/ ‘bald person’. This word can be reconstructed back to Common Tibetan *|zaŋs.mgo|, a *bahuvrīhi* meaning ‘one whose head is (polished like) brass’.

/sə^Lmbəŋe^Hta/ ‘firefly’. A complex compound such as *|srin.ⁿbu.me.ʔ| ‘demon+bug+fire+?’ must be reconstructed here. The etymology of the last syllable is unclear; it could come from CoT |stag|, but could as well derived from the verb |btag| ‘attach.PFV’.

/te^hə^Lrɔ p^hæk^Ltsa:/ [te^hə^Lrɔ^Hp^hæχ^Ltsa:^H] ‘temple’. This puzzling form, if reconstructed back to Common Tibetan, could be *|k^hi.ro.p^hag.ts^haŋ| (the meaning however would be ‘dog corpse and hog den’, which does not really make sense).

/tɔ^Lts^Hr/ ‘this year’. We reconstruct *|do.tshod| here; |do-| is a prefix found in forms like |do.nub| ‘tonight’, |do.zag| ‘these days’ and |ts^Hod| means ‘time’.

/mɔ^Lndzɔ^H:wã:/ [mɔ^Lndzɔ^H:wã:^L] ‘snail’. The syllable /ndzɔ:^L/ (with tonal alternation) clearly reflect the verb |ⁿdzul| ‘go into (a hole)’, probably referring to the snail pulling itself back into its shell. The first syllable /mɔ-/ is however certainly not the negation |mi-|, as it is not entirely clear how this compound is to be analyzed.

/k^Hu:^L/ ‘hurt (it.)’. Two etymologies are possible for this verb, either |ⁿk^Hoŋ| ‘dislike’ or |ⁿk^Hol| ‘boil’. The semantic change from ‘boil’ to ‘hurt’ would be through ‘burn’. As a typological parallel, we can cite |ts^Ha| which means ‘hot’, ‘spicy’ but also ‘hurt’ at the same time. The Taku Tibetan form *k^Hu*: ‘be sore’ appears to be related to this Cone verb, but in Taku the rhyme *-u*: unambiguously comes from |-ol|, a fact which would support the second etymology (Jackson T.S. Sun, p.c.).

6.2 Non-standard proto-forms

The CoT dialect ancestral to Cone was not exactly identical to the literary Old Tibetan language attested in Dunhuang texts and imperial inscriptions, and in the classical language. We sometimes have to reconstruct a proto-form that is a variant of the standard etymon. These words have already been discussed in §4.

As mentioned in §4.1, we find four words with |m-| initial in Classical or Old Tibetan by high tone in Cone, which go back to etyma with a preinitial in proto-Cone:

/jɛ^H/ ‘fire’ *|Cmⁱɛ|, /jɔ^H/ ‘man’ *|Cmⁱɨ|, /jɨ^H/ ‘swallow’ *|Cmⁱid| and /jɨ:^H/ ‘name’ from *|Cmⁱij| with a nasal suffix to explain the nasalization (it could have been |-ma| or |-mo|).

/zõ:^H/ ‘thick’ comes from *|sbrom|, a |-r-| infix variant of standard |sbom|. The function of |-r-| here is unknown.

/mbɔ:^Lwã:/ ‘bee’ comes from *|ⁿbuŋ.ma| with a nasal prefix. The Classical form is |buŋ.ma|.

/ndzer^L/, /ɛ^Her^H/ ‘open’ from *|ⁿbier|, *|p^Hier| rather than the standard form |ⁿbied|, |p^Hie|.

Various other irregular correspondences could be interpreted as a retention from non-standard features of the ancestor of Cone. For instance, /k^Hə^Ls^Hər/ ‘fist’ perhaps points to CoT *|k^Hu.sur| instead of the Classical form |k^Hu.ts^Hur|, /dzæ^L/ ‘rust’ to CoT *|rdza| rather than classical |btsa|. Additional data from other Tibetan languages and literary texts however are needed to confirm these hypotheses.

6.3 Words without clear etymology

Some words in Cone have no clear etymology in literary forms of Tibetan. These includes the following:

Table 141: Problematic Cone etyma and their possible CoT etymologies

| Cone | Meaning | Possible CoT origins |
|---|-----------------------------|---|
| /tɛ ^L p ^h ɔ/ | rooster | * de.p ^h o |
| /dzɑ: ^L mæ/ | young girl | * rg ⁱ {aŋ,al}.ma |
| /æ ^L pɔ/ | baby | * ʔa.po |
| /zj: ^H / | sweep | * s{b,g}r{us,is,il,iŋ} |
| /zi: ^L / | twist fibers to make a rope | * sb ⁱ {us,is,il,iŋ} |
| /pər ^L / | crispy | * bur (perhaps related to bu.ram 'brown sugar') |
| /dzu ^L / | rafter | * {rdz,sg ⁱ ,rg ⁱ }{ib,ug,ub} |
| /dzɑ: ^L / | uterus (of animals) | * {rdz,zl}{aŋ,al,a.ba} |
| /dər ^L / | thick (of liquids) | * {bd,sd}ur |
| /dəC ^L mā:/ [dəm ^L mā:] | broom | * {bd,sd}uC.ma |
| /æ ^H xi/ | piglet | * ʔa.{ge,z}{ig,id,ud} |

Note that none of these words seem to come from Rgyalrongic or Qiang languages; there is no evidence of a ‘Qiangic’ substratum in Cone.

7. The place of Cone among Tibetan languages

It is commonly accepted among Tibetologists such as Sun (2003) that the traditional division between Dbus/Gtsang, Khams and Amdo of the Tibetan languages spoken in the PRC-controlled area of the Tibetan world has limited empirical value. Most of the outlier Eastern dialects, such as Zhongu, Khalong, Chosrje, Thebo, Baima, Cone, ‘Brugchu and others, are not in any way relatable to either Amdo or standard Khams.

Although the general path of tonogenesis and the development of alveolo-palatals fricatives in Cone is quite similar to that of typical Khams dialects such as Sbatang (Gésāng & Gésāng 2002:73-75), these changes are typologically very straightforward and might have occurred several times independently among Tibetan languages. They are therefore of limited relevance to language classification.

The following phonological innovations in Cone, however, are unusual and do not appear to be shared with other dialects:

Table 142: Unusual phonological innovations in Cone

| Sound change | Note |
|--|---|
| spr- , sr- > /s̥ ^H /, sbr- > /z̥ ^H / | Found in Zhongu (Sun 2003b:797), but in that dialect spr- and sr- do not merge. It is not a shared innovation between Cone and Zhongu. However, we do find an identical development in Thebo (Lin, this volume) |
| -Vl(d) , -Vŋ(s) > /-V:/ exclusive merger of -ub(s) , -ib , -ug exclusive merger of -ab(s) , -ad(s) | Also found in Thebo (Lin, this volume) |
| r- metathesis | Found in words such as /ŋæ ^H / rŋga ‘drum’. |

Since sound changes easily spread across language boundaries, they are of limited value to classify languages in general, especially broad changes like tonogenesis. Besides, archaisms (such as the preservation of final |-r|) have no value whatsoever in dialect classification.

On the basis of the unusual sound changes in Table 142, of all the Tibetan languages described up to now, the most promising candidate for a close relationship with Nyingpa Cone is Thebo (Lin, this volume). It shares with Cone the merger of |-ub| and |-ib| as a centralized rounded vowel, the merger of |spr-| and |sr-| as a fricative and the loss of stop in |sbr-|. Moreover, there are some examples of |-ŋ| final rhymes changing to long vowels in Thebo, for instance |sdoŋ| > /du:/ ‘tree’ (Lin this volume, fn.15), especially in the Tshong.ru dialect of Thebo where some nasal-final rhymes sporadically denasalize (Lin, this volume, §3.5.5). It is possible that these sound changes go back to the common ancestor of Cone and Thebo, which would provide support to Tournadre’s (2005) Thebo-Cone grouping.

The most important morphological innovation of Cone is without doubt the formation of the genitive and of the dative, whose complex history has been studied in §5.1.1. If a genitive in *|-b| could be reconstructed in any other Tibetan language, this would be an important argument for subgrouping.

Lexically-specific innovations such as ‘say’ and ‘tomorrow’ (see §6.1) also constitute important evidence for classifying Cone. Other major lexically-specific innovations include the suppletive verbs, in particular ‘do’ (see §5.2.1.2), whose paradigm is unlike anything found in the main dialects.

Any serious attempt at classifying Cone is in any case premature before all minor Tibetan languages of Northern Sichuan and Gansu have been properly described, in particular in terms of verbal morphology. Among the well-described languages, none seem particularly close to Cone.

8. Conclusion

This paper is a first description of the phonology and morphophonology of Cone Tibetan. The historical approach presented in this paper departs from previous approaches to Tibetan historical linguistics in two ways.

First, we provide a detailed and an explicit account of the evolution of the rhyme system of this language from Common Tibetan to modern Cone, in eight main steps (A-G).

Second, we do not just compare Cone verbal forms with Classical Tibetan as reported from the dictionaries. Instead, we project the Old Tibetan forms into Cone phonology using regular sound laws and then determine which forms of the paradigms are inherited and which were renewed.

Although this methodology has been applied to many languages before from Algonquian to Austronesian, it is the first time that a Tibetan dialect is described this way, and it is hoped that a similar methodology can be applied to other varieties.

Tibetan languages have much to contribute to historical linguistics. Cone attests to many sound changes without parallel in Indo-European or Semitic (as presented Kümmel's 2007 survey of sound changes in these families), such as the development of aspirated fricatives (on which see Jacques 2011).

Cone, although not yet moribund, is fluently spoken only in a limited area, and in critical danger of disappearing due to the spread of Chinese. The present paper is only a short introduction to this language, and an in-depth research involving extensive text collection is a task of utmost urgency. Much of the morphology and the syntax of this language still waits to be described in detail. Besides, a dialectal survey of the different varieties of Tibetan spoken in Cone county could be a worthwhile enterprise given their considerable divergence.

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Author Query

- (1) [Sun 2006](#) does not appear to have been cited in the text. Please add citation or delete this reference.
- (2) Please add [Jäschke 1881](#), [Jacques 2004](#), [Hill \(to appear\)](#) to the references.

Appendix

English-Cone Word List

The Cone forms are given in the phonetic, rather than phonological transcription used in the body of the article. Tone is indicated on all syllables, and the non-phonemic distinction between velar and uvular stops is represented. In cases where the Common Tibetan etymon significantly differs from the standard Classical Tibetan orthography, the latter is indicated between <>.

| | |
|--|---|
| a little; /tʃɛːˀL/ | ashes; /tʰeːˀL/ tʰal |
| a while, instant, moment; /ndzɔqˀqɛːˀH/ | ask; /ndzɔˀL/ <i>pst.</i> /tʃiːˀL/ ndri; dris |
| * mgjɔgs.skad | asthma; /tsʰɑːˀL/ ntsʰaŋ |
| about; /tsʰenˀnɛˀL/ | at that time; /tɔˀtiːˀL/ de.dus |
| about; /hærˀtɛɛˀH/ pʰal.tɛˀer | at the side; /ndzãːˀLkʰæˀH/ ngram.kʰa |
| Adam's apple, larynx; /uːˀduˀH/ ʔol.mdud | aunt; /æˀtɛˀɛˀH/ ʔa.tɛˀe |
| add; /nɛːˀH/ <i>conj.</i> /nɛŋˀgəˀH/ gnon | autumn; /tɛŋˀkʰæˀH, sɔqˀqæˀH/ ston.kʰa |
| afternoon; /ɛˀəˀrɔˀH/ pʰji.dro | axe; /tæˀrɛˀH/ sta.re |
| age; /lɔˀtsʰɪˀH/ lo.tsʰod | baby, infant; /æˀpɔˀH/ |
| air; /kʰæˀwɪˀH/ kʰa.dbugs | back; /dzeˀL/ rgjɔb |
| alive; /sɔmˀbɔˀH/ gson.pɔ | back of the neck; /ɲãːˀHtɛˀɔˀkʰɪˀL/ gɲa |
| alkali, soda; /tʰeːˀLkʰəˀH/ tʰalʔ | backbone; /geˀriːˀL/ sgal.rus |
| all; /jɛˀluˀH/ | bad; /ŋɛːˀL/ <i>conj.</i> /ŋɛŋˀgəˀH/ ŋan |
| altitude sickness; /dzæˀduˀH/ rdza.sdug | badger; /tɛɔmˀbæˀH/ grum.pa |
| aluminium; /hæˀjãːˀL/ ha.jaŋ | bald; /sɑːŋˀgɔˀH/ * zɑŋs.mgo |
| amber; /pɪːˀHsʰerˀH/ spos.serʔ spos.ɛelʔ | balustrade; /ræˀkʰorˀH/ ra.nkʰor |
| ancient; /ɲiːˀHwæˀH/ ɲɲɲ | bamboo; /ɲiːˀHwãːˀH/ smiug |
| angle; /sərˀL/ zur | banded onyx; /zəˀ/ gzɪ |
| animal; /sʰɛːˀLtɛˀɛːˀH/ sems.tean | bandit, robber; /tɛæqˀqæˀH/ dzag.pa |
| ankle; /xʰoːˀL/ | bark (v.); /sɪˀL/ <i>conj.</i> /sɔkˀkəˀH/ zug |
| answer; /lɛːˀL ndeˀ/ <i>conj.</i> /ndɛkˀkəˀH/ <i>pst.</i> /tɛˀH/ | barley; /ɲeːˀL/ nas |
| ndebs; btab | basically; /hæŋˀgrːˀL/ |
| ant; /mbəˀL tɛũˀwãːˀL/ nbu.gro.ma | bat; /pʰɑːˀL gæmˀbəˀL/ pʰa.(waŋ).sgam.bu |
| anus; /ɲæˀɣuːˀH/ ʔ.kʰuŋ | be afraid; /ɲɛːˀLkʰæˀH/ ɲen.kʰa |
| appearance; /tsʰəˀLɣæˀH/ tsʰugs.ka | be blind; /xæˀræˀH/ za.ra |
| apple; /liːˀLtɛˀhiˀH/ | be blocked; /ŋgɑˀL/ <i>conj.</i> /ŋgæqˀqəˀH/ ngag |
| arm; /pʰuːˀHwæˀH/ dpuŋ | be cut; /tɛˀeˀH/ <i>conj.</i> /tɛˀɛkˀkəˀH/ tɛˀad |
| armpit; /tɛˀɛːˀLkʰuːˀH/ mtɛˀan.kʰuŋ | be drunk; /zəˀL/ bzɪ |
| arrive; /tʰɔːˀL/ <i>conj.</i> /tʰɔŋˀLgəˀH/ tʰon | be foggy; /mækˀkæˀH tʰuˀH/ <i>conj.</i> /tʰəkˀkəˀH/ |
| arrogant; /ɲæˀLdzærˀH/ ɲa.rgjal | ntʰibs |
| arrow; /ndæˀL/ mda | be full; /dzaˀL/ rgjagsʔ |

- be hungry; /tu^H/ *conj.* /tɔq^Hqə^H/ |ltogs|
 be in debt; /tɛ^he^H/ *conj.* /tɛ^hɛk^Lkə^H/ |tɛ^had|
 be jealous, envy; /tʂ^hɑ^Ltu^H/ |p^hrag.dog|
 be pregnant; /xɑ:^Lɣi:^H tɛ^hɑ^H/ |tɛ^hags|
 be shy, bashful; /ŋɔ^Lts^hæ^H/ *conj.*
 /ŋɔ^Hts^hæ^Lɣə^H/ |ŋo.ts^ha|
 be thirsty; /kɔ:^H/ *conj.* /kɔŋ^Hgə^H/ |skom|
 be tired; /tɛ^he^H/ *conj.* /tɛ^hɛk^Lkə^H/ |tɛ^had|
 be wounded; /me:^H/ |rmas|
 beam; /di:^Lwā:^H/ |gdɔŋ|?
 beam of a steelyard; /dzæ^Ljo:^L/ |rgja.ju.ba|
 bean; /ʂɛ^Hmmæ^H/ |sran|
 bear; /tɔ:^L/ |dom|
 bear (brown); /tʂi:^Lmɔ:^H/ |dred moŋ|
 beastings; /tʂə^L/ |spril|
 beat (at a game); /p^hā:^L/ *imp.* /p^hɔ:^L/ |p^ham|
 beautiful; /jæq^Lqə^H/ *conj.* /jæq^Lqə^H/ |jag.po|
 because; /ti:^Lɛæq^Hqə^L/
 bee; /mbu:^Lwā:^H/ *|nbuŋ.ba|
 beg for money; /tsɑ:^H/ |bslan|
 beggar; /pa:^Hwu:^H/ |spran.po|
 believe; /lɔ:^L/ *conj.* /lɔŋ^Lgə^H/ |brlom|
 bell; /tɛ^hɔ^Lli:^H/
 bell; /tʂə^Llu:^L si:^H/ |sgril.bu|
 bellows; /k^hɔ:^Ltɛe:^H/
 belly; /p^ho:^L/ |p^ho.ba|
 belly (sheep, ox); /tɛɛ^Lpə^H/
 bellyband; /lɔ^H/ |glo|
 bellyworm; /p^ho:^Lm^Lbə^H/ |p^ho.(ba).nbu|
 below; /jɔ^Lɛæ^H/ |fiog|
 below; /ŋæ^Lju^H/ |mŋa.fiog|
 belt, sash; /tɛ^hɛ^Lmæ^H/ |ntɛ^haŋ.ma|
 bent; /gə^L, gə^Lrə^H/ |sgur|
 big; /tɛ^hɛ^H, tɛ^hæ^Hŋə^L/ |tɛ^he|
 bigger; /tɛɛ^Ltɛ^hɛ^H/ |dze.tɛ^he|
 birch; /tæq^Hqə^H/ |stag.pa|
 bird, fowl; /ɛæ^L/ |bja|
 bit (bridle); /k^hæ^Lmor^H/ |k^ha.mor|
 bitch; /tɛ^hə^Lwɔ:^L/ |k^hi.mo|
 bite; /s^hɔ^H tɛ^H/ |so btab|
 bitter; /k^hæ^H/ |k^ha|
 black; /næq^Lqə^H/ |nag.po|
 blacksmith; /ŋgæ^Lræ^H/ |mgar.ba|
 bladder; /tɛ^hə^Lgɑ:^L/ |tɛ^hu.lgaŋ|
 blink, wink; /ɲi^H de^L/ *conj.* /dɛk^Lkə^H/ |rdeb|?
 block; /ŋgu^L/ *conj.* /ŋgɔq^Lqə^H/ *pst.* /ka^H/ *imp.*
 /ku^H/ |ngogs|
 blood; /tɛ^hɑ^H/ |k^hrag|
 blood vessel; /tɛ^hæ^Lχtsæ^H/ |k^hrag.rtsa|
 blossom; /mɛ^Lt^hu^H ŋge^L/ *conj.* /ŋgɛk^Lkə^H/ *pst.*
 /ke^L/ |gad (dgod, bgad)|
 blow (instrument); /mbi^L/ *conj.* /mbək^Lkə^H/ *pst.*
 /pi:^L/ |nbud; bus|
 blow (wind); /lu:^H tɛɑ:^L/
 blue; /ŋɔ^Hŋŋɔ^H/ |sŋo|
 blunt; /mə^Lnɔ^H/
 board; /dɔ^Llɪ^H/ |rdɔ.leb|
 board game; /ndzi^L/ |nbrel|?
 boat; /ts^hɔ^Ltʂə^H/ |mts^ho.gru|
 body; /li:^Lp^hu:^H/ |lus.p^huŋ|
 boil (water); /də^L/ |gdu|
 boiled water; /tɛ^hə^Lgrɪ^H/ |tɛ^hu.rgod|
 bold; /p^hɔ^Lts^hr^H tɛɛ:^L/ |p^hod.ts^hod.tean|?
 bone; /ri:^Lpæ^H/ |rus.pa|
 book; /pɛ^Htɛ^hæ^H/ |dpe.tɛ^ha|
 borrow (money); /ɛə^H/ *pst.* /ɛi:^H/ |skji; bskjiis|
 borrow (tools); /jær^H/ *imp.* /jor^H/ |gjar; gjor|
 botfly larva; /ts^hɑ^H/
 bottle; /hɛ^Llɔ^H/
 bow; /ndæ^Lɣə^H/ |mda.gzu|
 bowel; /nā:^Ltɛ^hɔ^H/ |nan.tɛ^ha|?
 bowl; /tɛæ^Lnɛ^H/ |tea.ne|
 box; /gæm^Lbə^H/ |sgam.bu|
 bracelet; /də^Lɣə^H/ |gdub|
 branch; /lɔ^Ltɛ^hɔ^H/ |lo.??|
 bread; /kɔ^Lrɛ^H/
 break; /tɛɑ^H/ *conj.* /tɛæq^Hqə^H/ *imp.* /tɛu^H/
 |bteag|
 break (it.); /tɛ^hɑ^H/ *conj.* /tɛ^hæq^Lqə^H/ |tɛ^hag|
 breast; /nɔ^Lwā:^H/ |nu.ma|

| | |
|---|---|
| breathe; /hɛːkæʰ/ he.ga | nded, ded |
| brick; /tɛã:mʰbɑʰ/ | cattle shed, barn; /ʌeːː/ lʰas |
| bridge; /sãmːbæʰ/ zam.pa | cause to change; /dzɔɛː/ sgʷiur |
| bridle; /ʃeʰ/ srab | cause to melt; /ɣɔːː/ <i>pst.</i> /ɣiːː/ gzus |
| bright; /seːʰ/ gsal | cause to move; /gʷaːː/ sgull |
| broom; /dɔːːmmãːʰ/ | cause to turn; /korʰ/ skor |
| brother (elder); /pĩːʰjæʰ/ spun.skʷa | cave; /sʰæːːtõːʰ/ sa.don |
| brush; /ɕuːː/ <i>conj.</i> /ɕækːkəʰ/ bʷug | center; /pærːːtsʰãːʰ/ bar.mtsʰams |
| brush lightly; /ʃuʰ/ <i>conj.</i> /ʃækːkəʰ/ srubs | chaff; /bɔːːtsʰɛʰ/ sbun ? |
| bucket; /soːː/ zom | change; /dzɛːː/ <i>pst.</i> /dzɪːː/ rdze, brdzes |
| bucket (little); /ziːː/ zefu | change; /ndzɔɛːː/ ngʷiur |
| bullock; /laːːŋəʰ/ glan | chappel; /tɛʰɔːːkɑːʰ/ mteʰod kʰan |
| bully; /pɔːː tsaːːʰ/ spo.btsan | chase after; /dæːː/ <i>pst.</i> /deːː/ bdas |
| bundle; /uʰ wæʰ/ | cheap, inexpensive; /kuːː tsæʰɣəʰ/ goŋ.sla |
| bundle; /kʰərːːtsæʰ/ nkʰur ? | cheek; /ndzæmːbæʰ/ ngram.pa |
| burn (the hand); /ʃæqːqəʰ/ sreg | cheese; /tɛʰəːːræʰ/ pʰu.ra |
| burn (wood); /ʃɑːː/ <i>conj.</i> /ʃæqːqəʰ/ <i>imp.</i> /ʃuʰ/ sreg | chest; /tʃãːːkʰeːʰ/ braŋ.kʰa |
| burn incense sticks; /pĩːː duːː/ <i>conj.</i> /dækːkəʰ/ spos | chest, cupboard; /tɛʰiːːɣəʰ/ |
| bury; /beːː/ sbas | chew; /deːː/ <i>conj.</i> /dɛkːkəʰ/ ldad |
| butcher; /xʰæmːbæʰ/ gɕan.pa | chicken; /tɛːːwuːː/ de.bo |
| butcher (v.); /seʰ/ <i>conj.</i> /sekːkəʰ/ bsad | chieftain; /dzæːːruːː/ rgjal.po |
| butter; /mæɾː/ mar | child; /xaːːɣiːʰ/ |
| butterfly; /xʰæːːwõːːː læːːdzɛːː/ ɕa.mo.ʔ | chimney; /tɔːːlɪːʰ/ dud.ʔ ; /kærːːkuːːʰ/ skar.guŋ |
| buttermilk; /tæːːræʰ/ da.ra | Chinese; /dzæːː/ rgja |
| buttocks; /ɕəŋːgɔʰ/ dpʷi.mgo | choose, select; /ndẽːː/ <i>conj.</i> /ndɛŋːgəʰ/ ndems |
| button; /zɔːːɣəʰ/ gzog | chop (firewood); /ŋgærːː/ <i>pst.</i> /kærʰ/ <i>imp.</i> /korʰ/ dgar; bkar |
| buy; /ɲɔːː/ <i>pst.</i> /ɲɪːː/ ɲos | chop down (trees); /tuʰ/ <i>conj.</i> /təkːkəʰ/ gtub |
| cabbage; /lɔːːkærʰ/ lo.dkar | chopsticks; /tʰərːːmaːʰ/ tʰur.ma |
| calf; /zəpːpæʰ/ bʷi.in.pa ? | claws; /derːːmɔʰ/ sder.mo |
| callus; /tʃʰɔːːːlɔʰ/ | clay; /sʰɑːːmærʰ/ sa.dmar |
| camel; /ŋæːːwõːːʰ/ rŋa.mon | clean; /tsaːːwãːːʰ/ <i>conj.</i> /tsaːːɣəʰ/ gtsan |
| capital; /mæɾːːtsæʰ/ ma.rtsa | clear; /tʰɑːː/ |
| carpenter; /zuːː/ bzɔ.(ba) | clearly (know); /taːːːmæʰ/ danʃ <dʷanʃ> |
| castrate; /ɕæːː (ɕiːː)/ | cliff; /tʃɑːː/ brag |
| cat; /æːːlɔʰ/ * a.lu | close (the door); /tẽːːʰ/ <i>conj.</i> /tɛŋːgəʰ/ gtan ? |
| catch fire; / (ɲɛʰ) xʰorʰ (kəːː tʰeːːː) / <i>conj.</i> /xʰorːːkəʰ/ ɕor; nteʰor | close, near; /ɲɛːː/ ɲɛ |
| catch up; /ndɪːː/ <i>conj.</i> /ndɛkːkəʰ/ <i>imp.</i> /tɪːː/ | cloth; /reːː/ ras |

- clothing; /ts^hə^Llɛ:^L/
 cloud; /sɿ:^H |sprin|
 coal; /dɔ^Ls^ho:^L |rdo.sol|
 coarse; /s^he:^L |^hral|
 cobble stone; /tɛ^hə^Ldɔ^H |tɛ^hu.rdo|
 cock; /tɛ^Lp^hɔ^H/
 coil; /ei:^H |dkris|
 cold; /tɛ^hæq^Lqæ^H |nk^hiags.pa|
 cold; /si:^H |bsil|
 cold (catch a); /tɛ^hæm^Lbæ^H |tɛ^ham pa|
 collapse; /di:^L conj. /dæk^Lkə^H |rdibs|
 collar; /kɔ^Lŋæ^H |gɔŋ.ba|
 color; /ndɔ^Lkæ^H |mdog|
 color; /ndu:^L |mdog|
 colt; /ti:^Ltɕ^hu^H |rte^hu.p^hrug|
 comb; /xe^H conj. /xek^Hkə^H *|bead|
 comb (sheep hair); /s^he^H, s^hek^Lkə^H |gsed|
 come; /ju:^L pst. /pi:^L imp. /x^hu^H |jɔŋ; bud;
 ɛog|
 comet; /kær^Hndæ^H |skar.mda|
 compensate; /ndze:^L |ndzal|
 competition; /ndzɛ:^Ldər^H |ngran.sdur|
 concave; /kɔk^Lkə^H/
 concave; /tu:^Ltu:^L |dɔŋ|
 connect; /t^hi^H conj. /t^hək^Lkə^H |mt^hud|
 cook, boil; /ts^hi^H conj. /ts^hek^Lkə^H pst. /tsi:^H/
 |nts^hod; btsos|
 cooked, ripe; /ts^hi:^L |ts^hos|
 copper; /sɑ:^Lmæ^H |zɑŋs.ma|
 copula; /jɿ:^L |jin|
 copula; /rɪ:^L |red|
 coral; /ɛə^Lrə^H |p^hi ru|
 corpse; /p^hu:^L |p^huŋ|
 corpse (animal); /rɔ:^L |ro|
 correct; /we:^L, /ndzək^Lkə^H |n^hgrig|
 cotton; /ɛ^Hse^H |srin|
 cough; /lə:^L |lu|
 count; /tsə^H conj. /tsə^Hɣə^H pst. /tsi:^H |rtsis|
 country; /ju:^L |jul|
 country; /dzæ^Lk^hɑ^H |rgjal.k^hab|
- courage; /p^hɛp^Lpæ^H |p^hod.pa|
 courtyard; /kæ^Lt^hɑ^H/
 cover; /ŋge:^L conj. /ŋgek^Lkə^H pst. /ke^H/
 |ngebs; bkab|
 cow; /ndzɔ:^L |mdzo.mo|
 crack open; /k^hæ^H ɛ^her^H |k^ha p^hie|
 crawl; /nər:^L |snur|?
 crisp; /pər^L, pə^Lrə^H *|bur|
 crossroads; /ɣən^Ldə^H |bzi.mdo|
 crow; /k^hæ^Htæ^H |k^hwa.ta|
 crowded; /ts^həŋ^Lk^hə^H |nts^haŋ.k^ha|
 cry; /ŋə:^L pst. /ŋi:^L |ŋu|
 cuckoo; /kət^Htə^Hwã:^H/
 cultivate; /nde:^L conj. /ndek^Lkə^H pst. /te^H/
 |ndebs; btab|
 curd; /xɔ:^L |zɔ|
 cure; /mɛ:^Htɛ:^H (ɛi:^L, ɛe:^L) |sman.bteos|
 cut (rope); /tɛe:^H conj. /tɛek^Hkə^H |btead|
 cut up; /tse:^H conj. /tsek^Hkə^H |gtsab|
 cut, mow; /ndzɑ:^L conj. /ndzæq^Lqə^H pst.
 /ɕɑ:^L imp. /ɕu:^L |nbreg|
 cutting board; /x^hæ^Ll^h |ɛa.leb|
 cypress; /x^hək^Lkə^H |ɛug.pa|
 dance (v.); /ɕɔ^Ltɛ^hu:^L |bro.mtɛ^hɔŋ|
 dare; /p^hɛp^Lpæ^H (ɛ^hɿjɪ:^L) |p^hod.pa (ʔe.jod)|
 dawn; /nã:^Llɑ:^Hk^hæ^L |nam.laŋs.k^ha|
 dawn; /nã:^L s^hɑ:^L |saŋs|
 day after tomorrow; /nã:^Hni:^H |gnɑŋs.jin|
 day before yesterday; /k^he:^H nəm^Lbær^L/
 |k^has.jin.ka|
 daytime; /nəŋ^Lk^hær^H |jin.dkar|
 deaf; /wɔ:^Lm^Lbæ^H |fion.pa|
 debt; /tɔ:^L |dom|
 deceive; /ŋɔ:^L kor^H |mgo.skor|
 deceive; /ŋɔ:^L ju^H conj. /jɔq^Hqə^H |gjogs|
 decide; /t^hæ^Lɕtɛe^H |t^hag.btead|
 deep; /ts^hɔ^H |mts^hɔ|?
 deer; /x^hɑ:^L |ɛa.ba| <ɛ^wa.ba>
 demon; /di:^L |bdud|
 demon; /t^he:^Lrã:^H pi:^Hdĩ:^H |t^hɛ^hu.raŋ spun bdun|

- dew; /si:^L wæ^H/ |zil.ba|
 dhole; /p^hær^Lwæ^H/ |ŋp^har.ba|
 diarrhea (suffer from); /k^hɔq^Lqæ^H (nde^L)/ |ded|
 die; /x^hə^H/ |ei|
 difficult, hard; /kæ^Hɣə^H/ |dka|
 dig, carve; /kɔ^H/ *pst.* /ki:^H/ |rko; brkos|
 dike, dam; /te^hə^Lra^H/ |te^hu.rags|
 diligent; /du:^Lri:^L tɛē:^L/|
 dimple; /dzəŋ^Lk^hu:^H/ |ndzum.k^huŋ|
 disappointed; /k^hɔ^Hte^he^H/ |mk^ho.te^had|
 discuss; /tɛ:^Lk^hæ^H/ |gros.k^ha|
 disease; /ne^L/ |nad|
 divination; /mɔ^L/ |mo|
 dizzy; /ŋgɔ^L ji^H k^hor^H/ |mgo nk^hor|
 do; /ɛi:^L/ *conj.* /ɛək^Lkə^H/ *pst.* /ɛe:^L/ *imp.* /ɛi:^L/
 |bied; bⁱas; bⁱos|
 do, make; /le:^L/ |las|
 doctor; /mē:^Lm^hbæ^H/ |sman.pa|
 dog; /te^hə^Lɣə^H/ |k^hij|
 dog (male); /p^hɔ^Lte^hə^H/ |p^ho.k^hij|
 door; /gɔ^Lk^hæ^H/ |sgo.k^ha| ; /gɔ^L/ |sgo|
 door curtain; /gɔ^Ljo:^H/ |sgo.jol|
 dove; /p^hə^Lɛ^hē:^H/ |p^huɟ|?
 doze off; /tɛɔ^Hji^H (dzɛ^Lnnə^L)/ |rgⁱab|
 dragon; /ndzɔ^L/ |ŋbrug|
 dream (n.); /ɲə^Llā:^L/ |rmi.lam|
 dream (v.); /ɲə^Llā:^L ɲə^L/ *pst.* /ɲi:^L/ |rmi|
 dregs; /ɲi^Hmmæ^H/ |sɲigs.ma|
 drill; /mbu^L/ *conj.* /mbək^Lkə^H/ *pst.* /pə^H/ *imp.*
 /pə^H/ |ŋbigs; p^huɟ|
 drink; /t^hu:^L/ |nt^huŋ|
 drum; /ɲær^H/ |rɲa|
 dry; /kæm^hbɔ^H/ *conj.* /kæŋ^Hgə^H/ |skam|
 dry land; /t^hɛm^Lbæ^H/ |t^han.pa|
 dung; /tɛe:^L/ |ltei.ba|
 durable, calm; /te^hmmə^H/ *conj.* /teŋ^Hgə^H/
 |brtan|
 dust; /s^hæ^Ldu:^H/ |sa.rdul|
 dye; /ki:^H/ *conj.* /kək^hkə^H/ *pst.* /ki:^H/ |skud;
 bskus|
 eagle; /la^H/ |glag|
 ear; /næn^Hte^hu:^H/ |rna.mte^hog|
 early; /ɲæ^Ls^hi:^H/ |sɲa.sos|
 earrings; /æ^Llu:^L/ |ʔa.loŋ|
 ears of barley; /tɛæ^Lwā:^H/ |gra.ma|
 earth; /s^hæ^Ldzə^H/ |sa.rɟu|
 earthen jar; /æŋ^Hgɔ^H/ *|a.mgo|
 earthquake; /s^hæŋ^Lgu:^L/ |sa.ŋgul|
 earthworm; /mbə^Lte^hu:^H/ *|ŋbu.nk^hog|
 earwax; /nā:^Hpa^H/ |rna.spags|
 east; /x^hær^H/ |ɛar|
 easy; /tsæ^H/ |sla|
 eat; /sæ^L/ *pst.* /sɪ:^L/ *imp.* /sɔ^L / |za; zos; zo|
 eat; /yi:^L/ |gzɛs|
 egg; /gæ^Lwā:^H/ |sgo.ŋa|
 eight; /dze^L/ |brɟiad|
 eighteen; /tɛɔ^Ldze^H/ |bteo.brgiad|
 eighth; /dzɛp^Lpæ^H/ |brɟiad.pa|
 eighth month; /dzɛp^Lpə^H nā:^L/
 |brɟiad.pa.nam|
 elbow; /teə^Lt^hi:^H/ |gru.mt^hil|
 elephant; /lā:^Hwɔ^hte^hi:^L/ |glan.po.te^he|
 eleven; /tɛə^Ltsi^H/|
 eleventh month; /lu^Ldzæ^H/ |lug.zla|
 empty; /tu:^Hwæ^H/ |stɔŋ.ba|
 endure; /ʃē:^H/ |bsran|
 enemy; /dzæ^Lwu:^H/ |dgra.bo|
 enough; /nda:^L/ |ndaŋ|
 enter; /nā:^L x^hu:^H/ |naŋ.ɛog|
 evening; /nu^Lmmə^H/ |nub.mo|
 everybody; /gō:^Lwā:^L/|
 evil; /s^he^Lnnā^H/ |sems.nag|
 except; /mbe^L, mbək^Lkə^H/ |ŋbab|?
 excrement; /tɛæq^Hqæ^H/ |skiag.ka|
 exist; /jɪ:^L/ *conj.* /jek^Lkə^H/ |jod|
 expensive; /ku:^L t^hə^Lɣə^H/ |gɔŋ.mt^ho|
 eye; /ɲi:^H/ |dmⁱɟ|
 eyebrow; /ɲi:^Hdzə^H/ |dmⁱɟ.rdzɪ|
 eyelash; /dɛ^Ldzə^H/ |ldebs.rdzɪ|
 eyelid; /ɲi:^Hpa^H/ |mig.lpags|

- face; /ŋɔː˥/ |ŋɔ|
 fall; /fɥː˥/ |fʰuŋ|
 fall (rain); /nãː˥ pe˥/
 fall over; /lu˥/ *conj.* /lɔq˥qə˥/ |log|
 falling rock; /zɛ˥dɔ˥/ |ʔ.rdo|
 familiar; /dziː˥ lɔː˥/ *conj.* /lɔŋ˥gə˥/ |rgʷus.lon|
 family; /tsʰən˥tsʰɑː˥/ |kʰim.tsʰaŋ|
 famous; /tɛɑː˥/ |grag|
 fan (v.); /fɥː˥dza˥/ |rluŋ.rgʷag|
 fang; /tɛ˥e˥/ |mtɛ˥e.ba|
 far; /dzaː˥/ |rgʷaŋ|
 far away; /tʰæ˥rɪ˥/ |tʰag.rɪŋ|
 farmer; /rɔː˥wə˥/ |roŋ.ba|
 fart; /ɛ˥ɛ˥ ta˥/ |pʰien.btəŋ|
 fart; /ɛ˥ɛ˥/ |pʰien|
 fasten (a belt); /dãː˥/ *conj.* /dæŋ˥gə˥/ *imp.*
 /dɔː˥/ |bsdams|
 fat; /tsʰom˥bɔ˥/ *conj.* /tsʰɔ˥ɣə˥/ |tsʰo|
 fat person; /tsʰom˥bɔ˥/ |tsʰon.po|
 fate; /le˥/ |las|
 father; /æ˥bæ˥/ |ʔa.pʰa|
 father's married sister; /æ˥dæ˥/|
 fathom; /xær˥tɛi˥/|
 fear; /ɛɑ˥/ *conj.* /ɛæq˥qə˥/ *imp.* /eu˥/ |skrag|
 feather; /ɛæ˥pə˥/ |bʷa.spu|
 feel relieved; /sʰɛ˥˥de˥/ |sems.bde|
 felt; /tɛ˥/ |stan|
 fence; /ra˥/ |ra.ba|
 fertile soil; /sʰæ˥˥næq˥qə˥/ |sa.nag|
 field; /tɛ˥ə˥xɪ˥/ |tɛ˥u.ziŋ|
 fifteen; /tɛɔ˥ŋə˥/ |bteo.lŋa|
 fifth; /ŋə˥˥wə˥/ |lŋa.ba|
 fifth month; /ŋə˥˥wu˥˥ nãː˥/ |lŋa.ba.nam|
 fight; /dza˥ ri˥/ |rgʷag.res|
 fill (a bowl with rice); /fɥː˥/ *conj.* /læk˥kə˥/|
 |blugs|
 fill up; /ka˥/ *imp.* /ku˥/ |skaŋ|
 filled up; /ka˥/ |gan|
 filter; /tsʰɑ˥/ *conj.* /tsʰæq˥qə˥/ *pst.* /tsʰu˥/|
 |ntsʰag|
- finally; /ndzɔ˥ di˥nə˥/ |mdzug.bsdu.sni|
 fine, in small particles; /xu˥/ *conj.* /xək˥kə˥/|
 |zib|
 finger; /ndzə˥ɣə˥/ |mdzub.gu|
 fire; /ŋɛ˥/ |me|
 firefly; /səm˥bə˥ ɲɛ˥tə˥/ |(srin).nbu.me.ʔ|
 fireplace; /tʰɛ˥gu˥/ |tʰab|ʔ|
 firetongs; /ŋɛ˥tʰər˥/ |me.tʰur|
 first; /tãː˥wɔ˥/ |daŋ.po|
 first lunar month; /tɛək˥kə˥/ |gteig.pa|
 fish; /ɲæ˥/ |ɲa|
 fishing hook; /ɲæ˥kʰe˥/ |ɲa.kʰab|
 fishing line; /ɲæ˥ki˥/ |ɲa.skud|
 fishing net; /ɲæ˥tɕɑ˥/ |ɲa.dra.ba|
 fissure; /ke˥˥kʰæ˥/ |gas.kʰa|
 fist; /kʰə˥sʰər˥/ |kʰu.tsʰur|
 five; /ŋə˥/ |lŋa|
 flag; /tær˥tɛ˥æ˥/ |dar.tɛ˥a|
 flail; /lɛ˥˥gə˥/|
 flame; /ɲɛ˥tɛ˥/ |me.rtse|
 flat; /le˥lɪ˥/ |le.leb|
 flea; /dze˥/ |ldzi.ba|
 flint; /ɲɛ˥tɛ˥æ˥/ |me.tɛ˥a|
 float; /kʰər˥/ |nkʰur|
 flood; /tɛ˥ə˥ lu˥/ |tɛ˥u.log|
 floor; /kɔ˥tɛ˥e˥/ |go.tɛ˥asʔ|
 floor; /tsɑ˥/ |rtseg|
 flour; /ɛ˥e˥/ |pʰie|
 flow; /ɣər˥/ |bzur|
 flower; /me˥tʰu˥/ |me.tog|
 flower (sp.); /sʰer˥ tɛ˥/ |ser.tean|
 flute; /nãː˥li˥/|
 fly (v.); /pʰər˥/ |npʰur|
 fly (n.); /mbə˥nã˥/ |nbu.nag|
 fly (n.); /zɑ˥/ |sbran|
 foam; /tɛ˥ə˥gɑ˥/ |tɛ˥u.lgan|
 fog; /mæk˥kə˥/ |smug.pa|
 fold up (a quilt); /trɪ˥/ *conj.* /tɛk˥kə˥/ |lɛb|
 food; /sæ˥wã˥/ |za.ma|
 foot; /kæ˥wə˥/ |rkaŋ.ba|

foot of a mountain; /rən^Lde^H/ |ri.ndabs|
 for example; /per^Hnæ^L/ |dper.na|
 forefinger; /dan^Ldzu^H/ |ldag.mdzub|
 forehead; /t^hɛp^Lpæ^H/ |t^hod.pa|
 forest; /nã^L/ |nags|
 forge; /tɛa^H du:^L/ |rdun|
 forget; /dze^L/ *conj.* /dzɛk^Lkə^H/ |brdzɛd|
 form (as of frost); /pe^L ɣa^L/ |bad bʒag|
 fortune, luck; /lɜ:^Htæ^H/ |rluŋ.rta|
 four; /ɣə^L/ |bzɪ|
 fourteen; /tɛu^Lɣə^H/ |btɛu.bzɪ|
 fourth; /ɣə^Lwæ^H/ |bzɪ.ba|
 fox; /wæ^L/ |wa|
 freeze; /tær^L k^hi^H/ |dar.ʔ|
 fresh; /sær^Hwæ^H/ |gsar.ba|
 friend; /rɔq^Lqə^H/ |rogs.po|
 frog; /be:^Lwæ^H/ |sbal.pa|
 front; /ŋə^Hs^hɔ^H/ |sɲun.so|
 front teeth; /tæ^Hs^hɔ^H/ |rta.so|
 frost; /pe^L/ |bad|
 fruit; /s^hi:^Lt^hu^H/ |sil.tog|
 gadfly; /x^hæ^Lzɑ:^H/ |ɛa.sbran|
 gallbladder; /tʂ^hi:^Lwæ^H/ |mk^hris.pa|
 gamble; /ŋɣu^L/ *conj.* /ŋgək^Lkə^H/ *pst.* /ku^H/
 |ŋgugs|?
 garbage; /kɔ^Lli^H/ |go.lud|
 garlic; /gɔq^Lqə^H/ |sgog.pa|
 gem; /ter^Hdɔ^H/ |gter.rdo|
 generous; /tɛ^hɛ^Lt^Lta^H/ |tɛ^he.rtags|
 ghost; /ndzɛ^L/ |ndre|
 ginger; /tɛæ^Hgæ^H/ |sk^ha.sga|
 give a name; /ɲi:^H ndu^L/ *conj.* /ndɔq^Lqə^H/ *pst.*
 /ta^H/ *imp.* /tu^H/ |miŋ.ndog|
 give birth to; /ɛɛ^H/ *conj.* /ɛɛ^Hɣə^H/ *pst.* /ɛr:^H/
 |beos|
 given name; /ɲi:^H/ |miŋ|
 glasses; /ɲi:^Hx^her^H/ |mig.ɛel|
 glove; /la^Lgɔ^H/ |lag.mgo|
 gnaw; /mər^H/ |rmur|
 go; /ndzɔ^L/ *imp.* /s^hu:^L/ |ŋgro; bud; soŋ|

go out; /gɔ^L mbi^L/ *conj.* /mbək^Lkə^H/ *pst.* /pi:^L/
 |sgo.nbud|
 goat; /ræ^L/ |ra|
 god; /læ^H/ |l^ha|
 gold; /ser^H/ |gser|
 good; /zɑ:^L/ |bʒaŋ|
 goose; /ŋã:^Lwæ^H/ |ŋaŋ.ba|
 grain; /ndzə^Lri^H/ |nbru.rigs|
 grandfather; /æ^Lbæ^H ge:^Lpə^H/ |ʔa.p^ha.rgas.po|
 grandmother; /æ^Lmæ^H ge:^Lmɔ^H/
 |ʔa.ma.rgas.mo|
 grape; /gən^Ldzɔ:^L/ |rgun.nbrum|
 grass; /tsæ^H/ |rts^wa|
 grasshopper; /jĩ:^L ts^hæ^hmæ^L/
 green; /dzã:^Lkə^H/ |ldzaŋ.ku|
 grind; /t^hɑ^H/ *conj.* /t^hæq^Lqə^H/ *imp.* /t^hu^H/ |nt^hag|
 ground; /s^hɑ:^L/ |sa.(ba)|
 growl; /tɛa^L/ *conj.* /tɛæq^Lqə^H/ |grags|
 guess; /de^Lwæ^H lɛ:^Lri:^H/ *|lde.ba.len.res|
 guest; /ndzɜ:^Lwæ^H/ |ŋgrul.ba|
 gum; /s^hɔ^Lɲr:^H/ |so.rɲil|
 gun; /pu:^L/ |bofiu|
 gunpowder; /mɛ:^hn^hdze:^H/ |sman.rdzas|
 gut; /dzə^Lwã:^H/ |rgju.ma|
 habit; /ndzɔ^Llɜ^H ndə^Llɜ^H/
 |ŋgro.lugs.ndug.lugs|
 hail; /s^hɛ^Ltʂɑ^H, s^hɛ^Ltʂɑ^H/ |ser.drag|
 hair; /ɛæ^H/ |skra|
 hair; /pə^H/ |spu|
 hair (ox); /tsəp^Hpæ^H/ |rtsid.pa|
 half; /ts^hr^Lwæ^H/ |p^hied.ka|
 half; /ke:^Hwæ^H/ |sked.ba|
 halter; /t^hərn^Ldæ^H/ |mt^hur.mda|
 hammer; /t^ho:^L/ |t^ho.ba|
 hand; /læq^Lqə^H/ |lag.pa|
 hand over; /ɣĩ:^L/ *conj.* /ɣəŋ^Lgə^H/ |sbjɪn|
 handspan (between forefinger and thumb);
 /tɛ^hi^H/
 handspan (between middle finger and
 thumb); /t^hɔ^H/

- hang (on the wall); /ndu^L/ *conj.* /ndɔq^Lqə^H/
pst. /tɑ^H/ *imp.* /tu^H/ |ndog; btags|
- hard; /ʂæ^H/ |sra|
- harvest; /tʂɔ̃.n^Ldzæ^H/
- hat; /xæŋ^Lgɔ^H/ |z^wa.mgo|
- hatch; /rɔ̃:^L/ *conj.* /rɔŋ^Lgə^H/ |rum|
- have a fever; /ts^hæ^H ɛi:^H/ |ts^ha.bs^hos|
- have free time; /k^hɔ̃:^L/ *conj.* /k^hɔŋ^Lgə^H/
 |k^hom|
- have hit (the target); /hu^H/ *conj.* /^hɔq^Lqə^H/
 |p^hog|
- have mercy; /ŋi:^Ldze^H/ |sɲiŋ.rdze|
- have sex; /jɛ^Hri:^H/ *conj.* /jɛk^Hkə^H/ |gjem.res|
- head; /ŋgɔ^L/ |mgo|
- headband; /ŋgɔ^Lɛi:^H/ |mgo.dkris|
- heap (hay, grass); /pɯ:^H/ |dpun|
- heart; /s^hɛ̃:^Lts^hu^H/
- heat up (cold rice); /ts^hæⁿLt^he:^H/ *conj.*
 /ts^hæ^Lɣə^H/ |ts^ha|
- heavy; /ndzə^L/ |ldzid|
- heel; /ɛ^hət^Lti:^H/ |p^hi.rtiŋ|
- hell; /jɛr^Hwe^H/ |mⁱal.ba|
- help; /rɔq^Lqə^H (ɛi^L, ɛe:^L)/ |rogs.po bⁱed|
- hemp; /sɔ̃:^Hwā:^H/ |so.ma|
- hen; /tɛ^Lmɔ^H/
- herd (cattle); /ts^hɔ^H/ *pst.* /ts^hr:^L/ *imp.* /ts^hr:^L/
 |nts^ho|
- here; /ndə^Lnæ^H/ |ndi na|
- hiccup; /ri:^L tsə^H/ *pst.* /ri:^Ltɕi:^H/
- hide from view; /ju:^H/ |gjol|
- hill; /ti:m^Lbər^H/ |defu.nbur|
- hoe; /æt^Htæ^H/
- hogwash; /p^hæ^Lɣtə^H/ |p^hag|?
- hold; /ndzĩ:^L/ *conj.* /ndzəŋ^Lgə^H/ *pst.* /zɯ:^L/
 |ndzin; bzun|
- hold tight; /tɛa:^H/ *imp.* /tɛu:^H/ |btɛaŋ|
- hole; /k^hu:^H/ |k^huŋ|
- honest; /tʂā:^Lwɔ̃:^H/ |draŋ|
- honey; /dzā:^Ltsə^H/ |sbraŋ.rtsi|
- hoof; /jɲə^Hpə^H/ |rmig.pa|
- hook; /k^hɔŋ^Lgɔ^H/ |k^hugs mgo|
- horizontal; /tʂ^hɛ^H, tʂ^hɛ^Hre/ |nɲ^hred|
- horn; /ræ^Ltɛ^hɔ^H/ |ra.tɛo|
- horse; /tæ^H/ |rta|
- horse whip; /tæ^Hrteɔ^H/ |rta.lteag|
- host; /dæq^Lqə^H/ |bdag.po|
- house; /k^hæ^Lwæ^H/ |k^haŋ.ba|
- household; /ts^hə^Hwæ^L/
- how; /tɛ^hɔ^Hɣtsə^L/
- how many; /tɛ^hən^Ldzɛ^H/
- hug; /u^Hdā:^H/ |ʔoŋ bsdam|
- humpback; /gə^Lrə^H/ |sgur|
- hurt; /k^hu:^L/ |nk^hol|
- husband; /mæq^Hqə^H/ |mag.pa|
- husband and wife; /zæ^Lwæ^H nə^Lŋæ^L/ |bza.ba|
- hybrid yak; /ndzɔ^L/ |mdzo|
- I; /ŋæ^L, ŋe:^L, ŋā:^L, ŋə^L/ |ŋa; ŋas; ŋa.la; ŋafi|
- ice; /tær^L/ |dar|
- in one year; /ɣi:^L nā:^L/ |gzes.naŋs|
- in order; /tɛæ^Lta^H/
- in the beginning; /ŋgɔ^H tsæ^Lnnə^L/
 |mgo.tsam.pa|
- in the future; /ti:^Ltʂ^hɔ^H/ |de.k^hrod|
- in the past; /ŋæ^Hmmæ^H/ |sɲa.ma|
- in the surroundings; /ndzā:^L ri:^H ndzā:^L/
 |ngram.re|
- incense; /pĩ:^H/ |spos|
- ink; /næ^Hɣtsæ^H/ |snag.ts^ha|
- insert, stick in; /ndzɯ^L/ *conj.* /ndzək^Lkə^H/ *pst.*
 /tsu^H/ |btsugs|
- inside; /nā:^L/ |naŋ|
- interest; /p^hi:^Lk^hɛ^H/ |nɲ^hel.k^he|
- iron; /tɛa^H/ |lteags|
- itch; /sæ^L/ *conj.* /sæ^Lɣə^H/ |za|
- itch; /sæ^L/ |za|
- ivory; /pæ^Ls^hɔ^H/ |ba.so|
- jaw; /mā:^Lk^hi:^H/ *|ma.k^ha|?
- joint; /ts^hək^Lkæ^H/ |ts^higs.pa|
- jump; /tɛ^hu:^L/ |mte^hoŋ|
- just; /tʂ^hə^Hsi:^H/

- kettle; /tēːLziːH/ |dem .?|
 key; /dēːɲiːH/ |lde.mig|
 kick (as of a horse); /tʂʰeːH dzeːL/
 kidney; /kʰeːLmmæːH/ |mkʰal.ma|
 kin; /xʰæːLtsʰæːH/ |ca.tsʰan|?
 knead (dough); /dzəːL/ *conj.* /dzəːLɣəːH/ *pst.*
 /dziːL/ |rdzi; rdzis|
 knee; /piːLmoːH/ |pus.mo|
 knife; /lɔːHteːH/ *|glo.gri|
 knife sheath; /teːLxʰuːH/ |gri.sʰubs|
 know; /xʰrːL/ |çes|
 ladder; /keːH/ |skas|
 ladle; /kʰæqːLqəːH/
 lake; /tsʰoːH/ |mtsʰo|
 lama; /læːHmæːH/ |bla.ma|
 lamb; /ləːLɣəːH/ |lug.bu|
 lame; /xʰæːLwuːH/ |za.bo|
 lamp; /kærːLmæːH/ |dkar.me|
 language; /keːHluːH/ |skad.lugs|
 lard; /pʰæːLχtsiːH/ |pʰag.tsʰil|
 large basket; /sʰuːL/ |sle.bo|
 lasso; /ʂoqːLqæːH/ |zags.pa|
 last month; /dzɑːL ɲəːHmmæːH/ |zla.sɲun.ma|
 last night; /ndāːL/ |mdaŋ.nub|
 last year; /næːLniːL/ |na.niŋ|
 late; /eːheːH liːL/ |pʰiː.lus|
 laugh; /grːL/ *conj.* /gɛkːLkəːH/ |dgod|
 lay bricks; /tsiːH/ *conj.* /tsəkːLkəːH/ |rtsig|
 lazy; /jɔːHwuːH/ |gjo|
 lead along; /teːhiːH/ *conj.* /teːhəkːLkəːH/ |nkʰrid|
 leaf; /lɔːLwāːH/ |lo.ma|
 lean (meat); /kæmːHboːH/ *conj.* /kæŋːHgəːH/
 |skam|
 lean against; /kʰēːL/ *conj.* /kʰeŋːLgəːH/ |kʰen|
 leather; /koːL/ |ko ba|
 leather shoes; /ndzərːLtæːH/ |ndzur.rta|
 leave; /liːL/ |lus|
 left, left side; /jɔːHɣuːH/ |gjon.zogs|
 leg; /kaːŋːHgəːH/ |rkaŋ mgo|
 legging; /ɲæːLxʰuːH/ |ɲw.a.eubs|
- leopard; /kāːLsʰāːH/ |gaŋs.seŋ|
 leprosy; /ndzɛːLneːH/ |mdze.nad|
 less; /tɛːLɲuːL/ |dze.ɲuŋ|
 lick, lap; /dɑːL/ *conj.* /dæqːLqəːH/ *imp.* /duːL/
 |ldag; ldog|
 lid, cover; /kʰærːLdiːH/
 lie; /dzīːL/ |rdzun|
 life; /tsʰeːH/ |tsʰe|
 life, destiny; /ʂuːH/ |srog|
 lift (head); /leːːH ndzuːL/ *conj.* /ndzɔqːLqəːH/ *pst.*
 /teːH/ *imp.* /teuːH/ |jar.ngioŋs.bkʰags|
 light (adj.); /jaːL/ |jaŋ|
 light, relaxed, loose; /leːH/ *conj.* /lɛkːLkəːH/
 |lʰod|
 lightning; /luːH tʂʰɑːL/ |glog.npʰro.ba|
 like, love; /gæːL/ |dga|
 lime; /kæːLræːH/ |dkar.ba|
 limits; /tsʰāːL/ |mtsʰams|
 lining of clothing; /nāːLwāːH/ |naŋ.ma|
 lion; /sʰeŋːLgeːH/ |seŋ.ge|
 lips; /teːhəːLtoːH/ |mteːhu.to|
 lips; /kʰæːLxʰæːH/ |kʰa.ɛa|
 liquor; /ræːLkʰəːH/ |ʔa.rag|
 listen; /ɲēːL/ *conj.* /ɲeŋːLgəːH/ |ɲan|
 listen respectfully; /gəːL, giːL/ |gus|
 litter, nest; /tsʰɑːL/ |tsʰaŋ|
 little finger; /eːHɲeːH/ |ʔa.ŋan|
 little, few; /ɲuːL/ |ɲuŋ|
 liver; /teːhəmːLbæːH/ |mteːhin.pa|
 livestock; /gɔːLzuːH/ |sgo.zog|
 lizard; /tsāːLpæːH/ |rtsaŋs.pa|
 lock; /sæːL/ |zːwa|
 loess; /sʰæːLserːH/ |sa.ser|
 long; /riːL/ |riŋ|
 long ago; /nāːH/ |gna|
 look at, watch; /tæːH/ *pst.* /teːH/ *imp.* /trːH/ |lta;
 bltas; lto|
 loom (element); /neːH/ |snas|
 lose (a game); /pʰāːL/ *conj.* /pʰæŋːLgəːH/ |pʰam|
 lose, mislay; /mborːL/ *pst.* /porːL/ |nbor; bor|

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|---|---|
| louse; /x ^h i ^H / ɛiɡ | mistake; /nor ^L / nor |
| low; /mæ ^H / dma | molar; /ndzā: ^L s ^h ɔ ^H / ngram.so |
| lower (the head); /gər ^L / sgur | molar; /p ^h an ^L dzā: ^L , p ^h ɑ ^L s ^h ɔ ^H / p ^h ag.ngram |
| lower reaches of a river; /tɛ ^h ə ^L mɪ ^H / tɛ ^h u.smad | mole (animal); /ɛi: ^L lu: ^L / bji.lon |
| lunar eclipse; /dæ ^L ndzī: ^L / zla.ndzin | mole (on the skin); /x ^h æ ^L mɛ ^H / * ɛa.sme |
| lungs; /lo: ^H / glo.ba | monastery; /gɔm ^L bæ ^H / dgon.pa |
| madman; /ɲɔm ^H bæ ^H / smiɔn.pa | money; /gor ^L mɔ ^H / sgor.mo |
| maggot; /zɑ: ^H t ^h e: ^H / (sbraŋ).t ^h al | Mongol; /s ^h ɔq ^L qɔ ^H / sog.po |
| magpie; /ɛɛ ^H ɪæ ^H / skja.ga | monk; /tʃæ ^L wæ ^H / gr ^w a.ba |
| make a bed; /ndi: ^L / <i>pst.</i> /ti: ^H / ndiŋ; btiŋ | monkey; /ʃi: ^H / sprefu |
| man; /ɲə ^H / * Cm ⁱ | month; /ɣə ^L wu: ^L nã: ^L / bzi.ba.nam |
| man; /pə ^L ts ^h æ ^H / bu.ts ^h a | moon; /dzɑ: ^L / zla.ba |
| mane; /ɲɔɪ ^H mæ ^H / rɲog.ma | more; /tɛ: ^L mã: ^L / dze.man |
| manger; /sɔ ^H tɛ ^h e: ^H / gso.tɛ ^h as | morel; /kə ^H tə ^H x ^h æ ^L wō: ^L / |
| manure; /li: ^L / lud | morning; /ɲæ ^L rɔ ^L / sɲa.dro |
| many; /jək ^L kæ ^H / | moth; /ɲɛ ^H læ ^H ge: ^L pɔ ^L / me.la |
| mare; /gu: ^L mæ ^H / dgon.ma | mother; /æ ^L mæ ^H / ʔa.ma |
| marmot; /ɛ ^h e: ^L / nɲ ^h ji.ba | mountain; /rə ^L / ri |
| marrow; /ka: ^H / rkaŋ.ba | mountain pass; /læ ^L / la |
| marry; /ɣi: ^L / | mountain path; /rə ^L lã: ^L / ri.lam |
| marry; /zæ: dzɪ ^h conj. /dzək ^L kə ^H / bza.sgrugs | mountain slope; /rə ^L ɲɔ ^H / ri.ɲo |
| marry (a woman); /lɛ: ^L / | mountain top; /rə ^L ɲ ^L gɔ ^H / ri.mgo |
| mask; /mbɑ ^L / nɲbag | mountain valley, ravine; /tɛɔ ^L rō: ^L / grog.rɔŋ |
| matter; /le: ^L k ^h æ ^H / las.ka | mouse, mice, rat; /ɛe: ^L / bɪifu |
| measure; /ts ^h e ^H / conj. /ts ^h ɛk ^L kə ^H / ts ^h ad | mouth; /k ^h æ ^H / k ^h a |
| medicine; /mɛ: ^H / sman | move; /ɲgu: ^L / ngul |
| meet; /t ^h u ^H / conj. /t ^h ək ^L kə ^H / t ^h ug | much, many; /mã: ^L / conj. /mɑ: ^L ɣə ^H / man |
| melt; /xə ^L / zu | mud; /ndã: ^L pæ ^H / ndam.pa |
| mend, patch; /lɛ: ^L m ^L bæ ^H / l ^h an.pa | muddy (water); /ɲɔq ^H qɔ ^H / sɲogs.po |
| middle finger; /tɛi:n ^L dzɪ ^H / dk ⁱ il.mdzub | mugwort; /k ^h ɛm ^L bæ ^H / mk ^h an.pa |
| middle finger; /ke: ^H mɪ ^H / skal.med | mule; /tʃi: ^L lɔ ^H / drel.bu |
| midnight; /ts ^h ɛ: ^L ɣu: ^L / mts ^h an.gzuŋ | mushroom; /x ^h æ ^L wō: ^L / ɛa.mo |
| milk; /ɔ: ^H wã: ^H / fio.ma | mushroom (sp.); /pɑ ^H jɛ: ^H mbæ ^L / span.ʔ |
| milky way; /gɔ ^L ts ^h i ^H / dgu.ts ^h igs | mushy; /lu ^L / |
| mill, grindstone; /tɛ ^h ə ^L tɑ ^H / tɛ ^h u.n ^h ag | musk; /læ ^H tsə ^H / gla.rtsi |
| minister; /lɔm ^H bɔ ^H / blɔn.po | musk deer; /la: ^H / gla.ba |
| mirror; /ɲor ^L tæ ^H / ɲo lta | mustache; /mã: ^H ræ ^H / sma.ra |
| miss, think of; /tʃɛ: ^L / conj. /tʃɛŋ ^L gə ^H / dran | mute; /ja: ^L wæ ^H / |
| | naga; /lə ^H / klu |

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| nail; /ndzer ^L mæ ^H / gzer.ma | often; /dzən ^H tə ^L / rgiun.tu |
| nail (finger-); /s ^h ɛ: ^L mə ^H / sen.mo | oil; /ji: ^H / |
| nail (v.); /ndzer ^L / ndzer | old; /ge: ^L / rgas |
| name of a constellation; /næn ^L tɛ ^h ə ^H / nam.gru | old man; /lɔ ^L lɛ: ^L / lo.lon |
| narrow; /tu ^L / conj. /tɔq ^L qə ^H / dog | on the side; /sək ^L ke ^H / zur.ga-r |
| navel; /te: ^H / lte.ba | on the top, above; /t ^h ɔ ^L ɾæ ^H / t ^h og.ka |
| near, close, in the vicinity; /tsa: ^H / rtsa.ba | onager?; /tɛ ^h ət ^L tæ ^H / tɛ ^h u.rta |
| neck; /kɛ ^H t ^h ə ^H / ske.ʔ | one; /tɛi ^H / gtɛig |
| necklace; /kɛ ^H dzɛ: ^H / ske.rgiʌn | one day; /ɲi: ^L tɕi ^h i ^H / |
| needle; /k ^h e ^H / k ^h ab | onion; /tsu: ^H / tsonj |
| neigh; /ts ^h er ^H / nts ^h er | only; /k ^h ə ^L ri: ^H tɕi ^L / k ^h er.ʔ |
| neighbour; /ts ^h ən ^L tɕi: ^H / k ^h im.mts ^h es | open; /ndzer ^L / pst. /ɛ ^h er ^H / nɔ ^h ied; p ^h ie |
| nephew; /ts ^h ə ^L wu: ^L / ts ^h a.bo | open (eyes); /ɲi ^H ndzer ^L / pst. /ɛ ^h er ^H / p ^h ie ? |
| nettle; /ɛæ ^L tɕi ^h ə ^L ɣə ^L / | open (the mouth); /da: ^L / pst. /da: ^L / imp. /du: ^L / gdəŋ |
| new; /s ^h ɔ: ^L wā: ^H / so.ma | ore; /ter ^H kæ ^H / gter.ka |
| new year; /lɔ ^L s ^h ær ^H / | orifice; /ɲə ^H ɣæ ^H / |
| next month; /dzɑ: ^L ɛ ^h ɔ ^L wā: ^H / zla.p ^h i.ma | otter; /ʃā: ^H / sram |
| next year; /s ^h ɑ: ^L nā: ^L / saŋ.gnam | outside; /x ^h ə ^L zɔ ^H / p ^h i.so |
| niece; /ts ^h ə ^L wɔ: ^L / ts ^h a.mo | outside (of clothing); /ɛ ^h ɔ ^L wā: ^H / p ^h i.ma |
| nine; /gə ^L / dgu | overcast; /lu: ^L / lonj ? |
| nineteen; /tɛər: gə:/ btɛu | overflow, spill; /k ^h ɛ ^H tɛ ^h ər ^H / k ^h a.np ^h ur |
| ninth; /gə ^L wæ ^H / dgu.ba | owl; /ɛk ^L kæ ^H / fug.pa |
| ninth month; /gə ^L wu: ^L nā: ^L / dgu.ba.nam | ox (all body black, with white between the eyes and the nose); /kæ ^L t ^h ɔ ^H / |
| nit; /ʃɔ: ^H wā: ^H / sro.ma | ox (black body, grey mouth); /tʃɛ ^L dzɛ ^H / |
| noon, midday; /ɲəŋ ^L gə: ^L / ɲin.guŋ | ox (black body, white tail); /ɲæ ^H kæ ^H / |
| north; /ɛā: ^L / b ^h aŋ | ox (black eyes, white face); /ɲi: ^H nā ^H / mig nag |
| north side (mountain); /ʃə ^H ŋŋɔ ^H / srib.ŋo | ox (white and black); /tɛ ^h ə ^L tɛæ ^H / |
| nose; /næn ^H dɔ ^H / sna.mdo | ox (white head, black body); /tɛ ^h ə ^L mær ^H / |
| nostril; /næ ^H ɣu: ^H / sna.k ^h uŋ | ox, cow; /su: ^L / zog |
| not exist; /m ^L / med | paddy, rice; /ndzɛ: ^L / nbras |
| not to be; /mə ^L nā: ^H / mi.snaŋ | pagoda; /tɛ ^h ɔ ^L tɛ: ^H / mtɛ ^h od.rten |
| not yet; /ta: ^L rə ^H / da.duŋ | paint; /sɔ ^H / pst. /sɪ: ^H / gso ? |
| now; /tæ ^L / da | palm of hand; /lan ^L t ^h i: ^H / lag.mt ^h il |
| numb; /zɔ ^H / sbrid ? | pan; /sæ ^H ŋæ ^H / sla.ŋa |
| nun; /tɛɔ ^L mɔ ^H / dzo.mo | pantalon, trousers, pants; /kā: ^H lā: ^H / rkəŋ.lam |
| oats; /jək ^H kɔ ^H / jug.po | paper; /x ^h ɔ ^L ɾə ^H / ɛog.bu |
| obtain; /t ^h ot ^H ta: ^L sə ^L / t ^h ob | |
| oesophagus; /ɲəp ^H pæ ^H / mid.pa | |
| official; /pəm ^H bɔ ^H / dpon.po | |

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| parch; /ŋɔ ^H / <i>pst.</i> /ŋɪ: ^H / rŋo; rŋos | pox; /ndzəm ^L bə ^H / nbrum |
| parrot; /nɛ ^L tso ^H / nɛ.tso | press; /le ^H / <i>conj.</i> /lɛk ^H kə ^H / |
| pass (time); /ŋgor ^L / ŋgor | press; /nē: ^H / <i>conj.</i> /nɛŋ ^H gə ^H / gnon |
| paste; /zæɾ ^L / <i>imp.</i> /zɔɾ ^L / sb'ar | press, push down; /tɛə ^H / gtɛur |
| pasture; /jær ^H sæ ^H / gjar.sa | price; /ku: ^L / goŋ |
| paw; /s ^h ət ^L tə ^H / sug.pa | price; /rəm ^L bæ ^H / rin.pa |
| pay attention to; /s ^h ē: ^L tɛ ^h u: ^H / sems.te ^h uŋ | prison; /tsɛŋ ^H k ^h a: ^H / btson.k ^h aŋ |
| peacock; /mæɾ ^H ɛæ ^H / rma.b'a | promise; /k ^h e: ^L lē: ^L / <i>pst.</i> /la: ^H / k ^h as.len |
| pearl; /mə ^L t ^h i ^H / mu.t ^h ig | protect; /sɹ: ^H / bsruŋ |
| penis; /ndzɛ ^L / mdze | pull; /ndzē: ^L / <i>conj.</i> /ndzɛŋ ^L gə ^H / <i>pst.</i> /tʂa: ^L / |
| people; /mā: ^L ts ^h u ^H / dmanʂ.Nts ^h ogs | <i>imp.</i> /tʂu: ^L / ndren; draŋʂ; droŋʂ |
| pestle; /sɔ ^L χtɪ: ^H / * sogs.gtun | pull; /t ^h ē: ^L / <i>conj.</i> /t ^h ɛŋ ^L gə ^H / nt ^h ɛn |
| petticoat, skirt; /tɛ ^h i: ^L re: ^L / ʔ.ras | pungent smell; /tʂə ^L ŋē: ^H t ^h u ^H / dri.ŋan.nt ^h ibs |
| pick (tooth); /ndzɛ ^L / <i>pst.</i> /tʂi: ^L / nbru; brus | puppy; /tɛ ^h ə ^L tʂ ^h u ^H / k ^h i.p ^h ruŋ |
| pick up; /t ^h ə ^H , t ^h i: ^H / nt ^h u | purple; /mæk ^H kə ^H / smug.po |
| pig; /p ^h ɑ ^H / p ^h ag | pus; /nā ^H / mrag |
| piglet; /æ ^H xi ^H / | push; /kʉ: ^H / skul |
| pigment; /ts ^h ɪ: ^L / ts ^h os | push, shove; /p ^h u: ^L / np ^h ul |
| pika; /ɛ ^H zæ ^H / ʔa.bra | put; /ndzu ^L / <i>conj.</i> /ndzɔq ^L qə ^H / <i>pst.</i> /ɣɑ ^L / <i>imp.</i> |
| pillar; /ka: ^L / ka.ba | /ɣu ^L / ndzɔg; bzag; zɔg |
| pillow; /je: ^H gɔ ^H / ŋas.mgo | put in; /də ^L / <i>pst.</i> /di: ^L / bsdus; bsdus |
| pilose antler; /x ^h ɑ: ^L ɾæ ^H / ɛa.ba.rwa | quantity; /ts ^h i ^H / ts ^h od |
| pincers; /kæŋ ^H k ^h æ ^H / skam.pa | quick; /ndzɔq ^L qə ^H / mgiogs.po |
| pine; /sō: ^H du: ^H / gsom.sdon | quilt; /jā: ^L ɣɪ: ^L / jnal.gos |
| pine needle; /ŋɔ ^H lɔ ^H / sŋo.lo | rabbit; /rə ^L ɣu: ^L / ri.boŋ |
| place where one used to sit; /x ^h u: ^L / ɛul | radish; /læ ^L wu ^H / la.bug |
| plait, pigtail; /re: ^L wæ ^H / ral.ba | rafter; /dzɹ: ^L / |
| plane; /pi ^L lē: ^L / nbur.len | rain; /tɛ ^h ær ^L wæ ^H / tɛ ^h ar.ba |
| plate; /der ^L mæ ^H / sder.ma | rainbow; /ndzæ ^L / ndza |
| play; /tsɛ ^H / <i>pst.</i> /tsɪ: ^H / rtse; rtses | raincoat; /tɛ ^h ær ^L kɪ ^H / tɛ ^h ar.gos |
| pleiades; /mən ^L dzɔ ^H / smin.drug | raise, feed; /sɔ ^H / <i>pst.</i> /sɪ: ^H / <i>imp.</i> /sɪ: ^H / gso; |
| ploughshare; /xu: ^H te ^h u ^H / geol.lteags | gsos |
| plow (n.); /xu: ^H / geol | rape (vegetable); /læ ^L t ^h æ ^H / |
| plow (v.); /mɔ ^H / <i>pst.</i> /mɪ: ^H / rmo; rmos | raw; /sɔm ^H bɔ ^H / gson.po |
| pluck out; /mba: ^L / <i>pst.</i> /pa: ^L / <i>imp.</i> /pu: ^L / | read; /ndē: ^L / <i>conj.</i> /nden ^L gə ^H / ndon |
| nbal | recite scriptures; /tɛ ^h i: ^L ndē: ^L / tɛ ^h os.ndon |
| pocket; /k ^h ō: ^L wæ ^H / k ^h oŋ | recover (from illness); /tʂɑ ^L / <i>conj.</i> /tʂæq ^L qə ^H / |
| poison; /tu ^L / dug | drag |
| pool; /dzā: ^L wə ^H / rdziŋ.bu | red; /mæ ^H ru: ^H / dmar.po |
| porcupine; /ŋgā: ^L / rgaŋ | red-billed chough; /æ ^H x ^h i ^H tɛɔŋ ^L k ^h æ ^L / |

regret; /ndzɔp^Lpæ^H ɛr:^H/ |ngiɔd.pa|
 reincarnate lama; /ɑ^Hlɑ^H/ |ʔa.lags|
 reins; /ʂen^Hdæ^H/ |srab.mda|
 religious dance; /tɛ^hã:^L tɛ^hu:^L/
 |mtɛ^hams.mtɛ^hoŋ|
 repay (a debt); /ɛəm^Hbæ^H ɣĩ:^L/ |skʲin.pa|
 rest; /mɛ:^L ʂɔ^H/ *conj.* /ʂɔ^Hɣə^H/ *pst.* /ʂɪ:^H/
 *|mal.gso|?
 retreat; /ɛ^hə^H nər^H/ |p^hji.snur|
 revenge; /dzæ^Lx^hæ^H (lɛ:^L)/ |dgra.ɛa.len|
 rib; /tsə^Hɣə^H/ |rtsib|
 rich; /ɛ^hək^Lkə^H/ *conj.* /ɛ^hək^Lkə^H/ |p^hjug|
 ride a horse; /ɛð:^L/ *conj.* /ɛɔŋ^Lgə^H/ |bzɔn|
 right (side); /je:^Hɣu^H/ |gjas.gzogs|
 rimple; /ge:^Lɲer^H/ |rgas.gner|
 ring; /ndzə^Lɛi:^H/ |mdzub.dkris|
 road, path; /lã:^L/ |lam|
 rob; /tʂu^H/ *conj.* /tʂu^hɔq^Lqə^H/ |np^hrog|
 roll; /ndzi:^L/ |ngril|
 roll (tr); /zi:^H/ |sgril|
 roll over; /ndzi:^Llu^H/ |ngrel.log|
 roof; /læ^Lk^hæ^H/ |la.k^ha|
 root; /tsep^Hpæ^H/ |rtsad|
 rope; /t^hæ^Lkə^H/ |t^hag.pa|
 rot; /rɑ:^L/ |rull|
 rough; /tsət^Htə^H/ *conj.* /tsək^hkə^o/ |rtsub|
 round; /tɛə^Llə^H/ |gril|
 rub (hands); /p^hər^H/ |np^hur|
 ruminate; /de:^L/ |ldad|
 run; /ndzɔ^L/ *pst.* /tʂɪ:^L/ |nbro; bro|
 run; /dzɔ^L/ *conj.* /dzək^Lkə^H/ |rgju|
 rust; /dzæ:^L/ |btsa|?
 sad, sorrowful; /shɛ:^Ldu^H/ |sems.sdug|
 saddle; /tæ^Hrgæ^H/ |rta.sga|
 saddle's crupper; /ɲr^H/ |rmad|
 saffron; /æ^Htær^H gi:^Ltær^H/|
 salary; /dza:^Lp^hu^H/ |zla.p^hog|
 saliva, dribble; /k^hæ^Ltɛ^hə^H/ |k^ha.tɛ^hu|
 salt; /ts^hæ^H/ |ts^hwa|
 sand; /ɛæ^Lwã:^H/ |bie.ma|

saw; /shu^Llə^H/ |sog.le|
 sawdust; /x^hĩ:^Lɛ^hɛ^H/ |ɛiŋ.p^hje|
 say; /si:^L/ *conj.* /sək^Lkə^H/ |zer|?
 say; /dze:^L/ |bzlas|
 scatter (seeds); /tor^H/ |gtor|
 scold; /wær^H (ndu^L, tɑ^H)/
 scoop up; /tɛə^H/ *pst.* /tɛi:^H/ |btɛu; btɛus|
 scratch (an itch); /tʂ^hu^H/ |np^hrugs|
 script; /jə^Lɣɛ^H/ |ji.ge|
 sea; /dzæn^Lts^hə^H/ |rgia.mts^ho|
 seal; /t^hi^H/ |t^hel|
 search; /ts^hɛ:^L/ *pst.* /tse:^H/ |nts^hol; btsal|
 second; /ɲi:^Hwæ^H/ |gnis.ba|
 second floor; /ɲi:^Ht^hu^H/ |gnis.t^hog|
 second month; /ɲi:^Lpə^H nã:^L/ |gnis.pa.nam|
 see; /t^hu:^L/ |mt^hoŋ|
 seed; /s^hæ^Lŋr:^H/ *|sa.sŋos|
 seize, climb; /ndzə^L/ *pst.* /ndzi:^L/ |ndzu;
 ndzus|
 sell; /ts^hu:^L/ *pst.* /tsu:^H/ |btsoŋ|
 send; /ɛɑ:^H/ *imp.* /ɛu:^H/ |bskial|
 separate; /t^hor^H/ *pst.* /tor^H/ |nt^hor|
 servant; /jɔq^Hqə^H/ |gjog.po|
 set (sun); /ndza:^L/ |ngiãŋ|
 seven; /dĩ:^L/ |bdun|
 seventeen; /tɛu^Ldĩ:^L/ |btɛu.bdun|
 seventh; /dəm^Lbæ^H/ |bdun.pa|
 seventh month; /dəm^Lbə^H nã:^L/|
 |bdun.pa.nam|
 sew (up); /ts^hɛ:^L/ *conj.* /ts^hɛŋ^Lgə^H/ *pst.* /tsɛ:^H/|
 |nts^hem|
 shadow; /tɛə^Lmmæ^H/ |grib.ma|
 shallow; /tɛã:^L/ *conj.* /tɛɑŋ^Lgə^H/ |gram|?
 share; /gr:^L/ *conj.* /gek^Lkə^H/ *pst.* /gr:^L/ |bgod;
 bgos|
 sharp, pointed; /nɔ^H/ |rno|
 shave; /ɣær^L/ *pst.* /ɣor^L/ |gzar|
 sheath; /xu^H/ |ɛubs|
 shed (tears); /t^hək^Lkə^H/ |t^higs.pa|
 sheep; /lu:^L/ |lug|

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| shell, peel; /ŋu ^L / <i>conj.</i> /ŋɔɔq ^L qə ^H / <i>pst.</i> /ku ^H / ŋgog; bkog | skin (goat, sheep); /pæ ^L χtə ^H / lpags ? |
| shepherd; /dzu: ^L / rdzi bo | skin of the milk; /k ^h e: ^L rə ^H / k ^h a.spris |
| shiver, tremble; /ndær ^L / ndar | skull; /lep ^L pə ^H k ^h əq ^L qə ^H / klad.pa ? |
| shoe; /hā: ^L / hām | sky, heaven; /næ ^H ŋŋə ^H / gnam.ŋo |
| shoelaces; /hæn ^L dzu ^H / hām.ŋgrog | sky, heaven; /nā: ^H / gnam |
| shoot; /p ^h ē: ^L / <i>conj.</i> /p ^h ɛŋ ^L gə ^H / <i>pst.</i> /p ^h ɑ: ^L / <i>imp.</i> /p ^h u: ^L / np ^h en; np ^h ans; np ^h oŋs | slanting; /jē: ^L / jon |
| shop; /ts ^h u: ^L k ^h ɑ: ^L / ts ^h oŋ.k ^h an | sleep; /ɲā: ^L / <i>conj.</i> /ɲā ^L ɣə ^H / <i>imp.</i> /ɲū: ^L / nal |
| shore, bank; /ndzā: ^L / ŋgram | sleeve; /p ^h ə ^L ru: ^L / p ^h u.ruŋ |
| short; /t ^h u: ^L / t ^h uŋ | slide; /x ^u : ^L / |
| shoulder; /tʂ ^h an ^L gə ^H / * p ^h rag.mgo | sliding weight of a steelyard; /dzær ^L də ^H / rgia.rdo |
| shoulder blade; /s ^h əq ^L qə ^H / sog.pa | silkworm; /tærm ^L bə ^L / dar.nbu |
| shrub; /x ^h u: ^L / | slingshot; /wə ^L rdə ^H / fiur rdo |
| shrub (sp.); /mæ ^H xə ^H / | slip, slide; /ndze ^L / <i>conj.</i> /ndzək ^L kə ^H / ŋgiel |
| shrub (sp.); /s ^h ə ^L rə ^H / | slow, late; /kæ ^L li: ^H / ga.le |
| shrub (sp.); /tə ^h əp ^L p ^h i ^H / | slow, late; /s ^h i: ^L də: ^L / sos.dal |
| shut, close (mouth); /k ^h æ ^L ru ^H / k ^h a.rogs | small, little; /tə ^h u: ^L / tə ^h uŋ |
| shuttle; /tā: ^H wā: ^H / | smell; /nī: ^H / <i>conj.</i> /nəŋ ^H gə ^H / snom.bsname |
| sick; /nep ^L pə ^H / nad.pa | smoke (n.); /to: ^L / du.pa |
| sickle; /sə ^L rə ^H / zor.ba | smooth, glossy, slick, gentle; /ndzā: ^L ndzæm ^L bə ^H / <i>conj.</i> /ndzæŋ ^L gə ^H / ndzam |
| side; /sə ^L kæ ^H / zur.ka | snail; /mən ^L dzu: ^H wā: ^L / ? .ndzul.ma |
| sieve; /tə ^h e ^L də ^H / tə ^h e.bsdu ? | snake; /z ^u : ^H / sbrul |
| sign; /tɑ: ^H / rtags | snore; /ŋər ^H wæ ^H tʂɑ: ^L / snur.ba.drans |
| silk; /tær ^L / dar | snot; /næ ^H / snabs ? |
| silk fabric; /tær ^L ki: ^L / dar.gos | snow; /k ^h ɑ: ^L / k ^h a.ba |
| silver; /ŋu: ^H / dŋul | snow (v.); /k ^h ɑ: ^L mbe ^L / <i>conj.</i> /mbək ^L kə ^H / <i>pst.</i> /pe ^L / k ^h a.ba.nbab |
| silverweed; /təū ^L wā: ^H / gro.ma | soak; /ba: ^L / <i>imp.</i> /bu: ^L / sban; sboŋs |
| similar; /dzæ ^L ɣə ^H / ndra ; /rək ^L kə ^H / rigs | soak; /pɑ: ^L / ban |
| sinew; /tsæ ^H / rtsa | sock; /mbu ^L / nbog |
| sing; /lə ^H lē: ^L / glu.len | soft; /ɲə ^H / sɲi |
| sink; /ɲi ^H / <i>conj.</i> /ɲək ^H kə ^L / mid | soil; /s ^h æ ^L ɣə ^H / sa.gzi |
| sit down; /ndu ^L / <i>conj.</i> /ndək ^L kə ^H / <i>pst.</i> /de ^L / <i>imp.</i> /dɪ ^L / ndug; bsdad; sdod | solar eclipse; /ɲi: ^L ndzi: ^L / ɲin.ndzin |
| six; /tʂu ^L / drug | soldier; /ma ^H / dmag |
| sixteen; /təə ^L ru ^H / btəu.drug | sole of boots; /hæ ^L ŋŋə ^H / hām.ŋo |
| sixth; /tʂək ^L kə ^H / drug.pa | solidify; /ʂæn ^H t ^h e: ^H / sra.n ^h as |
| sixth month; /tʂək ^L kə ^H nā: ^L / drug.pa.nam | song; /lə ^H jā: ^H / glu.dbians |
| skill, ability, capability; /ni: ^L wæ ^H / nus.ba | sorcerer; /ŋæq ^H qə ^H / sɲags.pa |
| skin; /x ^h əm ^L bə ^H / ɕun.pa | sore; /mæ ^H k ^h æ ^H / rma.k ^h a |

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| soul; /nãːˡxʰĩː˥/ rnam.ɛes | stir; /ɕu˥/ <i>conj.</i> /ɕækʰkə˥/ dkrug |
| sound; /dzæː/ sgra | stirrup; /jɔːˡtɕɛː˥/ job.tɛan |
| soup; /kʰə˥/ kʰu | stomach; /æ˥wu˥ ɕu˥/ |
| sour; /ɕər˥/ skʲur | stone; /dɔːˡ/ rdo |
| south; /ɬə˥/ lʰo | stop up; /dzaːˡ/ <i>imp.</i> /dzuːˡ/ brdzaŋs |
| south side of a mountain; /jŋəŋˡŋɔː˥/ * ni.ŋo | storehouse; /ndzɔːˡkʰaː˥/ mdzod.kʰaŋ |
| sow (n.); /pʰaːˡ ɡɛ˥mmæ˥/ pʰag.rgan.ma | story; /liː˥re˥/ gliŋ.rabs |
| spark; /jŋɛ˥ta˥/ me.stag | straight; /tʂãːˡwɔːˡ/ <i>conj.</i> /tʂaːˡɣə˥/ draŋ |
| sparrow; /jŋeːˡɛiːˡ/ nas.biɛfiu | straw; /pʰəˠmmæ˥/ pʰud.ma |
| speak; /xɛ˥/ <i>conj.</i> /xɛkʰkə˥/ bɛad | strength; /xʰi˥/ ɕed |
| speak (honorific); /sɔː˥/ <i>conj.</i> /sɔŋ˥gə˥/ | stretch out (the arm); /ʂiː˥/ sriŋ |
| ɡsuŋs | stride; /kɔ̃mˠbæ˥ pɔː˥/ <i>pst.</i> /pɪː˥/ spo; spos |
| spear; /nduːˡ/ mduŋ | stride over; /ɡaːˡ/ <i>imp.</i> /ɡuːˡ/ brgal; brgol |
| spicy; /kʰæ˥ tsʰæ˥ɣə˥/ | strike; /duːˡ/ rduŋ |
| spider; /mbəˠdɔːˡ/ nbu.sdom | stroke, touch; /raːˡ/ <i>conj.</i> /ræqˠqə˥/ <i>pst.</i> /raːˡ/ |
| spike; /jŋiː˥wãː˥/ sŋe.ma | <i>imp.</i> /ruːˡ/ rag |
| spin (into yarn); /læ˥/ <i>pst.</i> /leːˡ/ sla; slas | strong; /ŋærˠwæ˥/ <i>conj.</i> /ŋærˠkə˥/ ŋar |
| spindle; /dɔːˡlɔ˥/ rdo.lo | student; /jɔ̃nˠdɛːˡ/ jig.ndon |
| spit; /kʰæ˥li˥ pʰɛːˡ/ | stupid; /zæˠrə˥/ ɡza.ro |
| spittle; /kʰæ˥li˥/ kʰa.lud | stutterer; /təkˠkə˥/ |
| split; /keːˡ/ ɡas | suck; /ndzɔːˡ/ <i>conj.</i> /ndzəkˠkə˥/ ndzib |
| spring; /ɕækʰkə˥/ dpʲid.ka | suddenly; /lɔ˥rdza˥/ ɡlo.bur.du |
| sprinkle; /tsu˥/ btsugs | sugar; /dɔːˡ kæˠræ˥/ rdo.ka.ra |
| sprout; /xeːˡlɔ˥/ | sugar; /ŋærˠmɔ˥/ mŋar.mo |
| square; /sərˠɣə˥/ zur.bzi | summer; /jærˠkə˥/ dbʲar.ka |
| squirrel; /duːˡlɔː˥wãː˥/ sdon | summit; /rəˠtɕɛ˥/ ri.rtɕe ; /tɕɛ˥kʰæ˥/ |
| stallion; /sɪ˥/ ɡseβ | rtɕe.kʰa |
| stammer; /təkˠkə˥/ dig.pa | sun; /jəˠwãː˥/ ni.ma |
| stand; /laːˡ/ <i>imp.</i> /luːˡ/ lan; loŋ | sunshine; /jəˠwɪ˥/ ni.fiod |
| star; /kærˠmæ˥/ skar.ma | support; /ɕor˥/ skʲor |
| start; /ŋɡɔːˡ ndzɔːˡ/ <i>conj.</i> /ndzəkˠkə˥/ <i>pst.</i> | surrender; /ŋɡoˠ ɡərˠ/ mɡo.ɡur |
| tsu˥/ mɡo.btsugs | surroundings; /tʰækˠkor˥/ mtʰa.dkor |
| steal; /kə˥/ <i>pst.</i> /kiː˥/ rku | swallow (n.); /kʰæ˥læ˥ ji˥/ kʰa.la.jug |
| steelyard; /dzæ˥wãː˥/ rgʲa.ma | swallow (v.); /jŋi˥/ <i>conj.</i> /jŋəkʰkə˥/ mid |
| steep; /zærˠ/ <i>conj.</i> /ˠkə˥, zərˠkə˥/ gzar | swear; /næ˥ ɕaː˥/ mna.bskʲal |
| steep cliff; /jãː˥zær˥/ ɡjaŋ.ɡzar | sweat; /ŋuː˥tɕɛ˥/ rŋul.tɕɛu |
| step; /dɔɣˠtɕər˥/ rdog.btɕur | sweep; /ziː˥/ |
| stick; /ɔ˥tʰɛ˥/ | swell; /pʰær˥/ npʰar |
| stick; /uː˥tɕɛ˥/ | swim; /tɕe˥/ rkʲal |
| stingy; /sʰɛ˥ŋŋɛːˡ/ sems.ŋan | swim; /tɕəˠdzeːˡ (ndɔqˠqə˥, ta˥)/ |

- table; /tɕɔːχtɕɛ˨/ |tɕog.tɕe|
 tadpole; /ɲæː tʰəm˨bɔː/ |ɲa.tʰom.bu|
 tail; /ɲæ˨wāː˨/ |rɲa.ma|
 take; /kʰər˨/ *imp.* /luː˨/ |nkʰur|
 take; /lɛː˨/ *conj.* /lɛɲ˨gə˨/ *pst.* /laː˨/ |len;
 blaŋs; loŋs|
 take off (clothes); /hi˨/ |pʰud|
 take off (clothes); /pʰi˨/ *conj.* /pʰək˨kə˨/ |pʰud|
 take out; /xaː˨/ *imp.* /xuː˨/|
 talk; /tāː˨/ *conj.* /tæɲ˨gə˨/ *imp.* /tōː˨/ |gtam|
 tall; /tʰɔː˨/ |mtʰo|
 tasty; /xīː˨/ *conj.* /xəŋ˨gə˨/ |zim|
 tea; /teæː˨/ |dza|
 teach; /tʂʰu˨/ *conj.* /tʂʰək˨kə˨/ |kʰrid|
 teacher; /geː˨gɛː˨/ |dge.rgan|
 tear; /tor˨/ |gtor|
 tear up; /xaː˨/ *conj.* /xəq˨qə˨/ *pst.* /xaː˨/ *imp.* /xuː˨/ |bcags|
 tears; /ɲiː˨tɕə˨/ |mig.tɕu|
 temple (anatomy); /tɕə˨rɔː˨ pʰæ˨χtsaː˨/ *|kʰji.ro.pʰag.tʰaŋ|
 ten; /tɕə˨ tʰām˨bæ˨/ |btɕu|
 tent; /kər˨/ |gur|
 tent; /wæː˨/ |sbra|
 tenth; /tɕə˨wæ˨/ |btɕu.ba|
 tenth month; /tɕə˨wuː˨ nāː˨/ |btɕu.ba.nam|
 testicle; /lək˨kə˨/ |rlig.pa|
 thank you; /kæ˨tʂiː˨ tɕɛ˨/ |bka.drin.tɕɛ|
 the other side; /jæ˨kʰæ˨/|
 the previous year; /ɣə˨niː˨ lɔː˨/ |gzɛs.niŋ.lo|
 there; /keː˨næ˨/|
 there (distal); /tɛ˨næ˨/ |de na|
 these days; /kʰər˨tsaː˨ tə˨riː˨/ |kʰa.rtsaŋ.de.riŋ|
 thick (of ropes, sticks etc); /zōː˨/ *conj.* /zəŋ˨gə˨/ *|sbrom|
 thick (of sheets, clothes etc); /tʰu˨/ *conj.* /tʰək˨kə˨/ |mtʰug|
 thick (liquid); /dər˨rə˨/ *conj.* /dər˨kə˨/|
 thief; /kə˨mmæ˨/ |rkun.ma|
 thigh; /læ˨/ |brla|
 thin (of ropes, sticks etc); /tʂʰæ˨/ |pʰra|
 thin (of sheets, clothes etc); /ʂɛ˨/ *conj.* /ʂɛk˨kə˨/ |srab|
 thin (liquid); /taː˨mæ˨/ |daŋs.ma| <dʷaŋs>
 things; /teæ˨la˨/ |tea.laŋ|
 think; /sāː˨/ *conj.* /sæŋ˨gə˨/ *imp.* /tuː˨/ |bsam|
 think; /sāː˨lɔː˨ taː˨/ |bsam.lo.btaŋ; btoŋ|
 third; /səm˨bɔː˨/ |gsum.pa|
 third month; /səm˨bɔː˨ nāː˨/ |gsum.pa.nam|
 thirteen; /tɕɛ˨sōː˨/ |btɕo.gsum|
 this month; /dzaː˨ ndi˨nāː˨/ |zla.ndi.naŋ|
 this year; /tɔː˨tʰr˨/ *|do.tʰod|
 thorn; /tʰɛ˨r˨māː˨/ |mtsʰer.ma|
 thread; /reː˨ki˨/ |ras.skud|
 thread; /kəː˨wæ˨/ |skud.pa|
 thread (a needle); /dziː˨/ |rgius|
 three; /sōː˨/ |gsum|
 threshold; /gu˨dza˨/ |sgo|?
 throat; /ɲət˨ta˨/ |mid.pa|
 throw, toss; /ju˨/ *conj.* /jək˨kə˨/ |dbiug.gjuŋ|
 thrush (bird); /ndzu˨mu˨/ |ndzol.mo|
 thumb; /tʰɛ˨tɕɛː˨/ |mtʰe.tɕɛn|
 thunder; /tʰu˨ dze˨/ *conj.* /dzæq˨qə˨/ |tʰog.rgiag; rgiab|
 thunderbolt; /tʰu˨/ |tʰog|
 Tibetan; /pɪ˨/ |bod|
 tie up; /ga˨/ *conj.* /gæq˨qə˨/ *imp.* /gu˨/ |dgag|?
 tiger; /ta˨/ |staŋ|
 tight; /tāː˨/ *conj.* /tæŋ˨gə˨/ |dam|
 timber; /xʰiː˨/ |ɕiŋ|
 time; /tiː˨tʰr˨/ |dus.tʰod|
 tinder; /ʂaː˨/ |spra.ba|
 tip of nose; /nær˨tɕɛ˨/ |sna.rtɕe|
 today; /tə˨riː˨/ |de.riŋ|
 together; /kʰæ˨tɕə˨χɛ˨/|
 toilet, washroom; /tʰɛ˨kʰaː˨/ |tʰal.kʰaŋ|
 tomb, grave; /tər˨sʰæ˨/ |dur.sa|

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| tomorrow; /tʰɔːreːL/ tʰo.reŋs | untrue; /dzəːmmæH/ rdzun |
| tomorrow evening; /tʰɔːreːL nəmˌmɔːH/ | upstream; /teːhəŋˌɔːH/ teːhu.mgo |
| tʰo.reŋs.nub.mo | urine; /teːhəH/ teːhu |
| tongue; /tɛːH/ ltɛ | use, employ; /kuːL/ bko |
| tonight; /tɔːniːH/ do.nub | utensil; /læːχtɛːH/ lag.teːha |
| tooth; /sʰɔːH/ so | uterus; /dzaːL/ |
| top of the head; /tsuːH/ gtsug | vagina; /γaːL/ gzan |
| torch; /ɲeːxɔːH/ me.dpun | vapour; /lãːH pæːH/ rlaŋs.pa |
| towards; /eːheːleL/ | variegated; /teːhæˌtɛːH/ kʰra.bkra |
| towards where; /kaːLγuːH/ gan.zogs | vegetable; /tsʰɔːmæːH/ tsʰod.ma |
| town; /tʃɔːnˌteːherH/ gron.kʰer | vertical; /nduːL, nduːˌŋe/ |
| trace; /rɔːL/ ri.mo | vest; /næŋˌkʰærH/ sna.kʰar ? |
| trachea; /uːHteːhəH/ ʔol.ʔ | village; /deːwæːH/ sde.ba |
| treat unjustly; /leːH taːH/ | vomit; /eːhdzaːH pʰɛːL/ skʰugs.rɟiag |
| tree; /duːL/ sdon | vulture; /tʰãːLkʰærH/ tʰaŋ dkar |
| trench; /teːhəˌkʰuːH/ teːhu.kʰug | waist; /keːHwæːH/ sked.pa |
| trick; /kɔːpʰæːH/ bkod.pa | wait; /gʌːL/ <i>conj.</i> /gəkˌkəH/ sgug |
| trick; /lɔːH/ blo | wake up; /ɲiːH ndzerˌ/ <i>pst.</i> /eːherH/ * gnid.pʰie |
| tripod; /tʰeːdɔːH/ tʰab.rdo | walk; /pʰeːH/ <i>conj.</i> /pʰɛkˌkəH/ pʰebs |
| trouser legs; /kaːLxʰuːH/ rkaŋ.eubs | wall; /kʰærH/ mkʰar |
| true, real; /ɲɔːmæːH/ ɲo.ma | walnut tree; /teːHkæːH/ star.ka |
| trunk; /γuːLtæːH/ gzun.rta | want, need; /gɔːL/ dgos |
| tumble, trip and fall; /ndzəˌriːL/ ndzu.res | warm; /tʃɔːγəːH/ dro |
| turn (it.); /kʰorH/ nkʰor | warm by fire; /ʃɔːH/ <i>pst.</i> /ʃiːH/ sro; sros |
| turn inside out; /dzuːL/ <i>conj.</i> /dzɔqˌqəH/ | warp; /dzəːL/ rgʰu |
| rdzɔg | wash; /teːhəH/ <i>conj.</i> /teːhəkˌkəH/ <i>pst.</i> /tɛiːH/ |
| turquoise; /læːhɟəːH/ bla.gju | nkʰrud; bkru |
| turquoise; /jəːH/ gju | waste; /tʃʰɔːlaːH/ npʰro.brɟag |
| turtle; /riːL pærH/ rus.sbal | water; /teːhəH/ teːhu |
| twelfth month; /lɔːɲiːH/ lo.gnis | waterfall; /mbeˌtɛːhəH/ nbab.teːhu |
| twelve; /teːL ɲiːH/ bteu.gnis | wave; /wæːliːH/ rba.rɟabs |
| twist (fibers to make a rope); /ziːL/ | wave (hand); /juːH/ gju |
| two; /ɲiːH/ gnis | we (excl.); /ɲəːHteːhuː/ ɲa |
| umbrella; /xɔːlɔdiːH/ zɔg.gdugs | we (incl.); /əːHteːhu/ fɪu.teːhug |
| uncle (FB); /æːLkʰəːH/ ʔa.kʰu | weak; /ndzæˌmɪːH/ ndra.med |
| uncle (MB); /xaːLwɔːH/ zan.bo | wear; /kɛːL/ <i>conj.</i> /kɛŋˌgəːH/ gon |
| understand; /hæˌkɔːL/ ha.go | weasel; /seːwɔːH/ sre.mon |
| unit of measure; /tʃɛːL/ bre | weave; /tʰaːH/ <i>conj.</i> /tʰæqˌqəːH/ <i>imp.</i> /tʰuːH/ |
| untie; /teːhuːL/ <i>pst.</i> /teuːH/ bkrol | ntʰag |
| untrue; /lepˌpəːH/ lʰad | weft; /pɪːH/ spun |

| | |
|--|---|
| welcome, greet; /gæ ^L sə ^H / dga.bsu | wither; /kã: ^H / <i>conj.</i> /kæŋ ^H gə ^H / skam |
| well; /tu: ^L tə ^H ə ^H / * duŋ.tə ^H u | wolf; /cæŋ ^L k ^H ə ^H / spjaŋ.ki |
| west; /nu ^L / nub | woman; /pə ^L wō: ^L / bu.mo |
| wet; /lɔm ^H bæ ^H / <i>conj.</i> /lɔŋ ^H gə ^H / rlon | woodpecker; /c ^H ĩ: ^L tæŋ ^H mæ ^L / ciŋ.btags.ma |
| what; /tə ^H ə ^H zə ^L / tə ^H i | wool; /pe: ^L / bal |
| wheat; /tə ^L / gro | work (n.); /le: ^L k ^H æ ^H le: ^L / las.k ^H a |
| wheel; /pə ^L lɔ ^H / spo.lo | world; /ndzã: ^L lã: ^H / ndzam.gliŋ |
| when; /næ ^L wō: ^L ndzə ^L ye ^L / | worm, bug; /mbə ^L / nbu |
| where; /ka: ^L nə ^H / ga | worry (vi.); /tʃi: ^L la: ^L / brel.laŋ |
| whet; /dær ^L / <i>imp.</i> /dor ^L / brdar; brdor | worship; /ndze: ^L / mdzal |
| whetting stone; /dær ^L / brdar | wound; /mæ ^H / rma |
| whirlpool; /tə ^H əŋ ^L k ^H or ^H / tə ^H u.nk ^H or | wound, scar; /mæ ^H zə ^H / rma ? |
| white; /kæ ^L ru: ^L / dkar | wring; /tsər ^H / <i>conj.</i> /tsər ^H kə ^H / btsir |
| white goose; /tʃ ^H ō: ^L tʃ ^H ō: ^H / k ^H ruŋ | wrinkled; /jɛr ^L / gɛr |
| why; /tə ^H ə ^H zə ^L ye ^L / tə ^H i? | write; /ndzə ^L / <i>pst.</i> /tʃi: ^L / ndri; bris |
| wide, broad; /ja: ^L / jaŋs | xanthoxylum; /jær ^H mæ ^H / gjer.ma |
| wife; /næ ^L χtə ^H / nag.tə ^H ags | yak; /ja ^H / gjag |
| wild animals; /tə ^H zē: ^H / gtean.zan | yak (female); /ndzə ^L / nbri |
| wild animals; /rə ^L ta ^H / ri.dags <ri.d ^w ags> | yawn; /lɔ ^H rə ^H / |
| wild cat; /æ ^H lə ^H s ^H r: ^L lə ^L / | year; /lɔ ^L / lo |
| willow; /teã: ^H wã: ^H / lteaŋ.ma | yeast; /p ^H e ^H / p ^H abs |
| win; /dze: ^L / rgjal | yell, shout; /mbr ^L / <i>conj.</i> /mbək ^L kə ^H / <i>pst.</i> |
| wind; /lu: ^H / rluŋ | /pr: ^L / nbod; bos |
| window; /tʃ ^H ə ^L dze ^H / | yellow; /s ^H e ^L ru: ^L / ser.po |
| wing; /ʃəq ^H qæ ^H / geog.pa | yellow flower; /ma: ^L wō: ^L tɛa: ^H xu ^H / |
| wink, shut (eyes); /(ni ^H) tsō: ^H / <i>conj.</i> | yesterday; /k ^H ær ^L tɛa: ^H / k ^H a.rtsaŋ |
| /tsəŋ ^H gə ^H / btsum | yoke; /mr: ^H jæ ^H / rmos.gna |
| winnow, thresh; /lu: ^H c ^H ær ^H / * rluŋ.ear | you (sg); /tə ^H ə ^L , tə ^H i: ^L , tə ^H o ^L , tə ^H u ^L / k ^H iod |
| winter; /gəŋ ^L k ^H æ ^H / dgun.k ^H a | young girl; /dza: ^L mæ ^H / |
| wipe; /c ^H ə ^H / <i>pst.</i> /c ^H i: ^H / p ^H jis | young man; /sæ ^H rə ^H / gsar.bu |
| wit; /rəp ^L pæ ^H / rig.pa | |