

THE MORAIC STRUCTURE OF CLASSICAL TIBETAN*

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O. INTRODUCTION

Although Tibeto-Burman has been reconstructed with a phonemic quantity distinction between vowels, e.g., TB **gar* 'leave, abandon' and **ga:r* 'dance, leap, stride' (Benedict 1972 #15 and #11), which probably indicates moraic light and heavy syllables, respectively, the Tibetan writing system is, at best, ambiguous concerning phonological quantity distinctions, even though the evidence seems to suggest morae in modern Lhasa Tibetan (Chang and Shefts 1965, Goldstein and Nornang 1978, Hari 1979, and Hogan 1994).

On the negative side, transcription of Indic long vowels and Middle Chinese complex nuclei with both an on-line and a subscript (འཇུག་ *'dogs*) འཇུག་ *a-chung*, as in ལྷ་ཡུ་ Written Tibetan *Sh'akya* <shaakya> from Sanskrit *śākya* and ལེ་འི་ *le'i* <le'i> and ལེ་འི་ ལེ་འི་ *l'e'i* <lee'i> for Middle Chinese 吏 (K975g) *liei*: indicates that, even though these orthographic means of indicating a phonological quantity distinction between vowels in monosyllables (and monomorphemes in the case of Chinese) were known to early Tibetan scribes, they were not employed for Tibetan. This seems to indicate that a phonological quantity distinction between vowels in Old Tibetan and Classical Tibetan was not perceived.

On the positive side, loan phonology, transcription of foreign words, and Classical Tibetan orthographic practices do seem to indicate a phonological quantity distinction between vowels. Monguor borrowings from Tibetan dialects indicate long vowels arising from coda loss in Tibetan: Mgr *arāwa* ~ *rāwa* 'hair' Written Tibetan ར་ལ་པ་ *ral-pa* 'long hair', Modern Lhasa *rεε-pa*. Transcription of Middle Chinese triphthongs and diphthongs in closed

* This is a continuation, to an extent, of the topic of compensatory lengthening in Modern Lhasa Tibetan in Hogan 1994. This article too depends to a great extent on the work of Sprigg (1987) and Hock (1986).

The following abbreviations are used:

CT	Classical Tibetan	L	Modern Lhasa Tibetan
LT	Literary Tibetan	M	Mongolian
MC	Middle Chinese	Mgr	Monguor
MM	Modern Mongolian	OT	Old Tibetan
WM	Written Mongolian = Classical Mongolian	WT	Written Tibetan

syllables seems to indicate a maximum monomorphemic syllable in Old Tibetan orthography: 吏 (K975g) Middle Chinese *liei*: in Li and Coblin 1987:IS.28, 33 is transcribed as both ལེ་ལི་ *le'i* and ལེ་ལི་ ལེ་ལི་ *l'e'i*, the former with a diphthong, instead of the triphthong in the latter, and 經 (K831c) MC *kieng* in Coblin 1992 (II.413) is transcribed as ལྷེང་ *kyeng* and ལྷེང་ ལྷེང་ *kyang*, with the Old Tibetan consonantal glide in the onset replacing the Middle Chinese high vowel of the diphthong in the nucleus, i.e., there were no super-heavy syllables (*VVC) in monomorphemic syllables. Within Tibetan, Classical Tibetan double vowels in རེ་ལུ་ *rde'u* 'little stone > pebble' (< རོ་ལུ་ *rdo* 'stone' + ལུ་ 'u (< ལུ་ *bu*) diminutive) are written without an internal syllable boundary, རེ་ལུ་ *tshed*, as if they were a sequence of two vowels, a heavy syllable with two vowels, i.e. two morae. Furthermore, Old Tibetan forms with the terminative suffix are often ambiguous, e.g., ལུ་དུ་ ~ ལུ་དུ་ *gu-du ~ gudu* 'separately' (Li and Coblin 1987: IX.46 and II.N.49) (= ལུ་དུ་དུ་ *gud-du*), from the root ལུ་དུ་ *gud* 'separation'. This suggests an alternation between a geminate consonant and a first syllable with unexpected short vowel.

Herein arguments will be presented that Classical Tibetan does have structures and processes that indicate moraic structure.

1. PHONOLOGY OF TIBETAN

1.1 Phonology of Old Tibetan

Old Tibetan (OT) is defined by Li and Coblin (1987:3) as the language of those texts written in the Tibetan language between the development of the script and the spelling reforms during the reign of King མི་གཙུག་ལྷེ་བཙུན་ Khri-gtsug-lde-brtsan, who ruled from 815 to 838 AD. This material includes inscriptions and texts of historical material, medical works, translations from the Buddhist canon, etc.

1.1.1 Orthography

Although the Tibetan script is traditionally believed to have been devised by ཐོན་མི་ལ་བུ་ལྷེ་བུ་ Thon-mi Anui-bu based on a Kashmiri prototype, Beyer (1992:41) states that an Indian script found on baked bricks from Gopālpur dated to ca. 500 AD is virtually identical to the Tibetan script.¹ Written Tibetan texts (Old Tibetan), some of which have been dated to the seventh century AD, have been discovered in Tunhuang (Dunhuang) 敦煌 in far western China.²

¹ Concerning the Gopālpur paleographic model for the Tibetan script, Miller (1976:18) [= Miller 1963:502] fn. 108 refers to Inaba 1954:2.

² Ref. Coblin 1992 for sources.

There are two general forms of Tibetan script: དབུ་ཅན་ *dbu-can* ‘with a head’, the horizontal line at the top of the graphs, and དབུ་མེད་ *dbu-med* ‘headless’, without the horizontal line.³ Because the དབུ་ཅན་ *dbu-can* form is generally more common in xylographic printing of texts, this form will be the one discussed herein.

All consonant graphemes, other than superscripts and subscripts, indicate an inherent <a> unless another vowel grapheme is explicit: དག་ is <daga> interpreted as *dag* due to the ཚེག་ *tshed*, vs. དག་འ་ <daga’a> *dga’* with the ་ *a-chung* represented by the apostrophe plus vowel. The explicit vowel indicating the syllable nucleus is always a superscript or subscript to the root consonant: བསྐྱལ་བ་ <baskula-ba> *bskul-ba* ‘to extend (perfective)’ (Li and Coblin 1987:XI.9) and བསྐྱུངས་པ་ <baskrungasa> *bskrungs-pa* ‘to mix (perfective)’ (Li and Coblin 1987:VI.16), and འཁྲུགས་པ་ <’akhrugasa-pa> *’khrugs-pa* ‘disorderly’ (Li and Coblin 1987:II.37). There is obviously a great deal of language-specific knowledge of Tibetan phonotactics and syllable structure inherent in the orthography and orthographic practices.

1.1.2 Segmental phonemes

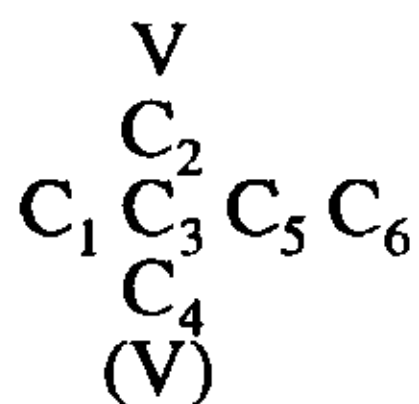
According to Beyer (1992:55ff), Old Tibetan (OT) had the following phonemes: *p ph b t th d k kh g ʔ, ts tsh dz tš tšh dž, s z š ž h, m n ɲ ŋ, l r, y w, i e a u o*.⁴ The symbol *r* is classified as a retroflex in his consonant chart (Table 5). The *a-chen* ཨ་ is transcribed as the glottal stop plus vowel. To this is added the barred *i* as used in Li and Coblin 1987, which represents \bar{i} , the གི་གུ་ “*gi-gu* inverse” of Miller, who describes it as “a high open unrounded vowel [I]” (Miller 1976:xcviii). A length distinction between vowels is not mentioned in either work; although Beyer (1992:71) lists complex nuclei *oi*, *ai* and *eu* in open syllables and gives examples of vowel coalescence of two and three vowels in closed syllables resulting from the suffixes ་འང་ *’ang* ‘also’ and ་འམ་ *’am* ‘or’: པ་འང་ *-pa’ang* (noun and verb suffix), བོ་འང་ *-po’ang* (noun suffix), and རྟ་འམ་དྲེ་འམ་བེ་འམ་འབྲི་འམ་ *rta’am dre’am be’u’am ’bri’am* ‘horse or donkey or calf or yak-cow or ...’, all being complex words of two or three morphemes without internal ཚེག་ *tshed*.

³ Ref. Róna-Tas 1985:183ff for a discussion of the Tibetan script, especially pp. 279ff for examples of older forms of the script.

⁴ Beyer (1992:69f) also discusses the evolution of Proto-Tibetan diphthongs **ua* > OT *o* and **ie* > OT *e/ya*.

1.1.3 Syllable structure

In Old Tibetan, the possible positions for the དབྱངས་ཡིད་ *dbyangs-yid* vowels (V) and དམལ་བྱེད་ *dsal-byed* consonants (C) are:



Traditionally, the central consonant C_3 is known as the radical; the superscript C_2 , the pre-radical; the subscript C_4 , the post-radical; and the initial consonant C_1 , the pre-pre-radical. The final is C_5 and the post-final, C_6 . According to Beyer 1992:42ff, the pre-radicals are *r*, *l*, and *s*, which are historically derivational in nature, and the pre-pre-radicals, *g*, *d*, *b*, *m*, and ' (i.e. *a-chung*); of these latter, all but *m*- occur as verb inflections in some functions, i.e., they are possibly transparent prefixes throughout OT and, at least for some dialects, Classical and Modern Tibetan. The post-radicals are the glides and the liquids: *y*, *w*, *l*, and *r*. The finals are *b*, *d*, *g*, *s*, *m*, *n*, *ŋ*, *r*, *l*, and ' *a-chung*. The stops written as voiced, , <d>, and <g>, do not contrast with voiceless stops <p>, <t>, <k> as syllable finals.⁵ The post-finals are only two: *s* and *d*, again verb inflections in some functions, the latter, according to Beyer 1992:49f fn. 12, being the ད་དག་ *da-drag*, an allophone of the former.⁶ Thus, the verb སྐྱེ་བ་ *skye-ba* 'to be born' has the perfective སྐྱེས་པ་ *skyes-pa* (Li and Coblin 1987:V.13), སྐྱུང་བ་ *sgrung-pa* 'to mix', the perfective form བསྐྱུངས་པ་ *bskrungs-pa* (Li and Coblin 1987:VI.16), and འགྱུར་བ་ 'gyur-ba 'to change', the perfectives གྱུར་ *gyur* and གྱུར་དྲི་ *gyurd* (Li and Coblin 1987:IE.28 and IE.50, respectively). Thus, the monomorphemic syllable was tautosyllabically <V> as in སྐྱེ་བ་ *skye-ba* or <VC> as in སྐྱུང་བ་ *sgrung-pa*; all codas of two consonants were at least bimorphemic as in བསྐྱུངས་པ་ *bskrungs-pa*.

It has been recognized, at least since Laufer 1914:84ff, that OT codas and preradicals were in the process of being lost as early as the ninth century. Middle Chinese transcription of OT names and titles seems to indicate that some codas and preradicals were already lost, at least in the dialect on which

⁵ Tibeto-Burman is not reconstructed with final voiced stops. Furthermore, LaPolla (1994) argues for the Old Chinese reconstructions of Baxter 1992 and reconstructed Sino-Tibetan without final voiced stops. In radical underspecification, as discussed in Kiparsky 1995:646, the stops *p*, *t*, *k* are not specified for [+/- voice]. A subsequent rule would spread voicing if necessary: [] --> [+voice] / [+voice] ___ [+voice]. A default rule would specify [-voice] for those segments not specified as [+voice].

⁶ Róna-Tas (1985:173f) derives the present tense *-s* and *-d* suffixes from **-d*, with **-s* representing the perfect. Ref. also Wolfenden 1929:56ff.

these transcripts were based: final *-l* in རྒྱལ་ OT *rgyal* ‘victory;’ the *r*-preradical in the same word; and the *b*-preradical in བཟུང་ OT *btsan* ‘strong’. The loss of the initial onset consonants seems to have begun in morphs with three consonant onsets.⁷

1.2 Phonology of Classical Tibetan

Classical Tibetan is the language of those texts written after the spelling reforms of King མི་གཙུག་ལྷེ་བཟུང་ Khri-gtsug-lde-brtsan, but before the recent past.⁸ It is the language of the majority of the Buddhist canon translated into Tibetan.

1.2.1 Segmental phonemes

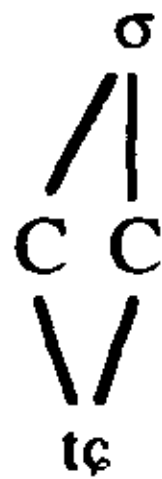
Classical Tibetan had the same phonemes as OT with the addition of several allophones: *p ph b t th d k kh g ʔ, ts tsh dz tš tšh dž, s z š ž h, m n ŋ, l r, y w, i e a [a, ä] u [u, ü] o [o, ö]*. To this group should be added long vowels and nasalized vowels for the Pre-modern Lhasa dialect due to compensatory lengthening and final nasal loss, i.e., the phonemic inventory of Classical Tibetan is intermediate between that of OT and modern Tibetan languages such as Lhasa Tibetan.

The processes of glide formation and preradical and coda loss in some dialects continued within the period of Classical Tibetan: *b-* > *w* (> \emptyset) as in ཤམ་ WT *shaba* > *shawa* > Modern Lhasa (L) *shā* ‘a stag’, contrasting with ཤ་ WT *sha* ‘flesh;’ and *-s* > \emptyset , *d-* > \emptyset , and *g-* > \emptyset as in དབྱེར་གནས་ WT *dbyar-gnas* > L *yarnεε* ‘summer prayers’.

1.2.2 Prosodic structure of Classical Tibetan

If there is no phonological distinction between light and heavy syllables in Classical Tibetan, the syllable consists of an onset (O) and a rhyme (R) which

⁷ The affricates are complex segments of two consonants:



⁸ Beyer (1992:36f) defines Classical Tibetan to exclude canonical translations, but to include material before the spelling reforms.

in turn includes a vowel as a nucleus (N) and an optional coda (C). This structure is indicated in Figure 1 for ལུག་ WT *lug* 'sheep':



Figure 1

In a syllable-timed language, the binary foot (F) composed of two syllables is the minimal prosodic word (ω) as in Figure 2 for ལུག་གུ་ WT *lug-gu* 'lamb':

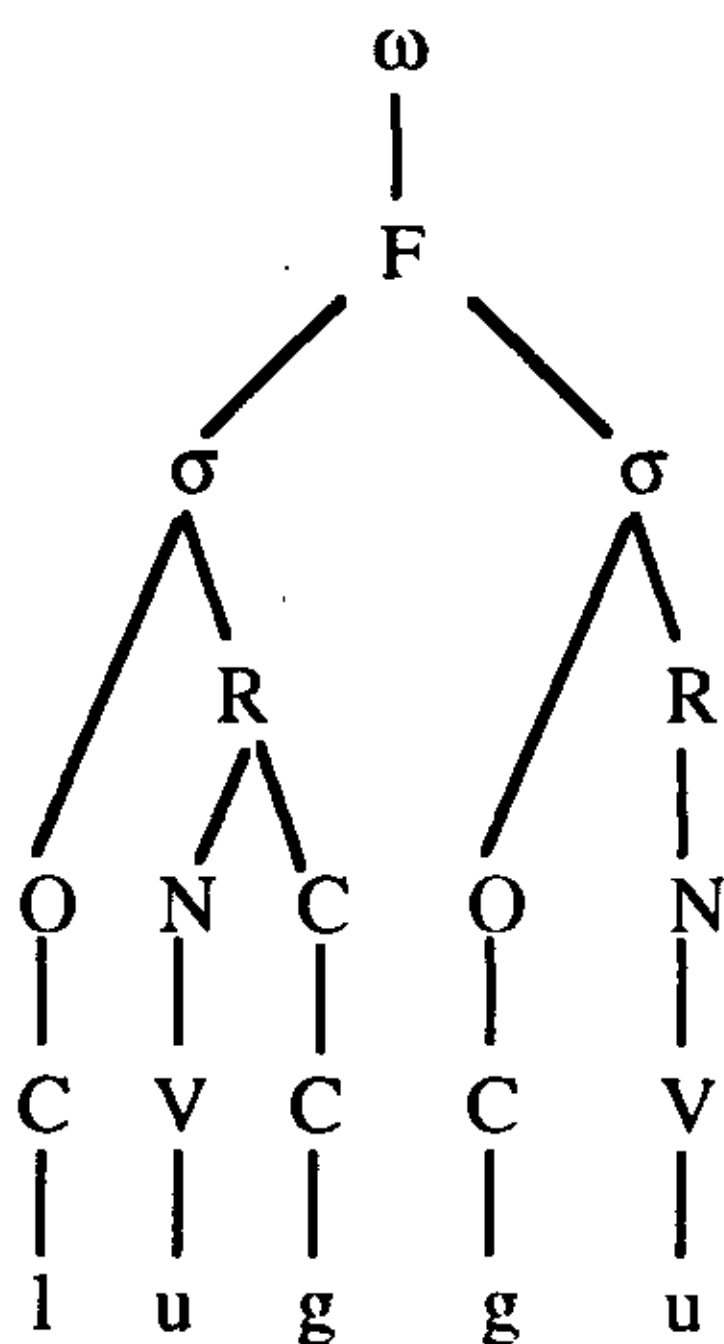


Figure 2

with maximization of onset, i.e., the final <g> of the first syllable is reduplicated to form an onset for the second syllable.⁹

⁹ A more recent proposal is the following representation corresponding to Figure 2:

If the prosodic structure of Classical Tibetan includes a phonological distinction between heavy and light syllables as in Modern Lhasa Tibetan, the following are then possible moraic representations of the above words:



Figure 3

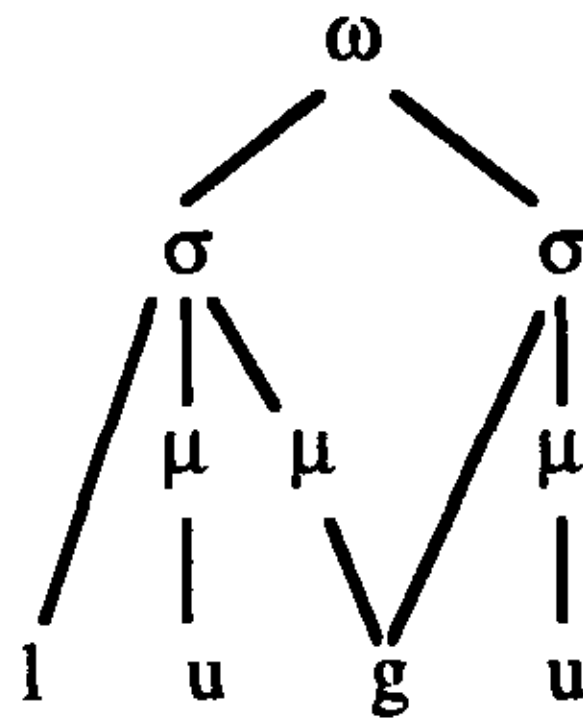
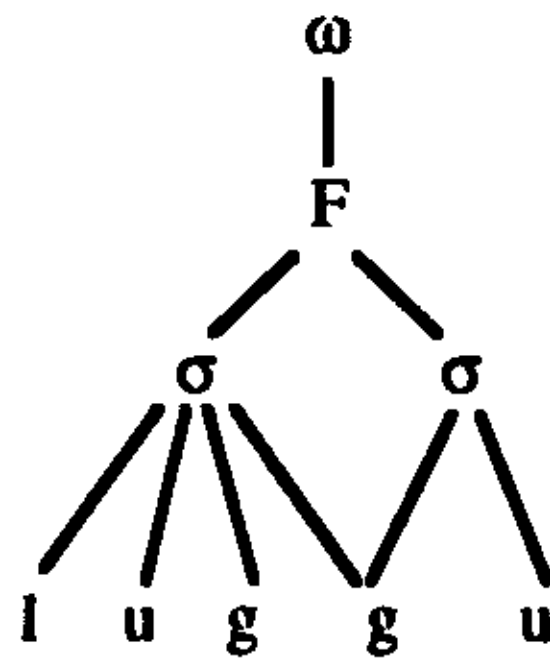


Figure 4

In Figure 3, the binary moraic foot forms a minimal word. In Figure 4, the prosodic word is composed of a binary moraic foot and (probably) a deficient



in which the internal structure of the syllable is omitted.

Hogan, L.C. 1996, "The moraic structure of Classical Tibetan", in *Linguistics of the Tibeto-Burman Area*, vol. 19, no. 1, pp. 115-149. (purl.org/sealang/hogan1996moraic.pdf)

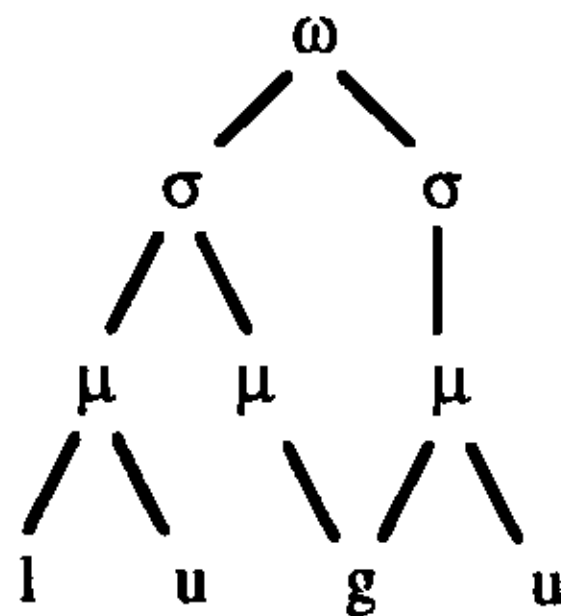
monomoraic syllable. The geminate consonant <gg> in Figure 4 is shared by both syllables, a coda in the first and an onset in the second.¹⁰

1.3 Phonology of Modern Lhasa Tibetan

1.3.1 Segmental phonemes

According to Goldstein 1977:11, the Modern Lhasa dialect has the following sounds: *p phⁿb t thⁿd t̥ t̥hⁿd k khⁿk q qhⁿg, ts tsh c chⁿj, s š h, m n ɲ, m^h ɲ^h ŋ^h, l r, l^h r^h, y w, i ii e ee ε εε ê êê ə əə a aa u uu o oo ü üü ö öö ɔ ɔɔ*. The symbols *n^b* etc. represent prenasalized stops and affricates; *m^h* etc., voiceless sonorants; and *ê* and *ö*, tense [possibly + ATR] vowels contrasting with the lax vowels *ε* and *ɔ*, respectively. Double vowel symbols indicate long vowels. All of the vowels also occur as nasal vowels, which should be considered as separate phonemes. The only diphthong is *əu*; other bimorphemic vowel sequences are assimilated as in ལྷོ་ལྷོ་ WT *su'i*, L *süü* (< ལྷོ་ su + ལྷོ་ 'i genitive suffix) 'whose'; ཁོ་ལྷོ་ WT *kho'i*, L *qhöö* 'his'; and ལྷོ་ལྷོ་ WT *nga'i*, L *ngεε* 'mine'.¹¹

¹⁰ An alternate proposal for languages with morae is that discussed in Broselow 1995:190ff, Blevin 1995:237ff fn. 25, and Perlmutter 1995:310ff in which the onset branches directly from the mora node as in this representation of Figure 4:



Although Blevins does discuss languages in which onsets do apparently contribute to syllable weight, this particular approach will not be utilized herein because onsets do not seem to influence syllable weight in Tibetan.

¹¹ Hari (1979:5, 28ff) considers the following phonemes: *p ph t th t̥ t̥h k kh ʔ, tɕ tɕh, ɕ s h, m n ɲ, l r, l̥, w j, i ii ə əə ε a aa u uu o oo y (=ü) ø (=ø)*. The symbol *l̥* is the voiceless lateral represented by *l^h* in Goldstein 1977:11. Nasal vowels are synchronically derived allophones. Furthermore, she has a distinction between short, half-long, and long vowels [40ff] for /i e a u o / (tone marks ignored): མོ་ WT *tho* /tho/ [tho] 'list', མཐོ་ལྷོ་ WT *mtho-po* /tho?-/ [tho?] 'be high', and མོ་བ་ WT *tho-ba* /thoo-/ [tho:] 'a hammer', the half-long being determined by a final glottal stop or *k*. For other vowels, the distinction is between short and half-long. However, this distinction is non-phonemic in some cases such as མཚལ་ WT *tshad* /tɕeh?/ 'measure' and མཚལ་ WT *mdzal* /tɕeh?/ 'visit' which occur with all three quantity distinctions (the superscript *n* and the subscript dots of [ᵐdʒɛ] representing prenasalization and breathy voice, respectively): /tɕeh?-tang/ [ᵐdʒɛḏã:] 'way of measuring', /tɕeh? kɛ?/ [ᵐdʒɛ? ge·] 'will (you) measure?', /tɕeh? pɛ?/ [ᵐdʒɛ? βe·] 'did (you) measure', and /tɕeh?-kaa/ [ᵐdʒɛ ga·] 'in order to visit', /tɕeh? soŋ/ [ᵐdʒɛ? sɔ:] 'visited', /tɕeh? pa/ [ᵐdʒɛ: βa] 'did (you) pay a visit?' Because final stops *-p*, *-t*, and *-k* alternate with the glottal stop, the lengthening of the vowel may be

1.3.2 Syllable structure in Modern Lhasa Tibetan

There are two syllable types in Modern Lhasa Tibetan: short and long. The short syllable consists of an optional onset with a short vowel: དབུ་ WT *dbu*, L *u* ‘head’, སྒྲི་ WT *sga*, L *qa* ‘saddle’, and the first syllable of སྒྲིམ་པོ་ WT *sgam-po*, L *qā po* ‘dry’ with a nasal vowel.¹² A long syllable consists of an optional onset with a short vowel and coda or a long vowel or a diphthong: འམ་ WT *am*, L *am* ‘mango’, བསྐྱམ་ WT *bskam*, L *qam* ‘to dry’, དབུགས་ WT *dbug*, L *uu* ‘breath’, རྒོད་ WT *rgod*, L *qöö* ‘eagle’, and གཤམ་ WT *ga’u*, L *qhəu* ‘box for holding religious objects’. There are no tautosyllabic long vowels plus consonant sequences, i.e., monomorphemic VVC does not occur.

Because Lhasa Tibetan seems to clearly be a language with a phonological quantity distinction between vowels and, thus, light and heavy syllables, the syllable structure of Lhasa Tibetan can be represented as below: the first ལུག་ WT *lug*, L *luu* ‘sheep’ with a long vowel and the latter ལུང་ WT *rlung*, L *lung* ‘air’ with a short vowel and coda:

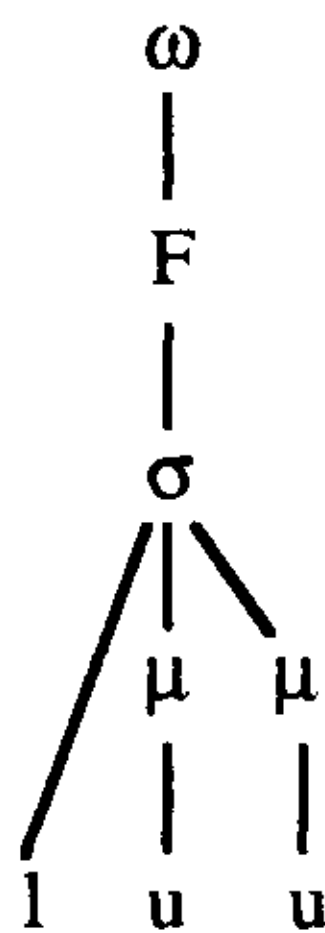


Figure 5

due to the tonal feature, i.e., the half-long vowel may be phonetic (allophonic). This would be similar to the situation which Yip (1995:493f fn. 8) points out as occurring in stopped syllables in the Pingyao and Wenzhou dialects: stopped syllables occur with contour tones; however, the contours are not fully realized, e.g., 54 [half-long] vice 53 [long].

¹² It is often the case that a short nasal vowel occurs where a long nasal vowel is expected. This seems to be due to the loss of the distinction between word-internal nasal vowels resulting from association (delinking and relinking) of prenasalization of an onset with a short vowel as in སྐུ་རྩུག་ WT *sku-'jug*, L *qū cuu* ‘blouse (H)’ and those resulting from coda loss of a nasal with concomitant compensatory lengthening. Word-final nasal loss results in long nasal vowels for all three final nasals: ལུམ་ WT *shum*, L *shūū* ‘to cry’, མ་ཚེན་ WT *ma-chen*, L *maa cēē* ‘cook’, and གཤམ་ WT *gang*, L *qhāā* ‘full’. Ref. Hogan 1994 for a discussion of nasalization in Lhasa Tibetan.

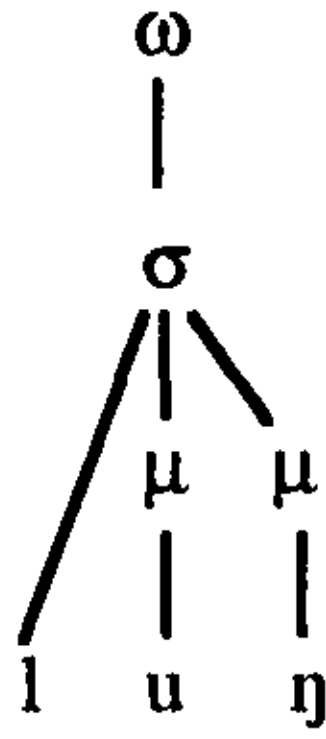


Figure 6

1.3.3 Word stress in Modern Lhasa Tibetan

On the basis of the brief statement in Goldstein and Nornang 1978:xv, word stress in Modern Lhasa Tibetan is determined by phonological quantity. Monosyllabic content words receive stress whether the syllable is short or long: དབུ་ WT *dbu*, L *u* ‘head’, ལྷུ་ WT *shum*, L *shūū* ‘to cry’. In disyllabic words in which both are short, the first syllable is stressed: ཕུ་མོ་ WT *phu-mo*, L *phó-mo* ‘male-female’. In disyllabic words in which both syllables are long, the stress seems equal unless the second has a falling tone (↓): བོད་གཞུང་ WT *bod-gshung*, L *phöö-shúng* ‘Tibetan government’ and བོད་དམག་ WT *bod-dmag*, L *phöö-maá* ↓ ‘Tibetan army’, in which the second syllable has falling tone and stress. In disyllabic words in which the syllables are of unequal length, the long syllable receives stress: སྐུ་ཁབ་སྒྲོན་ WT *sku-khab sgron*, L *qüü-qəp tō* ‘to give an injection (H)’, with stress on the first syllable, as opposed to སྐུ་རྩུག་ WT *sku-’jug*, L *qǔ cuú* ‘blouse (H)’, with stress on the last syllable.¹³

2. TRANSCRIPTION OF FOREIGN WORDS IN TIBETAN

2.1 Tibetan transcription of Indic loanwords

According to Hock 1991:571f, Sanskrit inherited from late Proto-Indo-European a distinction between the following long and short vowels: *i*, *ī*, *e*, *ē*, *a*, *ā*, *u*, *ū*, *o*, *ō*. Subsequently, according to Anderson 1973:58f and Hock 1991:571, within Sanskrit, all non-high vowels merged into *a*, *ā*. Resulting falling diphthongs with *a* became long mid vowels, i.e., *ai* > *ē*, *au* > *ō*.

¹³ All the examples discussed by Goldstein and Nornang (1978:xv) involve short and long vowels, not light (monomoraic) or heavy (bimoraic) syllables with codas as in those involving the formatives འུ་ WT *bu*, L *u* ~ *uu* and འུ་ WT *pa*, L *pa* ~ འུ་ WT *ba*, L *wa* ~ *a* such as: ཞབས་སུ་ WT *zhabs-su*, L *šəp-suú* ‘socks (H)’ with stress on the last syllable, and རྩུག་པ་ WT *rkang-pa*, L *qáng-pa* ‘foot’ with stress on the first syllable; or compounds such as: ཞིབ་ཅེ་ WT *zhib-che*, L *šip-cə* ‘detail’, in which both syllables are short in their treatment, and རྩུག་ལག་ WT *rkang-lag*, L *qang-laa* ↓ ‘limbs’, with a bimoraic first syllable and falling tone on the the long vowel of the second syllable.

Although Indian and Tibetan translators often interpreted Indic Buddhist terms based on contemporaneous understanding of Sanskrit etymology (Beyer 1992:107ff), names (especially personal and place names) were often transcribed with indication of the distinction between short and long vowels by using a subscript ^२ *a-chung* (འཇུང་ 'dogs) for long vowels: ཀ་ *ka*, ཀ་^२ *kā*, ཀི་ *ki*, ཀི་^२ *kī*, ཀུ་ *ku*, and ཀུ་^२ *kū*.¹⁴ The Sanskrit long vowels *ē* and *ō*, written as the diphthongs *ai* and *au*, were represented as double vowels in Tibetan: ཀའི་ WT *kai* <kee> and ཀའུ་ WT *kau* <koo>, respectively. Some forms from Hopkins 1989, Das 1970, and Jäschke 1881 representing these distinctions are given in Table 1:

Sanskrit	Tibetan	Gloss
kalaviṅka	ཀལ་བིང་ཀ་	ka-la-bing-ka sparrow
sarva	ས་ར་བ་	sa-rba all
utpala	ུཏ་པ་ལ་	ut-pa-la lotus
Varuṇa	མ་རུ་ན་	wa-ru-na
indranīla	ཇིན་མུ་ནི་ལ་	in-dra-n'i-la sapphire
Kamalaśīla	ཀ་མ་ལ་ཤི་ལ་ ^२	Ka-ma-la-sh'i-la
kāya	ཀ་ཡ་ ^२	k'a-ya body
śākya	ཤ་ཀུ་ ^२ ཤ་ཀུ་	Sh'a-kya Sha-kya
ṭīkā	ཏི་ཀ་ ^२ ཏི་ཀ་	t'i-k'a t'i-ka commentary
Tathāgata	ཏ་ཐ་ཀ་ཏ་	ta-th'a-ga-ta
Kārsapana	ཀར་ས་པ་ན་	kar-sa-pa-na a kind of coin

Table 1

In the first four items above, Indic short vowels are transcribed with short vowels in Tibetan. In the second group of three, Indic long vowels are indicated with the subscript *a-chung* ^२. In the last group of four, each is anomalous in that a long vowel occurs in the Indic word but a subscript *a-chung* does not necessarily occur in the Tibetan borrowing. Thus, there was

¹⁴ In the manuscript Pelliot No. 3531 discussed in Hackin 1924, Sanskrit long vowels are represented by both the *a-chen* ཨ་ as in Skt *Raynāvalī*, ར་ད་ན་ཨ་བ་ལི་ WT *Rad-na-a-ba-lī* and Skt *Aparagodāvarī* ཨ་པ་ར་འགོ་དུ་ཨ་བ་རི་ WT *A-pa-ra-'go-da-a-ba-ri* and the on-line ^२ *a-chung* as in Skt *Aparagodāvarīrāja* ཨ་པ་ར་ཀ་གོ་འདེའ་ཨ་བ་རི་ར་ཇ་ WT *a-pa-rak-ko-'da'-a-ba-ri-ra-dza*.

an early, viable option in Tibetan orthography for the representation of long vowels.

2.2 Tibetan transcription of Chinese words

There are several inscriptions on historical monuments in both Middle Chinese (MC) and Old Tibetan. MC as interpreted by both Li (1971) and Karlgren (1957) had a complex system of glides, monophthongs, diphthongs and triphthongs, such as the following in Li's transcription, with K numbers referring to Karlgren 1957: 肥 (K566t) MC *phi*, 夫 (K101a) MC *pju*, 論 (K470b) MC *luən*, 衛 (K342a) MC *jwäi*, 斐 (K579k) MC *bjwei*, and 吏 (K975g) MC *liei*. In the Tibetan transcription of Chinese names and titles, the last vowel of the Chinese diphthongs and triphthongs is indicated with the on-line *a-chung* རྩ and a vowel letter if other than *a*; however, the first vowel of a sequence is sometimes written with the subscript རྩོགས 'dogs. Some of those relevant to the structure of the syllable nucleus are given in Table 2 with the Middle Chinese (MC) values from Li and Coblin 1987 (with K numbers for reference to Karlgren 1957) and the reconstructed 沙州 Sha-chou [Shazhou] Tang-time dialects from Coblin 1992 where available.¹⁵

Except for forms such as 戶 (K53a) *yuo:* transcribed as ཧོ ho, 州 (K1086a) *tšjəu* as ཅེ ci'u and 部 (K999z) *buo:* as བོ b'o, there is generally a careful transcription of MC diphthongs. The transcription of the MC diphthong *au* in 校 (K1166i) *kau-* and 孝 (K1168a) *xau-* as *e'u* in ཀེ ke'u and ཧེ he'u, respectively, is consistent within T, i.e., the diphthongs *au* and *ou* are not possible, e.g., ཧེ rte'u 'little horse > pony' (< *rtau < ཧ rta 'horse' + ར ི u (< བ bu diminutive) and ཧེ rde'u 'little stone > pebble' (< *rdou < ཧ rdo 'stone' + ར ི u diminutive).¹⁶ Furthermore, except for 僕 (K1211b) *buok, buk* transcribed as བོག བོག bog, b'og, all examples seem to be open syllables; i.e., syllables closed with the MC stops *p, t, k* and the nasals *m, n, ŋ* were not transcribed into OT with diphthongs. Although it was possible to transcribe final *-m* with long vowels as in Skt ཨོ om in ཨོཨོཨོ ཨོ om a hūm, this practice did not occur with the OT transcription of MC here.¹⁷

¹⁵ Coblin (1992:275) suggests that the 長安 Chang-an dialect may have been the language used in the Sino-Tibetan Treaty of 821-822 and that this northwestern dialect "was probably closely related to those of the Shazhou area".

¹⁶ Róna-Tas (1985:334) attributes this insight to Uray (1952).

¹⁷ This is also the situation within the transcriptions in Coblin 1992: Groups 4 and 5 with final *-m*: 厭 (K616c) MC *ʔjiän* Shazhou (I.233) *ʔiam [ʔiam] are transcribed as ཨོ em; Groups 6 and 7 with final *-n*: 面 (K223a) MC *mjiän-* Shazhou (I.282) *mian as མེ myan; and Groups 8, 9 and 13 with final *-ng*: 經 (K831c) MC *kieng* Shazhou (II.413) *kieng as ཀེ kyeng and ཀེ kyang.

Chinese		Tibetan	
MC	Shazhou		
吏	liei: (K975g)		ལེའི་ ལེའི་ le'i, l'e'i
開	khâi (K541)	khei (IV.154a)	ཁེའི་ kha'e
太	thâi- (K317d)	thei (IV.171a)	ཐེའི་ ཐེའི་ tha'i, the'e
大	dâi- (K317a)	'dei (IV.171)	དེའི་ དེའི་ da'e, da'i དེའི་ de'e
衛	jwâi (K342a)		འཇེའི་ 'we'i
載	tsâi (K943a)	tsâi (I.164)	ཙེའི་ tse'e
僕	buok,buk (K1211b)		བོག་ བོག་ bog, b'og
戶	yuo: (K53a)		ཧོ་ ho
部	buo: (K999z)	bu (IV.593a)	བོ་ b'o
守	śjəu: (K1099a)	śəu (I.557)	ཞིའུ་ zhi'u ཤིའུ་ sh'i'u
老	lâu: (K1055a)	lâu (IV.501)	ལཱུ་ la'u
劉	ljəu (K1114a')		ལིའུ་ li'u
孝	xau- (K1168a)		ཧེའུ་ he'u
校	kau- (K1166i)		ཀེའུ་ ke'u
苗	mjäu (K1159a)		འབྲེའུ་ 'bye'u
牛	ŋjəu (K998)		འགྲིའུ་ 'gi'u
兆	djäu (K1145a)		ཙེའུ་ ce'u
朝	djäu (K1143a)		ཇེའུ་ je'u
杜	duo: (K62g)	tho (I.583)	
州	tśjəu (K1086a)		ཙེའུ་ ci'u

Table 2. Chinese Transcription of Tibetan

For MC triphthongs and glides plus two vowels, the OT transcriptions are less accurate; OT orthographic traditions did not permit monomorphemic <-VVV> sequences: the latter transcriptions of 吏 (K975g) MC *liəi:* ལེའི་ *le'i* <lei>, ལེའི་ *l'e'i* <lee'i> and 守 (K1099a) MC *śjəu:* ཞིའུ་ *zhi'u* <zhi'u>, ཤིའུ་ *sh'i'u* <shii'u> being examples of exceptions.¹⁸

¹⁸ Although the *a-chen*¹⁸ was also apparently used to transcribe non-initial MC vowels in some manuscripts such as British Museum MS. Or. S.2736 and 1000 discussed in Thomas and Giles (1948), the interpretation of it as a glottal stop as in Coblin (1992:271) creates some problems, i.e., apparent monomorphemic monosyllabic MC words are transcribed as

Róna-Tas (1985:305ff) compares the transcription of Chinese and Tibetan names in Tibetan transcription of MC texts, primarily those in Csongor 1960. The following are relevant to the discussion here. The MC values are those of Karlgren (1957) followed by the K numbers therein. The reconstructed 沙洲 Sha-chou Tang-time dialect forms from Coblin 1992 have been added, where available:

Chinese		Tibetan	
MC	Shazhou		
帝	tiei (K877a)	དེ	de
開	k'âi (K541a)	ཁམ་མེ	kha'i
載	dzâi (K943a'b')	ཚེ	tse'e
杜	d'uo (K62g)	དོ	do
孝	χau- (K1168a)	ཧེ་ཅུ	he'u
老	lâu (K1055a)	ལེ་ཅུ	le'u
綬	zi <u>u</u> (K1085e)	ཤི་ཅུ	shi'u

Table 3. Chinese Transcription of Tibetan

Although not completely independent transcriptions of MC, these forms from Karlgren 1957 verify the conclusions reached on the basis of the OT transcription of Chinese names and titles in Li's system above.

3. REPRESENTATIONS OF TIBETAN PRONUNCIATION

Herein there are two historically important sources of information about Tibetan pronunciation: the transcription of OT names and titles in OT from Li and Coblin 1987 and Róna-Tas 1985, and Tibetan borrowings into Monguor in Róna-Tas 1966.

3.1 Chinese transcription of Tibetan

In the Sino-Tibetan inscriptions discussed in Li and Coblin 1987, and the Sino-Tibetan Treaty of 821-822 AD discussed in Róna-Tas 1985:337ff, there are several MC transcriptions of Tibetan names and titles. Those relevant are listed in Table 4. The first group (examples 1-2) exemplifies a relatively straightforward transcription. However, in the second group (examples 3-11),

disyllabic with a word internal glottal stop as in Thomas and Giles (1948:768) #A85 道 MC *dâu*: 'way' transcribed as ཏཱ་ཨ་ཏཱ་ *da'o?a*. These should probably be considered as a monosyllable because the same word in the next phrase is transcribed as ཏཱ་ *da'o*.

Tibetan		Middle Chinese
1. བཀའ་ལ་གདོགས་པ་	bka' la gtoḡs pa 'a title'	伽羅篤波 (K15* 6a 1019g 25l) gja lâ tuok puá
2. རང་རྒྱལ་ཟིགས་	zhang rgyal zigs	尚野息 (K725a 831 925a) źjang jia sjək
3. འོ་ལྷོ་སྤུ་རྒྱལ་	'o lde spu rgyal	鶻提悉補野 (K486b 866n 1257e 102c' 831) yuət diei sjet puo jia
4. སྤུ་རྒྱལ་	spu rgyal 'clan name'	率勃野 (K490* 491b 831) suət buət jia
5. ཀལུ་བཟང་ལྟེས་མ་	klu bzang myes rma	矩立藏名摩 (K95j 694a 727g 826a 17e) kju ljəp dzāng mjwong muá
6. ཀལུ་བཟང་ལྷོ་ཤོ་བཟུན་	klu bzang lha bo brtsan	〔矩〕樓勃藏他 (K95j 123k 481b 727g 4c' 72* [phuo] tsân [譜] 贊 153ab) [kju] ləu buət dzāng thá
7. རབ་ཤོ་འོ་ཚོག་གི་བྱ་	khab so 'o chog gi bla	榼蘇戶屬劫羅 (K642t 67c 53a 1224s 642h 6a) kháp suo yuo tsjwok kjop lâ
8. སྤི་བཞེར་ལྷོ་མཐོང་	khri bsher lha mthong	綺立熱貧通 (K1b' 694a 330j 645a 1186r) khje ljəp řízjat thəm thung
9. ལྷོ་ལ་བཟང་འདྲུས་ཀོང་	rgyal bzang 'dus kong	頰藏弩悉恭 (K630h 727g 94z 1257e 1182l) kiek dzāng nuo sjet kjwong
10. ལྷོ་ལ་བཞེར་ཁོང་ལོ་ཤོ་ལྷོ་བཟུན་	rgyal bzher khod ne brtsan	頰熱窟寧贊 (K630h 330j 496q 837a 153a) kiek řízjat khuət nieng tsân
11. སྤི་སྤོང་ལྷོ་བཟུན་	khri srong lung brtsan	綺宗弄贊 (K1b' 1003a 1180 153a) khi tsuong lung tsân

Table 4. Chinese Transcription of Tibetan

Hogan, L.C. 1996, "The moraic structure of Classical Tibetan", in *Linguistics of the Tibeto-Burman Area*, vol. 19, no. 1, pp. 115-149. (purl.org/sealang/hogan1996moraic.pdf)

the finals of the Chinese characters indicate a floating consonant in the OT words.

In the first group, in (1), the preradicals *b-* and *g-* of བཀའ་ OT *bka'* and གཏོགས་ OT *gtogs* are lost, i.e., deleted by the Stray Erasure Principle, which deletes unsyllabified segments (Blevins 1995:223f, 228), as well as the suffix post-final *-s* of the latter. In the second example (2), the preradical *r-* of རྒྱལ་ OT *rgyal* is floating and cannot attach to the coda position of the preceding word རྩ་ OT *zhang* because it is filled by the final འ་ *-ng*; thus, the Stray Erasure Principle deletes it. The final *-l* of *rgyal* and the post-final *-s* of ཟིགས་ OT *zigs* are both lost.

In the remaining examples, the linking of onset consonants to codas in preceding syllables for some of these examples was noted by Róna-Tas (1985:347), especially the preradical *b-*. In (3), the final *-t* of 提 (K866n) MC *yuət* indicates that the preradical *l-* of ལྡེ་ OT *lde* is floating and is linked to the coda position of འོ་ OT *'o*. The final *-l* of རྒྱལ་ OT *rgyal* is lost as well as the preradical *r-*. In (4), the final *-t* of 勃 (K481b) MC *buət* indicates that the preradical *r-* of རྒྱལ་ OT *rgyal* is floating and becomes attached to the coda position in སྤུ་ OT *spu*.¹⁹ The final *-l* of *rgyal* is lost. In (5), the final *-p* of 立 (K694a) MC *ljəp* indicates that the preradical *b-* of བཟང་ OT *bzang* is floating and is linked to the coda position of ལྷུ་ OT *klu*. In (6), the same situation prevails as in (5), yet the preradical *b-* of བཟང་ OT *bzang* is represented by a full syllable in 勃 (K491b) MC *buət*; furthermore, the preradicals *br-* of བཟླ་ OT *brtsan* are apparently lost. In (7), the final *-p* of 榼 (K642t) MC *kjəp* indicates that the radical *b-* of ལྷུ་ OT *bla* is floating and links to the final coda of གི་ OT *gi*. In (8), the final *-p* of 立 (K694a) MC *ljəp* indicates that the preradical *b-* of བཤེར་ OT *bsher* is floating and is linked to the coda position of ཁྲི་ OT *khri*; furthermore, the final *-m* of 貪 (K645a) MC *thəm* indicates that the preradical of མཐོང་ OT *mthong* is floating and is linked to the coda position of ལྷུ་ OT *lha*. In (9), the final *-p* of 頰 (K630h) MC *kjep* indicates that the final *-l* of རྒྱལ་ OT *rgyal* is lost and the floating *b-* of བཟང་ OT *bzang* is linked to this coda position; furthermore, the separate syllable 悉 (K1257e) MC *sjet* represents the final *-s* of འདུས་ OT *'dus*. In (10), the final *-p* of 頰 (K630h) MC *kjep* indicates that the final *-l* of རྒྱལ་ OT *rgyal* is lost and the floating preradical *b-* of the བཤེར་ OT *bzher* is linked to this coda position; furthermore, the floating *br-* preradicals of བཟླ་ OT *brtsan* seem to be linked to the coda

¹⁹ In Coblin 1992, the final *-t* in the Tang-time dialects of 沙洲 Sha-chou is often represented by a T *-r*, e.g., page 323 (II.724) 佛 (K500l) MC *bjuət*, which Coblin reconstructs as **vur*, is transcribed བུར་ WT *bur*.

position of རྗེ OT *ne*.²⁰ In (11), here the same syllable འཕྲོ་མ་ OT *brtsan* occurs, but because there is no position for the linking of the preradicals, they are lost.

Laufer (1914, especially pp. 64ff) discusses the same names and titles from the Sino-Tibetan Treaty of 821-822. He correctly recognized that the preradical *b-* was being lost (herein historically delinked so as to become a synchronic floating segment), e.g. འཕྲོ་མ་ had the allomorphs OT *btsan* ~ *tsan*; however, because he tried to analyze the pronunciation of individual morphemes instead of phonological phrases, he failed to recognize that the loss of the final *-l* in words such as རྒྱལ་ OT *rgyal* left an empty coda position to which the floating *b-* could link, as in རྒྱལ་བཞེན་ OT *rgyal bzher* represented by 熱 (K330j) MC *kiep n̄zjat* exactly as an empty coda position allowed the linking of a floating preradical as in ཀལུ་བཟང་ OT *klu bzang* 矩立藏 (K95j 694a 727g) MC *kju ljəp dzāng*.

3.2 Tibetan borrowings into Monguor

Due to the close contact, including intermarriage, of Tibetan and Mongolian Monguor tribes in ར་མཚོ་ 'Amdo in the vicinity of 西寧 Hsi-ning (Xi-ning), which Róna-Tas (1966:211) dates as subsequent to the twelfth century A.D., there are a large number of borrowings from Northeast Archaic Tibetan (NEAT) dialects (including Banag, Dpa-ri, Golok, 西康 Hsi-k'ang [Xi-kang] dialects, Panaka, Reb-kong, Tao-fu, and Wayen) and the Central Tibetan koine into Monguor (Mgr). According to Róna-Tas (1966:214ff), of the approximately 480 "independent" T loanwords which he identifies in Mgr, approximately half are Buddhist, e.g., #314 *mbō*, 'honorarium, wheat and money given to lamas for their prayers' from Literary Tibetan (LT) རབོགས་ 'bogs 'fee, donation;' however, about forty-four are domestic vocabulary brought by the Tibetan wives into the Monguor families e.g., *tśūrā* 'cheese prepared from buttermilk' from LT ཅུར་བ་ *chur-ba id.* Although Norbu and Takeuchi (1991:386) consider the usage of Mgr or T a sign of ethnicity and not prestige,²¹ because of the close continuous contact of these tribes over

²⁰ In Coblin 1992:309 (I.416) 寧 (K837a) MC *nieng* is transcribed by T རྗེ *ne*. Furthermore, Coblin reconstructs the Tang-time 沙州 Sha-chou pronunciation as **niē*. The Chinese dialect used by those officials in the transcription may have been similar to that of Sha-chou.

²¹ The Mongolian language, according to Norbu and Takeuchi (1991:385f), was considered a prestige language (superstratum) in Central Tibet until relatively modern times, due to the Lama-Patron relationship existing between Tibetan lamas and Mongolian patrons. Therefore, Mongolian loanwords were more readily borrowed into Central Tibetan (specifically the Lhasa dialect). Although the study of Mongolian loan words in Tibetan goes back at least to Laufer 1916, there are apparently relatively few Mongolian words in Tibetan. In Buck 1969, fewer than ten words are identified as being derived from Mongolian, including: ཐའི་ཇི *thai-ji* 'lord' < M *thaizhi*; and རྗེ་ཡོན་ *no-yon* 'prince, lord' < M *noën*. The majority of those in Buck

generations and the relative superiority of Tibetan (religious) culture, T might be thought to function as a superstratum language in this contact situation, i.e., light to moderate interference of T in Mgr should be expected, in addition to simple lexical borrowings. However, Róna-Tas (1966:20) states that the bilingual situation is relatively complex due to: (1) the fact that Monguor Buddhist monks studied not only in Tibetan monasteries in Kumbum and Labrang but also Central Tibet and, thus, probably knew the Tibetan Koine, i.e., Tibetan (including the historic Lhasa dialects) functions as a superstratum language; and (2) the fact that the Monguors had important political power under both the Ming and Ch'ing dynasties, arising from their function as loyal border guards in the strategic areas near Lake Kokonor [211] and 秣州 Lanzhou (Lanzhou) [209], i.e., Mgr functions as a superstratum language. Because of (2), some of the non-Buddhist vocabulary in Mgr may be due to imperfect learning of Mgr by second-language speakers, i.e., Tibetans whose first language was T.²²

According to Grønbech and Krueger (1976:9), Classical (Written) Mongolian had long vowels and diphthongs resulting from loss of intervocalic consonants (e.g., *sain* < *sayin* 'good', *dalai* < *dalayi* 'ocean') or from hiatus. Furthermore, stress was not phonemic. However, according to Binnick (1979:xxv), in Modern Khalka Mongolian word stress is phonemic, on the first long vowel or diphthong or the first syllable by default. Non-initial-syllable short vowels are reduced.²³ Unlike Modern Khalka Mongolian, Mgr, according to Binnick (1991:45), is one of several MM languages with end (final) word stress and, consequently, "there is a tendency to lose initial syllables," e.g., WM *adali* 'like' > Mgr *dali*, but that "syncope of the middle

seem to be titles and/or terms of direct address. Of those listed in Laufer 1916, the following seems interesting: #187 རྩེག་རན་ 'dzeg-ran 'antelope' < M *dsägüütran*, *dsüütr(ün)*.

²² For a recent discussion of the political situation in this geographical area ref. Rong 1990.

²³ Halle and Idsardi (1995:411, 413f) set up the following parameters for stress in Khalkha:

Line 0:	Project: L	Edge: RRR	Head: L
Line 1:		Edge: LLL	Head: L

(R = right and L = left) with the stipulation that secondary stresses are eliminated by Conflation. The word *dsä-rüü-gü* 'hedgehog' would result in the following:

Line 0:	Project: L	x	(x	x
		L	H	L
	Edge: RRR	x	(x	x)
		L	(H	L)
	Head: L		x	
		x	(x	x)
Line 1:	Edge: LLL		(x	
		x	(x	x)
	Head: L		n.a.	

thus, *dsä-rüü-gü* with the first syllable unmetrified.

syllable...[resulted from] a period in which initial stress induced vowel loss," e.g., WM *dabusun* 'salt' > Mgr *dabse*.

In Table 5, the Monguor forms are from Róna-Tas 1966 (without the subscripts), to which have been added Modern Lhasa forms from Goldstein and Nornang 1978 and Goldstein 1977, 1984 (without the tone marks) for comparative purposes ²⁴

Róna-Tas (1996:196) summarizes the compensatory lengthening within NEAT as follows: OT vowels in syllables with *-l* [+sonorant] and *-s* [-sonorant] [+continuant] codas lengthened when these were lost (#19, #785²⁵ and #13, #255, #280, #338, #778 above respectively), but not when *-d*, *-n*, and *-g* were lost.²⁶ However, he does recognize that final *-g* was lost before post-final (formative) *-s* [146] as in #314 Mgr *mbō*, 'honorarium' < རོགས་ལྷན་པ་ LT 'bogs 'fee, donation' and initial onset (preradical) of a subsequent syllable as in #558 Mgr *sesmiel* 'cardamom' < སུག་སྐྱེལ་ LT *sug-smel* 'cardamom' (CT). This compensatory lengthening in the Tibetan forms indicates that not only did the loss of [+continuant] consonants, i.e., *-l* and *-s*, in syllable final morae cause compensatory lengthening, but also [-continuant] consonants, i.e., *-g*.

Although #244, #366, #559 and #665 (in the NEAT dialects, not necessarily the L dialect) seem to represent unexplained final lengthening (see

²⁴ The addition of Modern Lhasa (L) pronunciations is not meant to imply a mother-daughter genetic relationship between NEAT dialects and Modern Lhasa. In fact, Róna-Tas (1985) derives the Archaic dialects and the non-Archaic dialects, of which modern Lhasa Tibetan is an exemplar, separately from OT. Furthermore, there are often divergent forms suggesting a sister-sister genetic relationship, e.g., in #13 Mgr *aramī* ~ *rami* 'to consecrate', LT རབ་གསལ་ *rab-gnas id.*, L *rəp-née* is from a form in which the pre-radical *g-* and the word final *-s* have been lost *rab-gnas* > *rap-nee* for L *rəp-née* and, however, the Mgr form suggests that the following additional changes occurred in the T dialect from which it was borrowed: the place features of the *-p* in the first syllable are delinked and attached to the nasal of the second syllable **rap-nee* > **ram-ee* with subsequent onset formation *ram-ee* > *ra-mee*. In L *rəp-née* only the first two processes have occurred, although the historical processes of delinking and onset formation also occur therein.

²⁵ Both #146 Mgr *fūla* ~ *fula-* 'to offer' and #783 *yōla-* 'to stop' seem to be derived from འཕུལ་བ་ LT 'phul-ba 'to give' and འཇོག་པ་ LT *dbyol-ba* 'stopped', respectively, through loss of the onset of the second syllable and relinking of the coda of the first syllable; however, the heavy first syllable of the Mgr form would then be unexplained and the verbal suffix *-la* occurs with borrowed T verbs which have no liquid or nasal finals, e.g. #367 Mgr *nDZeGla-* < འགྲིག་པ་ LT 'grig-pa 'to suit, to be adequate' and is identified by Róna-Tas (1966:174) as a form of the Mgr denominal verb-formative suffix *-la* ~ *-lo* ~ *-lie* (from M *-la* ~ *-le*). This nativization of T verbs seems to indicate light to moderate interference. Therefore, even though the suffix *-la* does seem in some cases to be derived via onset formation from a coda within T, it is not a dependable indicator of such.

²⁶ The former two processes Róna-Tas considers to be present in NEAT dialects; however, he does mention that some records may be inaccurate.

	Monguor	Tibetan		
			WT	Lhasa
#19	arāwa ~ rāwa 'hair'	རལ་པ་	ral-pa 'long hair'	ræɛ-pa
#785	yū 'round metal disk'	དངུལ་	dngul 'silver'	ŋüü
#13	aramī ~ rami 'to consecrate'	རབ་གསལས	rab-gnas <i>id.</i>	rəp-neë
#255	lagśī 'towel'	ལག་ཕྱིས	lag-phyis <i>id.</i> ²⁷	
#280	lē 'fortune, fate'	ལས	las 'karma'	læɛ
#338	murguō 'unnecessary'	མི་དགོས	mi dgos 'useless' ²⁸	
#778	yārnī 'summer prayers'	དབྱར་གནས	dbyar-gnas <i>id.</i>	yarnæɛ ²⁹
#314	mbō 'honorarium'	འབོགས	'bogs 'fee, donation'	pɔɔ
#8	anie 'grandmother'	ཨ་ནེ	a-ne 'father's sister'	ə-ni
#18	arāru 'fierce'	ར་རོ	ra-ro 'intoxicated'	ra-ro
#244	k'uā 'soup'	ཁུ་བ་	khu-ba 'fluid, liquid'	qhöö
#665	iā 'stag'	ཤ་བ་	sha-ba 'stag, deer'	šaa
		ཤུ་བ་	shwa-ba	šaa
#19	arāwu ~ rāwu 'he-goat'	ར་བོ	ra-bo <i>id.</i> ³⁰	
#173	gāra 'sugar'	ཀ་ར་	ka-ra 'sugar'	ka-ra
#216	χuāwu 'military exercise'	དཔའ་བོ	dpa'-bo 'hero'	pa-wo ³¹
#336	muonuo ~ mōnuo 'evening'	མུན་པོ	mun-po 'obscurity'	
#366	ndzāni 'similar'	འདྲ་བ་ནི	'dra-ba-ni <i>id.</i>	
#485	rīra ~ rira 'Sumeru'	རི་རབ	ri-rab <i>id.</i>	ri-rap

Table 5. Monguor Borrowings from Tibetan

(continued on following page)

²⁷ According to Norbu and Takeuchi (1991:384), the OT/LT word ལག་ཕྱིས *lag-phyis* 'towel' has been replaced in L by the WM *alčiyū* MM *alčūr* > ཨ་ཚོར་ WT *a-chor*, L *a-choo* in Goldstein and Nornang 1978.

²⁸ Goldstein and Nornang (1978) list དགོས་མཁོ་ LT *dgos-mkho*, L *qöö-qo* 'needs', with a heavy syllable in the first morpheme and Goldstein (1975:821) lists མི་དགོས་པ་བཟོ་ LT *mi dgos-pa bzo*, L *mi qülipə so* 'to eliminate a need'.

²⁹ For this word, Goldstein (1975) lists the meaning 'summer retreat of monks' in L. Goldstein and Norwang (1978) list དབྱར་དགུན་ LT *dbyar-dgun*, L *yæqülli* 'summer and winter' in which the first morpheme 'summer' has a long vowel.

³⁰ Goldstein (1975) lists ར་བོ་ LT *ra-pho*, L *ra-po* 'ram'.

³¹ Goldstein and Nornang (1978) list the related words: དཔའ་ལྷུ་མ་ LT *dpa'-zhum*, L *pa-šum* 'to be cowardly', with a light syllable in the first morpheme, and དཔའ་སྐྱེས་ཚེ་པོ་ LT *dpa' skyes tsha po*, L *paq-kee tsha-po* 'braggart', with a coda in the first morpheme.

	Monguor	Tibetan		
			WT	Lhasa
#606	ṣāla- 'to plaster floor'	ཇ་ལ	zha-la 'plastering'	ṣa-la ³²
#56	dāra 'whey'	དར་བ	dar-ba 'buttermilk'	tha-ra
#136	Dzilū ~ Dzirbu '(little) bell'	དྲིལ་བུ	dril-bu <i>id.</i>	ṭhii-pu
#559	sgā 'portion, share'	སྐལ་བ	skal-ba <i>id.</i>	qε-la ³³
#93	duordzī 'ritual sceptre'	དུ་རྩེ	rdo-rje <i>id.</i>	
#205	χāmDō 'Amdo'	ཨ་མ་དོ	a-mdo <i>id.</i>	am-to
#567	sgumben 'Kumbun'	སྐུ་རུམ་	sku-'bum <i>id.</i>	qum-pum
#568	sgundziā 'image of Buddha'	སྐུ་དྲ	sku-dra <i>id.</i>	
#575	sgurdiān ~ sgurdiān 'magician'	སྐུ་རྩེན་	sku-rten 'image of Buddha'	
#657	sdziŋk' uor 'Mandala drawing'	དཀྱིལ་འཁོར་	dkyil-'khor 'mandala'	
#240	k'ardā 'pack-animal'	ཁལ་རྩ	khal-rta 'pack horse'	qhεε-ta
#116	dzō 'wheat'	གྲོ	gro <i>id.</i>	ṭho ³⁴
#227	k'ā 'rectangular cloth'	ཁ་གང	kha-gang 'quadrate'	qha-qaan ³⁵
#239	k'arā 'trough'	ཁ་ར	kha-ra <i>id.</i>	
#389	nierwā 'monastic fiscal officer'	གཉེན་པ	gñer-pa 'steward'	ñee-pa
#530	sayā 'million'	ས་ཡ	sa-ya <i>id.</i>	sa-ya
#543	sdormā ~ ṣdorma 'torma'	གཏོར་མ	gtor-ma <i>id.</i>	too-ma
#586	sō 'barley'	སོ	so <i>id.</i> ³⁶	
#715	tś'iā 'tea'	ཇ	ja <i>id.</i>	cha
#557	sēr 'coin, money'	གསེར	gser 'gold'	see

Table 5. Monguor Borrowings from Tibetan (continued)

³² The Mgr form is possibly from LT ཇ་བ་ *zha-ba* or even ཇ་ལ་བ་ LT *zhal-ba*, L *ṣa-la* 'stone floor'.

³³ Goldstein and Norwang (1978) also list སྐལ་བ་ LT *skal-ba*, L *qε-la* 'a share', in which the coda *l* of the first syllable becomes the onset of the second syllable, i.e., without subsequent lengthening of the vowel in the first syllable, and སྐུ་སྐལ་ LT *sku-skal*, L *qu-qee id.* (H), in which the final morpheme is a heavy syllable, due to loss of the final *-l*.

³⁴ The Mgr form may be from གྲོ་བ་ LT *gro-ba* or a similar form with the lenition of *-w-* (<*-b-*) and subsequent vowel coalescence.

³⁵ The Mgr form may be from ཁ་གང་ LT *kha-ba* or a similar form with the lenition of *-w-* (<*-b-*) and subsequent vowel coalescence.

³⁶ The Mgr form may be from སོ་བ་ LT *so-ba* or a similar form with the lenition of *-w-* (<*-b-*) and subsequent vowel coalescence.

below), they represent the result of the loss of intervocalic *-w-* (< *-b-*) with subsequent vowel coalescence in T, e.g., #665 Mgr *śiā* < ‘stag’ < ཤ་བ་ ~ ཤ་བ་ LT *sha-ba* ~ *shwa-ba*, L *šā* ‘stag, deer’.

In addition to those long vowels formed via compensatory lengthening and vowel coalescence, the Mgr borrowings also indicate non-derived internal long syllables in the corresponding T forms, e.g., #8, #18, #19, #173, #216, #485, and #606, e.g.: #19 *arāwu* ~ *rāwu* ‘he-goat’ < ར་བོ་ LT *ra-bo id.* However, Binnick (1991:45f fn. 12) states that due to historic initial stress in M, Mgr has lengthened initial syllable /a/ before /u/ in the second syllable: WM *daru-* ‘scapula’ > Mgr *dālī-*, which created forms such as *-āCu* and *-āCi* which account for the Mgr forms in this group. In addition, #336 Mgr *muonuo* ~ *mōnuo* ‘evening’ < མུན་པོ་ LT *mun-po* ‘obscurity’ represents a lengthening of Mgr /o/ before /u/. Although he does not include the non-high back vowel in his rule, Binnick (1991:46 fn. 12) does give an example of the latter process in WM *modun* ‘wood’ > Mgr *mōdi*.

Onset maximization occurs in #56 and #136, for example, in the first form of #136 *Dzilū*, ~ *Dzirbu* ‘(little) bell’ < དྲིལ་བུ་ LT *dril-bu id.*, the *-l* coda of the first syllable of the T form becomes the onset of the second syllable in *Dzilū* through loss of the *-w-* (< *-b-*). The opposite process of coda formation occurs in #93, #205, #240, #567, #568, #575, and #657, e.g., #205 *χamdō* ‘Amdo’ < ཨ་མདོ་ LT *a-mdo*, L *am-to id.*, in which the preradical *m-* of the second syllable of the T form is floating and becomes attached only if there is a preceding empty coda. Unattached floating segments which are not associated via syllabification processes are eventually synchronically deleted by the Stray Erasure Principle (Blevins 1995:223f, 228). The Mgr forms in both #567 and #568 with coda nasals represent the linking of the final mora in the first syllable of the T forms with the prenasalized segments of *^mb* and *ⁿd*, respectively. The Mgr form #657 represents the borrowing of a T form in which the coda *-l* has been lost and the prenasalized segment of *^ŋk* is linked to the coda mora in the first syllable, i.e., *dkyil-ŋkhor* > *dkyii-ŋkhor* > *dkyiŋ-khor*.

The last group is that with Mgr forms which have final vowel lengthening not resulting from compensatory lengthening and/or for which the L forms do not have corresponding long vowels: #136, #205, #239, #240, #389, #530, #543, and #568. Thus, in #239 Mgr *k’arā* ‘trough’ is borrowed from LT ཁ་ར་ *kha-ra id.* This is possibly due to word-final stress in Mgr being interpreted as vowel length in the transcription.

The last group consists of monosyllabic words in which the Mgr transcription indicates a long vowel: #557 Mgr *sēr* ‘coin, money’ < གསེར་ LT *gser*, L *see* ‘gold’ and #715 Mgr *śś’iā* ‘tea’ < ཇེ་ LT *ja*, L *cha*. These remain unexplained, but may be due to transcription error.

4. LANGUAGE INTERNAL

Language internal processes within Tibetan indicate that at least since Classical times, the Lhasa dialect has had productive processes in which geminate consonants were created. In Classical Tibetan, diminutive formation produced geminate consonants in processes indicative of moraic languages. Although the evidence for gemination is less secure for OT, it does seem to occur with the terminative suffix.

4.1 Adverb formation in Modern Lhasa Tibetan

In Modern Lhasa Tibetan, there is a process of quadrisyllabic adverb formation discussed in Zhang 1985 in which a monosyllabic present or past tense verb or adjective is partially reduplicated to form a disyllabic form which is then the basis of the quadrisyllabic form: ཁོན་ WT *khon* ‘to hate’, ཁོན་ ཁོན་ WT *khan-khon*, L *khā khø*, ཁོན་ཁོན་ WT *kha-ne kho-ne*, ‘reluctantly’, without reduplication of the root coda *-n*; and ཁུམ་པ་ WT *khum-pa* ‘crumple’, ཁུམ་ཁུམ་ WT *kham-khum* ‘crumple’, ཁུམ་མི་ཁུམ་མི་ WT *kham-mi khum-mi*, L *id.* ‘in a crumpled shape’, with reduplication of the root coda *-m*. Some of those with reduplication from Zhang’s Table 2 [27ff] are shown in Table 6.

In Table 6, all final consonants are reduplicated: *p* <*b*>, *t* <*d*>, *k* <*g*>; *m*, *n*, *ng*; and *l*, *r*. However, there are subsequent processes in which syllable-final dental and velar stops and nasals are lost with subsequent fronting of vowels preceding dentals and nasalization of vowels preceding nasals. Before the liquids, there is fronting of vowels before the *l*. However, there is no apparent lengthening as might be expected. The reduplication of both liquids is apparent from the general process and, in the case of *l*, vowel fronting. Thus, this process of adverb formation indicates that vowel lengthening does not occur with loss of geminate consonants. At some level of representation, the geminates prevent a final long vowel.³⁷ This process of gemination may be represented by the first two syllables of WT *yam-me yom-me*, L *id.* ‘shakily’ from ཡོམ་པ་ *yom-pa* ‘to shake’:

³⁷ Forms in OT with the terminative suffix ཅུ་ ཅུ་ ཅུ་ ཅུ་ shows an ambiguity between geminate consonants and word internal monomoraic short vowels instead of the expected long vowels. The following are from Li and Coblin 1987:

Geminates	Non-geminates		Source
གུད་ཏུ་ gud-du	གུད་ gu-du	གུད་ gudu	IX, IX, IIN
ཉམས་སུ་ nyams-su	ཉམས་ nyamsu		VIII, IIE

Hogan, L.C. 1996, "The moraic structure of Classical Tibetan", in *Linguistics of the Tibeto-Burman Area*, vol. 19, no. 1, pp. 115-149. (purl.org/sealang/hogan1996moraic.pdf)

Root		Partial Reduplication		Quadrisyllabic	
གོབ་	gob	གབ་གོབ་	gab-gob	གབ་བེ་གོབ་བེ་	WT gab-be gob-be 'languidly' L khap-pe khop-pe
ཐིབ་བུ་	thib-bu	ཐབ་ཐིབ་	thab-thib	ཐབ་བི་ཐིབ་བི་	WT thab-bi thib-bi 'obscurely' L thap-pi thip-pi
ལྷོད་པོ་	lhod-po	ལྷོད་ལྷོད་	lhod-lhod	ལྷོད་དེ་ལྷོད་དེ་	WT lhad-de lhod-de 'loosely' L lhe-te lhö-te
ཀློག་པོ་	kyog-po	ཀློག་ཀློག་	kyag-kyog	ཀློག་གོ་ཀློག་གོ་	WT kyag-ge kyog-ge 'obliquely' L ca? ke co? ke
ཁུམ་པ་	khum-pa	ཁུམ་ཁུམ་	kham-khum	ཁུམ་པི་ཁུམ་པི་	WT kham-mi khum-mi 'in a crumpled shape' L id.
ཡོམ་པ་	yom-pa	ཡོམ་ཡོམ་	yam-yom	ཡོམ་བེ་ཡོམ་བེ་	WT yam-me yom-me 'shakily' L id.
འཕྱིན་	'khon	འཕྱིན་འཕྱིན་	'khan-'khon	འཕྱིན་ནེ་འཕྱིན་ནེ་	WT 'khan-ne 'khon-ne 'indignantly' L khē-ne khø-ne
འཇོན་པ་	'on-pa	འཇོན་འཇོན་	an-on	འཇོན་ནེ་འཇོན་ནེ་	WT 'an-ne 'on-ne 'pretending deafness' L ē-ne ō-ne
ཆུང་བ་	chung-ba	ཆུང་ཆུང་	chang-chung	ཆུང་དེ་ཆུང་དེ་	WT chang-nge chung-nge 'meticulously' L chā-nge chā-nge
ལིང་	ling	ལིང་ལིང་	lang-ling	ལིང་དེ་ལིང་དེ་	WT lang-nge ling-nge 'rocking' L lā-nge lī-nge

འཇོལ་བ་	'chol-ba	'chaotic'	ཇོལ་ཇོལ་	chal-chol	ཇོལ་ཇོལ་ཇོལ་ཇོལ་	WT chal-le chol-le 'heterogeneously' L che-le chö-le
འབོལ་པོ་	'bol-po	'soft'	འབོལ་འབོལ་	'bal-'bol	འབོལ་ཇོལ་འབོལ་ཇོལ་	WT 'bal-le 'bol-le 'softly' L pe-le pö-le
འཁྲུར་པོ་	'khyor-po	'shaky'	འཁྲུར་འཁྲུར་	'khyar-'khyor	འཁྲུར་ཇོལ་འཁྲུར་ཇོལ་	WT 'khyar-re 'khyor-re 'shakily' L cha-re cho-re
ཡོར་བ་	yor-ba	'to slant'	ཡོར་ཡོར་	yar-yor	ཡོར་ཇོལ་ཡོར་ཇོལ་	WT yar-reyor-re 'staggering' L ya-re yo-re

Table 6

Hogan, L.C. 1996, "The moraic structure of Classical Tibetan", in *Linguistics of the Tibeto-Burman Area*, vol. 19, no. 1, pp. 115-149. (purl.org/sealang/hogan1996moraic.pdf)

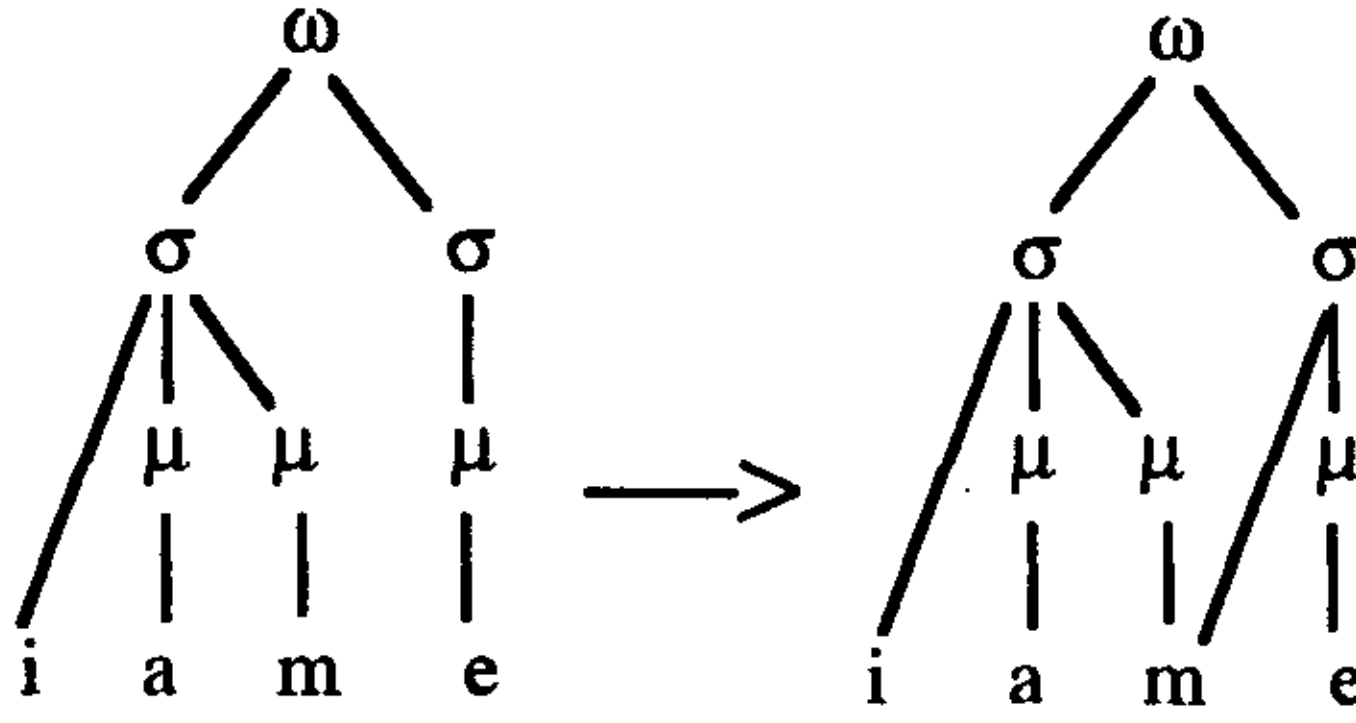


Figure 7

4.2 The diminutive suffix རུ ~ རུ bu ~ 'u in Classical Tibetan

Within Tibetan, there are several processes suggestive of an alternation between long vowels and geminate consonants: the diminutive suffix རུ ~ རུ *bu* ~ 'u, the declarative suffix རོ 'o, the question suffix རམ 'am and a general process in which a monosyllabic word becomes disyllabic.

Onset maximization produced two processes in T: the coda of the first syllable was delinked and relinked to the onset position of the second syllable; and the coda of the first syllable was geminated to function as the coda of the first and the onset of the second syllable. Both processes occur with the diminutive suffix རུ ~ རུ *bu* ~ 'u. Beyer (1992:122f) lists the following in which most roots occur with both processes. Most examples occur with syllable-final *g*, although root syllable-final *b*, *r* and *l* also occur:

Root	Delinking and Relinking	Gemination
གདུབ་ <i>gdub</i> 'bracelet'	གདུབ་ལྷ་ <i>gdu-bu id.</i>	གདུབ་ལྷ་ <i>gdub-bu id.</i>
ཐིག་ <i>thig</i> 'cord'	ཐིག་གུ་ <i>thi-gu</i> 'string'	ཐིག་གུ་ <i>thig-gu id.</i>
པག་ <i>pag</i> 'brick'	པག་གུ་ <i>pag-gu id.</i>	པག་གུ་ <i>pag-gu id.</i>
ཕུག་ <i>phrug</i> 'child'	ཕུག་གུ་ <i>phru-gu id.</i>	ཕུག་གུ་ <i>phrug-gu id.</i>
དབུག་པ་ <i>dbyug-pa</i> 'stick'	དབུག་གུ་ <i>dbyu-gu</i> 'wand'	དབུག་གུ་ <i>dbyug-gu id.</i>
སྐྱུག་པ་ <i>smyug-pa</i> 'bamboo'	སྐྱུག་གུ་ <i>smyu-gu</i> 'reed pen'	སྐྱུག་གུ་ <i>smyug-gu id.</i>
ལུག་ <i>lug</i> 'sheep'	ལུག་གུ་ <i>lu-gu</i> 'lamb'	ལུག་གུ་ <i>lug-gu id.</i>
གཟེར་ <i>gzer</i> 'nail'	གཟེར་རུ་ <i>gze-ru</i> 'tack'	གཟེར་རུ་ <i>gzer-ru id.</i>
རི་ལཔོ་ <i>ril-po</i> 'globule'	རི་ལུ་ <i>ri-lu</i> 'pill'	

Table 7. Diminutive Formation in Classical Tibetan

For this particular suffix, the process of lenition (glide formation) (*b* > *w*) occurs intervocally with subsequent loss of the glide, e.g., རྩེ *dre* 'mule' > རྩེ་ལྷེ་

dreu (< **dre-wu* < **dre-bu*) ‘young mule’. The above forms occur with this morphological leveled form རུ u.³⁸

5. CONCLUSION

Vowel coalescence occurred most commonly with the lenition of an onset *b-* > *w-* > \emptyset with debuccalization, loss of the place node of the onset and, because there is no coda in the first syllable to fill the onset, loss of the prosodic structure of the second syllable occurs, i.e., the final syllable mora is

³⁸ A similar restructuring involving the coda also occurs in CT in which monosyllabic bimoraic forms become disyllabic bimoraic forms. Most of these forms involve the coda consonants *l* and *r*, but forms with *g* and *ng* also occur. Note that few occur with geminate *l* and *r*:

	Monosyllabic	Disyllabic		Gloss	
-g		བེ་གེ be-ge	བེག་གེ beg-ge	‘a disease’	
		མུ་གེ mu-ge	མུག་གེ mug-ge	‘desire’	
		ཡིག་ yig	ཡིག་གེ yi-ge	‘letter’	
-ng	གསང་ sgong	གསང་ང་ sgo-nga	གསང་ང་ sgong-nga	‘egg’	
-l	ཤིལ་ shil		ཤིལ་ལི shil-li	‘gauze texture’	
	གལ་ gul	གལ་ལེ gu-le		‘slowly’	
	ཙལ་ col	ཙལ་ལོ co-lo		‘prattle’	
	ཚལ་ chol	ཚལ་ལོ cho-lo		‘dice’	
	ཞལ་ zhal	ཞལ་ལ་ zha-la	ཞལ་ལ་ zhal-la	‘clay’	
	-r	སར་ star	སར་རི sta-ri		‘axe’
		སདྲི་ sdir	སདྲི་རི sdi-ri		‘to roll’
སར་ ner		སར་རེ ne-re		‘sediment’	
སཔོ་ spor		སཔོ་རེ spo-re		‘steelyard’	
མེ་ཤར་ tsher		མེ་ཤར་རེ tshe-re		‘sorrow’	
ཤར་ shor		ཤར་རེ sho-re		‘damaged’	

(The regular forms པག་བུ *pag-bu*, གཟེར་བུ *gzer-bu*, and རིལ་བུ *ril-bu* are also listed in Jäschke 1881.) All forms are from Jäschke 1881.

It might be supposed that there is a related phenomenon in the confusion between long vowels and geminate consonants in the transcription of Skt in Pelliot No. 3531 in Hackin 1924:117-130:

Sanskrit	Tibetan	
	Long Vowels	Gemination
asītī	ཨ་སིད་ཏི	a-sid-ti
śākyabodhi	ཤག་ཀུ་བོ་དེ	Shag-kya-bo-de
śākyamuni	ཤག་ཀུ་མུ་ནི	Shag-kya-mu-ni
yogottara	ཡོ་གོ་འོ་རྩོ	yo-go-'o-tro

However, this is possibly due to a Prakrit in which long vowels and geminate consonants were confused.

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floating, with subsequent linking to the first syllable.³⁹ This is represented below with the word ཤ་བ་ *sha-ba* 'deer, stag' which occurs with a long vowel in both the NEAT dialects and the Modern Lhasa dialect:

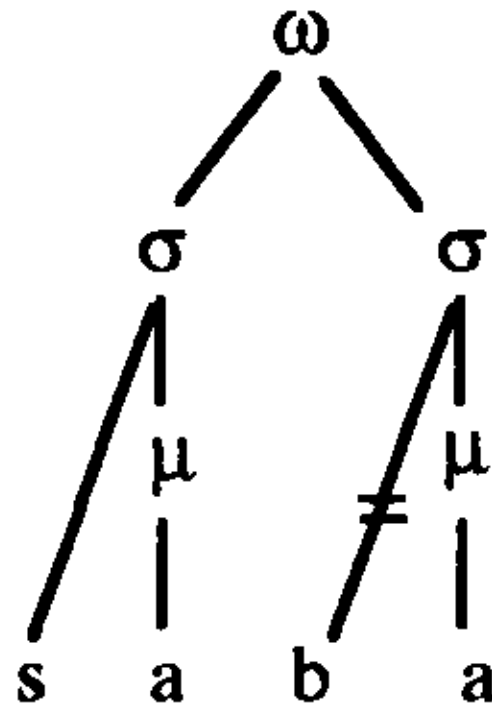


Figure 8

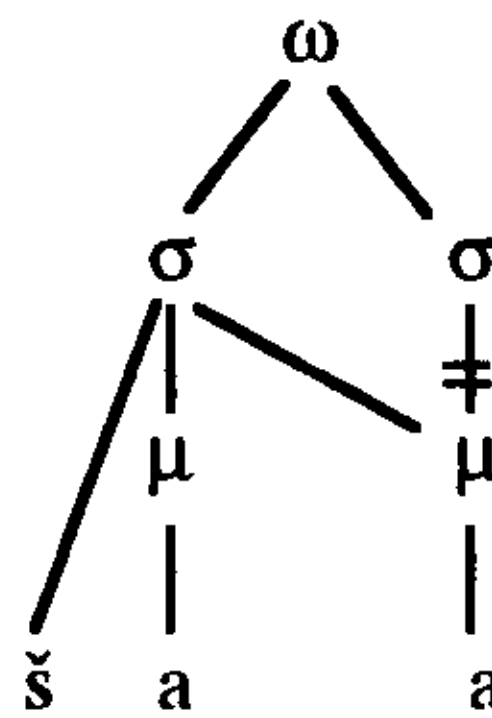


Figure 9

In addition, in CT, the loss of the intervocalic *b-* of the diminutive created structures with geminate consonants as in ལུག་གུ་ *lug-gu* 'lamb':

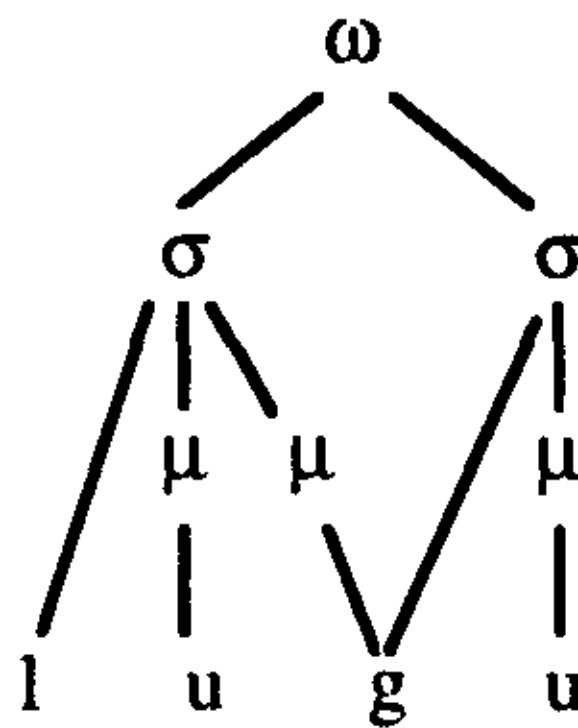


Figure 10

Although both the loss of a consonant in a syllable final mora and vowel coalescence produce a heavy syllable with two morae, on the basis of the

³⁹ The long syllables resulting from coda loss and vowel coalescence were identified as such in Laufer 1914:52.

NEAT and L dialects, the process of onset formation does not. In Figure 11, due to avoidance of a geminate *l*, the coda of the first syllable is delinked and relinked as the onset of the following syllable due to lenition of the onset there. This is represented below with the word སྐལ་བ་ *skal-ba* ‘portion, share’:

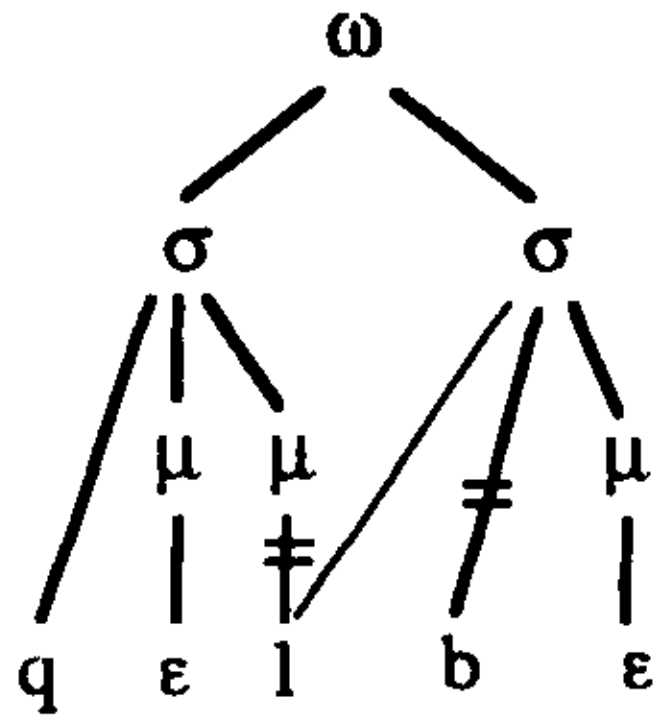


Figure 11

with the resulting structure in a bisyllabic bimoraic foot:

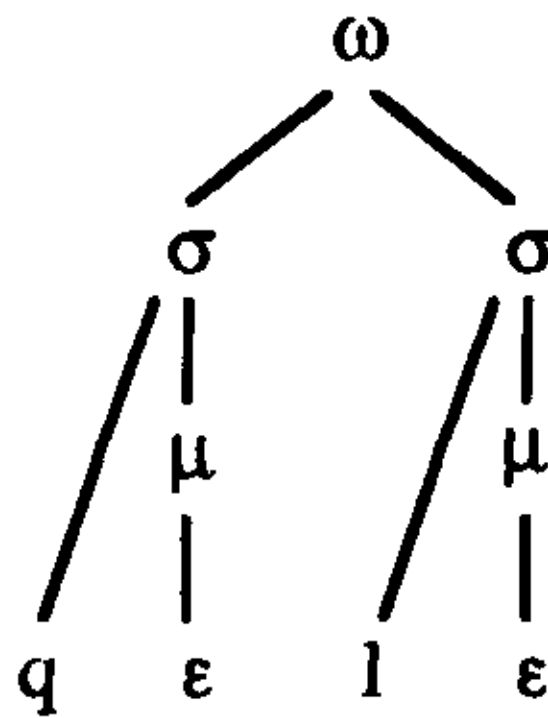


Figure 12

Thus, the morpheme སྐལ་བ་ has a resulting surface allomorphy in Modern Lhasa Tibetan: *qε ~ qεε* in སྐལ་བ་ WT *skal-ba* ‘portion’ and སྐལ་སྐལ་བ་ WT *sku-skal* ‘portion (H)’, respectively, due to the floating coda *-l*.

Floating initial consonants also occur as early as OT, due to onset simplification. In the following, ལྷུ་བཟུང་ *klu-bzang* (part of a name), the pre-radical *b-* is floating:

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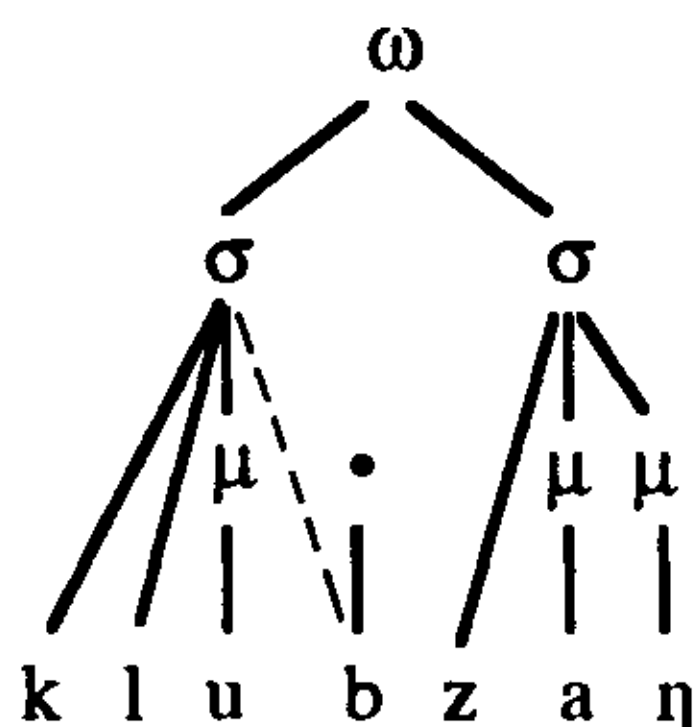


Figure 13

which is here linked to the final mora of the first syllable if empty. This structure contrasts with those involving the [᳚] 'a-chung pre-radical in which the pre-nasalization and the following consonant are one onset as in [᳚]ཏུག 'dug 'sit':

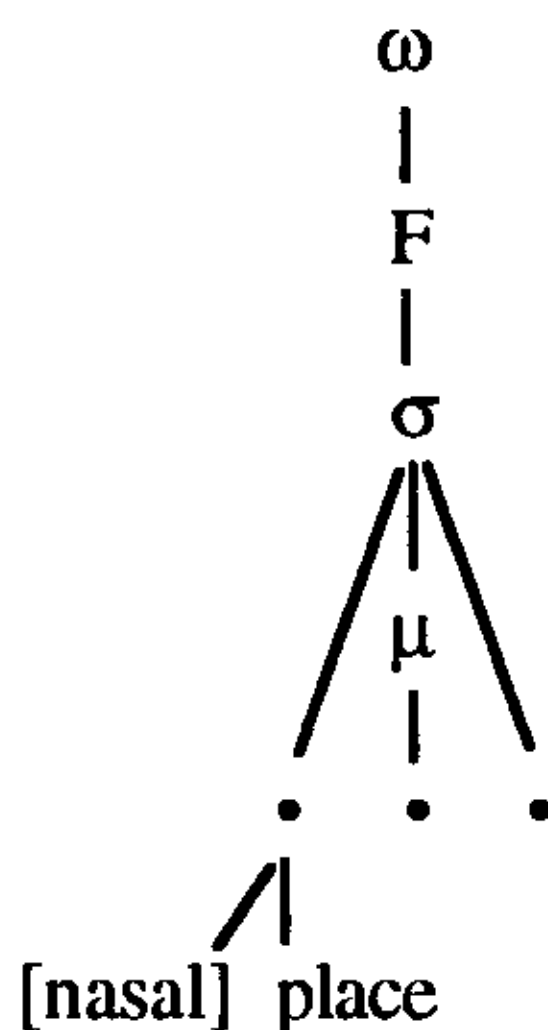


Figure 14

On the basis of Tibetan orthography, there were no long vowels in OT or (early) CT. However, the existence of monomorphemic syllables of restricted form, either <-V> or <-VC>, and syllable-restructuring processes (with vowel coalescence, floating consonants, and geminates indicated by transcription practices within OT and MC) are evidence that OT possibly had a quantity distinction between heavy and light syllables. Although the subsequent phonological quantity distinction between long and short vowels which was the result of diachronic processes in CT was not represented in the orthography, borrowings into Mgr indicate that it began in the pre-modern era. Kiparsky (1995: 656), referring to De Chene and Anderson 1979, states that compensatory vowel lengthening resulting from consonant loss occurs only "when there is a preexisting length contrast in the language ... languages

first acquire contrastive length through other means (typically by vowel coalescence); then only do they augment their inventory of long vowels by compensatory lengthening". Therefore, apparently either OT lost the TB phonological quantity distinction between long and short vowels, but not heavy and light syllables, or the reconstruction of a phonological quantity distinction within TB is an artifact of the reconstruction.⁴⁰

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⁴⁰ Coblin (1987:12) states that, although Benedict (1972) reconstructs a phonological quantity distinction for TB vowels which could be projected into ST, he feels that the problem deserves more study. Of those TB forms with long vowels used in his reconstruction of ST, the following occur:

	TB	ST
'bat'	*ba·k	**pjæk ~ bjæk
'bee/wasp (2)'	*kwa·y	**kway
'bow/(bent) tree branch'	*ku·ng	**kjəngw
'cave/cavity/belly'	*pu·k ~ buk	**phjəkw, bjəkw, pjəkw
'cough (2)'	*ka·k	**khək
'darkened'	*mu·ng	**mung
'draw (water)'	*ka·p	**kjəp
'extend/continue'	*ya·r	**yar
'fat/grease'	*sa·w	**sayw

Of these, only the last seems a viable candidate for compensatory lengthening within TB.

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