GYARONG HISTORICAL PHONOLOGY

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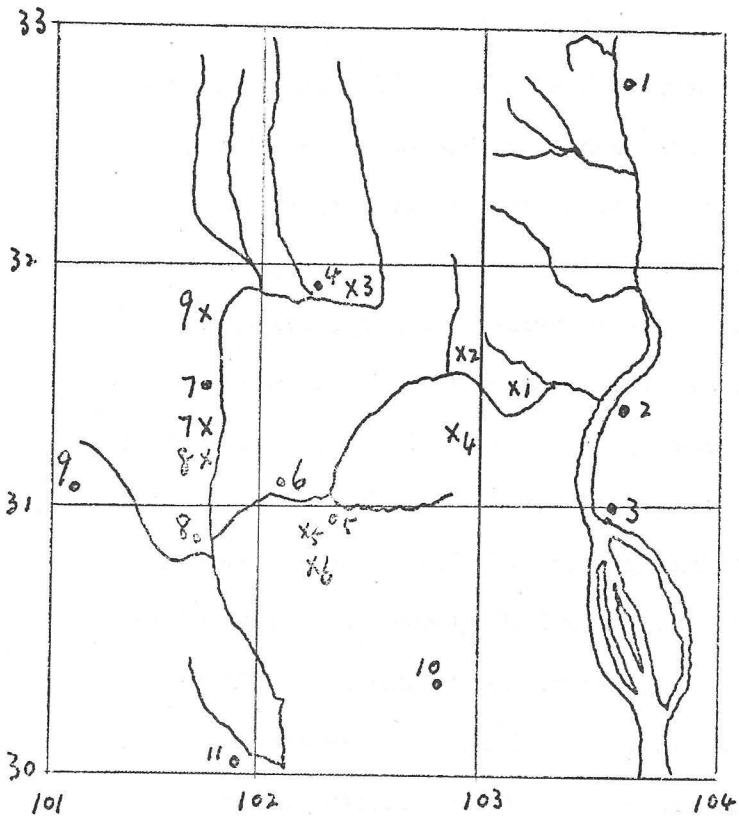
Introduction

The Gyarong dialects are spoken in China, in the northwestern corner of the province of Szechuan. We show on the map below the locations of the dialects we cite in our discussion, with the exception of Kham-to; Wolfenden, who studied the dialect of a speaker from this village, could provide no information on its location. The data on these dialects are from Chang 1968 and unpublished field notes made by Chang Kun in 1943 (Tzu-ta dialect), Chin 1949 (Tsa-ku-nao), Chin et al. 1957, 1958 (Suo-mo), von Rosthorn 1897 (Wassu [including Muphing], Pati, Pawang, Hanniu), Wolfenden 1936 (Kham-to), and Edgar 1932 (Chos-kia). Abbreviations we use are: C, Chos-kia; hon., honorific; H, Hanniu; K, Kham-to, L, Lepcha; Lu., Lushai; P, Pati; Pa., Pawang; S, Suo-mo; Sa., Sani; Ts., Tsa-ku-nao; Tz., Tzu-ta; W, Wassu; WT, Written Tibetan.

The transcriptions of Gyarong material vary widely. On occasion, an essential contrast may be missing. Did Kham-to, for example, really lack a retroflex series? On the other hand, there may be superfluous distinctions. Chin (1949: 217), for example, lists in addition to his vowel "phonèmes", two vowel "variantes" (in reality, a syllabic [z] and a syllabic [ẓ]), which are in complementary distribution; we have collapsed these into one unit, i̱. In general, however, we have neither added to, nor subtracted

from, the distinctions of an author's transcription. (We have sometimes given typographically more common substitutes, as for



Places (marked by circles):

1. Sung-p'an, 2. Wen-ch'uan, 3. Kuan-hsien, 4. Mar-k'ang, 5. Mao-kung, 6. Ta-chin, 7. Hsiao-chin, 8. Tan-pa, 9. Tao-fu, 10. Pao-hsing, 11. K'ang-ting

Dialects (marked x):

1. Tsa-ku-nao, 2. Tzu-ta, 3. Suo-mo, 4. Wassu, 5. Hanniu, 6. Muphing, 7. Pati, 8. Pawang, 9. Chos-kia

Chin's fricatives.) With enough material, from enough dialects, the major features and major changes appear to come through fairly clearly, in spite of the variations in the material. We should note here the origin of the Chos-kia material, which differs somewhat from that of the other phonetic or phonemic transcriptions. This was based on translations from Tibetan transcribed in Tibetan script by Yung Drung, a native speaker of Gyarong who knew Tibetan well and who had had experience translating official documents from Tibetan into Gyarong in this way.

The material with which we work was collected over a period of roughly fifty years, from the 1890's to the 1940's. The earliest data is relatively scanty, and yet many of the major changes we see in the later material are already there. In this connection, we may note that Professor Tatsuo Nishida has studied an eighteenth-century Chinese-Gyarong bilingual text and finds the Gyarong language recorded there similar to the modern Suo-mo dialect [personal communication]; he includes examples of this material in his forthcoming A Study of the Tosu-Chinese Vocabulary Tosu-I-Yu.

von Rosthorn did not identify the Gyarong speakers as Gyarong. He considered them politically Chinese, but ethnographically (even racially) Tibetan: "Dass die genannten Stämme samtlich der tibetischen Rasse angehören, ist an ihrer physischen Erscheinung, wie an Kleidung, Sitten und Sprache deutlich zu erkennen" (1897: 525). Conrady,

however, in a note to von Rosthorn's article (1897: 531-3), remarked on the similarities of Wassu and Pati to the Gyarong vocabularies of Hodgson and Baber, with Hanniu forming a bridge to Tibetan. And yet Conrady's attitude remained ambiguous; he apparently hesitated to unequivocally release even Wassu and Pati from an identification with Tibetan.

Though Wolfenden felt that the interest of Gyarong lay partly "in the fact that we may, perhaps, have here a moderately near surviving relative of Si-Hia" (1936: 168), in practice he treated Gyarong in relation to, and as a direct descendant of, Tibetan. His verb roots, for example, are divided into two groups, one composed of forms for which he could cite the Tibetan correspondent, another of "forms difficult to connect with known Tibetan originals" (1936: 198).

In Chin's treatment of the Tsa-ku-nao dialect (1949), a Gyarong form is seen as relating to a Tibetan one in four possible ways. It may be a modern loan from, for example, the area of religious terminology. More often, it derives from written Tibetan. Again, it may preserve some archaic trait which written Tibetan had lost (p. 231). But Gyarong may also create new elements. In the r- of rmi 'name', for example, Tsa-ku-nao preserves a segment lost in Tibetan miŋ (p. 236). In the -g of phog 'intestines' it creates one; cf. Tibetan pho-ba (p. 244). Chin gives no reason for this difference in interpretation. Nor does he say on what

basis he decided that such forms as Ts. pia (WT phag) 'pig' or pog (WT pho-ba) 'intestines' represent a deaspiration of voiceless aspirated stops, rather than that, in phag and pho-ba, Tibetan aspirated unaspirated stops (p. 231). (He also neglects to mention in this connection the examples in which voiceless aspirated stops in Gyarong and Tibetan coincide, such as 'dog', WT khyi, Ts. thiɛ or 'mouth', WT kha, Ts. khei.)

In his later approach, Chin (1957: 124-5) no longer emphasizes such clear-cut stages, but rather analyzes Gyarong forms in terms of their degree of identity with Tibetan. There may be shifts of sound and meaning in the largest group of Suo-mo words which relate to Tibetan (615 words, or 23% of Chin's total vocabulary of 2,726 items), but all elements of the Tibetan correspondent are either present or accounted for in some way. Included here are basic forms, e.g. 'six', WT drug, S kətsok, together with obviously late loans, e.g. WT tšhos-khrims 'religious law', S tshoskhʂəm 'lama in charge of religious discipline'. In a smaller group of words (235 or 9% of the total), all elements of the Tibetan word are present, but in combination with a Gyarong word, e.g. S tamiendzo 'toe': S tamie 'foot' (WT rkaŋ-ba); ndzo : WT mdzub-mo, mdzug-gu 'finger'. The smallest group (125 words; 5% of the total) is made up of words which derive from the same source as Tibetan and contain some, but not all, of the elements of the Tibetan form, e.g. 'pliers', WT skam-pa, S təmkam.

This sort of numerical breakdown is perhaps useful as a record of progress in recognizing cognate forms or loans. Chin and his co-workers have, for example, identified 97 Suo-mo words (3.6% of their total) as Chinese loans and 975 (37%) as related to Tibetan. This leaves 1,654 words (59.4%) unaccounted for. Words may be labelled Gyarong as opposed to Tibetan simply because the changes which have led from Common Tibetan-Gyarong to Gyarong have not yet been discovered. More work needs to be done, first on Tibetan and Gyarong, then on other related languages. In our discussion here of some of the problems in Gyarong historical phonology, we lay primary stress on Tibetan, both because of its obviously close relation to Gyarong and because it has been fairly well studied independently of Gyarong. When we speak of Common Tibetan-Gyarong, then, we refer to reconstructions made to account for features of these two languages. This does not exclude the possibility that a reconstruction may have wider applications.

Properly used, Tibetan is of the greatest value as a starting point in Gyarong comparative studies. Though it has lost some endings, for example, it has also in its written form preserved more than perhaps any other Tibeto-Burman language. This can be very helpful when we evaluate Tibetan-Gyarong vowel correspondences. The role of consonants in effecting vowel changes, such as fronting, backing, lowering, and raising, deserves greater attention than it has received in Tibeto-Burman studies. In basing reconstructions

on languages which have largely or wholly lost these endings we must posit a number of vowel contrasts (such as -Vy, -Vw) which comparison with cognates with consonantal endings shows to be misplaced. This was noted by Chang (1967: 442-4) in his study of the southern Ch'iang dialects, which are among the Tibeto-Burman dialects without endings. Gyarong has happily retained some endings, and we can see the source of a number of the differences in Tibetan and Gyarong vowels.

If we assume that written Tibetan vowels represent Common Tibetan-Gyarong vowels, this is of course merely a working assumption which must be revised when there is evidence to the contrary. We know that some of the changes we see in comparing written Tibetan with the modern Lhasa dialect had already been completed in some written Tibetan forms, as for example the development of palatal affricates from labial stops followed by y. One of the vowel changes we see in Lhasa is the backing of e to a before a velar stop; for example, the honorific for 'to die', in written Tibetan bšegs-pa, gšegs-pa, is in Lhasa šāà (← *šag). It is quite possible that a written Tibetan form in -ag may derive from *-eg. Chang (1972), for example, reconstructed Sino-Tibetan *ghleks for 'iron', where written Tibetan has ltšags, on the basis of the vowels reconstructed for Archaic Chinese and Proto-Kam-Tai in this word. In the absence of evidence that there was backing we must, however, be content with an *-ag reconstruction. K -še 'rock', where written Tibetan has šag(-ma)

'small stones, gravel', may, for example, preserve the vowel of *šeg; it cannot, however, be adduced as evidence for such a reconstruction, since Gyarong palatals have a fronting effect on vowels.

Another promising direction for research would be the languages which, in addition to Gyarong, are called Rong; Lepcha (Rong) and Trung ([təruŋ], i.e. Rong, with the prefix tV-). Perhaps it is not significant that these people all consider themselves Rong, but then perhaps it is; there are indications that there was an earlier period of close contact among these three languages. Among the features shared by Gyarong and Trung is the use of pronominal affixes in the verbal system, where for example if a verb ends in an oral stop, the first-person singular ends in the corresponding nasal. Also, words in which Gyarong voiceless unaspirated initials correspond to Tibetan aspirated ones appear to represent an earlier stratum shared with Trung. Vocabulary studies might be rewarding; see, for example, the word for 'cat', whth its common *myaŋ in these three languages: Tz. meňaŋ (*myaŋ), L -myaŋ (šimyaŋ), Trung -mye (namye), or 'tiger', with Trung k(h)aŋ, Tz. kheŋ, Ts. and S khuŋ. The frequent usefulness of comparisons with Lepcha will be apparent in our discussions below.

Prevocalic Consonants

*(C)l-, *Cy- Changes

Though Gyarong retains some lateral initials, it has also lost some, and some have changed to y. Forms which illustrate this last change must be distinguished from those in which the y is original or epenthetic. Further complications are the changes which consonant clusters containing Gyarong y of any origin undero, e.g. py → ptsy, my → mn̆.

Epenthetic y/i and r

In Tzu-ta, Tsa-ku-nao, Suo-mo, and Kham-to, there is an epenthetic y/i which is not found in either written Tibetan or the Wassu, Pati, Hanniu, Chos-kia dialects (cf. Chart 1 and 'board', WT spaŋ-leb, S zbyaŋ̂səŋ). This y/i was produced without restriction on the type of preceding consonant; it appeared most frequently before a and o, which could then be fronted, though when there was no velar-stop ending there were also instances before e (and perhaps even i, the latter at an inferred stage for Tzu-ta in the transition from dental stop followed by i to palatal affricate). Before u, epenthetic i is found in Tsa-ku-nao (Chart 1, 'pain'). In the other dialects, only what appears to be an epenthetic r appears before this vowel: WT a-bud-pa 'to blow', Tz. phru, Ts. ʔapiɛ (*api), S kaphlu (*phru), K -mut, C taphu kolad. For 'body', Tsa-ku-nao too has -r-: WT sku, Tz. teskru, Ts. təskru, təskri, skhri, S təskru, K teskuu, teškri, C tisskru.

The Development of Affricates from Stop + y Sequences

The various Gyarong dialects evidence what may be interpreted as four stages in the development of palatal affricates from sequences of labial stops followed by a high front vowel or palatal glide, including that of epenthetic origin:

(1)		(1a?)		(2)		(3)		(4)
py	→	*pty?	→	ptsy	→	pt̆š	→	t̆š

These stages are illustrated in Chart 2. Chos-kia remains at stage 1. Wassu has examples at stages 3 and 4, Kham-to at stage 4. Where in written Tibetan i follows the -y- glide, Tsa-ku-nao loses the -y-; where the -y- remains, Tsa-ku-nao moves on, in general, to stages 2, 3, and 4. Tzu-ta has an additional change of palatal to retroflex. (Chart 2: 'to use' and 'to go'; and see 'water', WT t̆šhu, Tz. teṭṣe.) Also, where in the other dialects the labial of stage 3 is retained only in medial position, in Tzu-ta the sequence pṭṣ (← *pt̆š) is found initially as well; its retention correlates with the presence in written Tibetan of an s- preceding the labial stop + y sequence. (For WT t̆ša-lag 'thing', Tz. pṭṣa(k)lak, we might then reconstruct *spya-.)

For the development of palatal affricates and nasals in modern Tibetan dialects from sequences of labial stops or labial nasal followed by palatal glides R. K. Sprigg (1968 and personal communication) posits changes which are in some respects similar to these stages:

[bja] (Balti) → *[bdja] → *[bdžza] → *[ptša] → [tša] (Ü)

[tšha] (Lhasa)

This differs from the Gyarong situation its assumption of a change in the degree of stricture of the palatal glide as the source of the palatal fricative. (There may, of course, be more than one way in which nonpalatal stops followed by -y- develop into palatal affricates, and the Gyarong way need not be the same as the Tibetan way.) There is, however, an essential similarity in the two sequences of changes, that is, the assumption of an epenthetic element (t or ts, t) and the loss of the original stop (p, b) rather than a change in the point of articulation of this stop.

The dominant mode of correspondence in Gyarong to Tibetan velar + y sequences is that of palatal affricates in Tzu-ta (tš), back palatal stops (t) in Tsa-ku-nao, back palatal affricates in Suo-mo (tš), palatals followed by y in Kham-to, and velars followed by y in Chos-kia (Chart 3). Occasionally, where written Tibetan has a velar followed by y Gyarong has a simple velar, e.g. WT rgya-nag, rgya-yul 'China', Tz. džana, C rgyayul, but WT rgya-bo 'Chinese', Tz. kepye, Ts. gəpa, W kapa, C kipe. And there are a few instances where the correspondences are the same as for Tibetan palatals, i.e. retroflex affricates in Tzu-ta, front palatal affricates in Tsa-ku-nao and Suo-mo (ts), palatals in Chos-kia and Kham-t (Chart 3, 'house' and 'sour').

The Nasalization of *my Sequences

Between an initial labial nasal and y/i there developed, except in Chos-kia, an epenthetic nasal (Chart 4). The Wassu, Pati, and Hanniu dialects, which appear to have a dental nasal in this position where the other dialects have a palatal, may represent an earlier stage in a sequence of changes mi → mni → mn̆; my → mny → mn̆. Few of the Tibetan cognates to these words have -y-. The Gyarong -y- may be epenthetic in 'steamed bread'. In 'cat' it appears not to be. Tibetan 'eye' and 'person' are among the forms which have m- in later Tibetan but my- in the inscription of the Sino-Tibetan treaty of 821-822 (Li 1955: 90) and in a Sino-Tibetan glossary from Tun-huang presumed to have been written in the ninth century (Li 1961: 237, 346). Li comments (1961: 241) that "In general the labials, before what is in the current orthography an i or e vowel, are usually written with a subscribed y ... There are, however, a few exceptions". Even on Tibetan evidence alone a hypothesis that Proto-Tibetan *mi(-) changed to early Tibetan myi(-), which in turn changed back to current Tibetan mi(-), is not inviting. Gyarong cognates suggest that Proto-Tibetan, too, had *myi(-). (*myi 'person' may derive from Common Tibetan-Gyarong *mri [Chart 13, I.B.].) Miller (1955: 478), citing the examples of myi 'person' and myiŋ 'name', gives the "depalatalization of labials before front vowels" as one of the marks which distinguish standard written Tibetan from early written Tibetan. The -y- : zero correlation appears, however, not to be limited to the environment before i and e.

There are also the examples of early written Tibetan smyan 'medicine', standard written Tibetan sman (interpreted by Miller 1958: 201 as ablaut variants) and myad-pa 'the older form of the word mad-pa "truth"' (Das 1902: 979). Could WT maŋ 'many' (Gyarong *myak), then, derive from *myaŋ (← *mraŋ ← *a-braŋ? cf. Trung bəŋ)?

*l- → Gyarong y-

Not all instances of initial *l- change to Gyarong y- (cf., for example, 'road', Chart 1). In at least the four words cited in Chart 5, however, this change does appear to have taken place, though there have been attempts to derive the initials of 'hand' and 'sheep' from *y-. Chin (1949: 238) relates yag 'hand' to Tibetan phyag ("La consonne qui précède la lettre souscrite > 0"), but this is his only example for labial + y changing to y. Wolfenden (1936: 174), adducing Tibetan byi 'rat', Kham-to peeyii, feels that akeyuu 'sheep' may correspond to Tibetan khyu 'flock'. The ke- of 'sheep' is, however, like the ta- of 'hand', a prefix added in Gyarong. (Cf. the ke- of Tzu-ta keptsi 'arrow', added to -ptsi [*b-la].)

*l → Gyarong y, Ø after Prefixes

Most often, Gyarong y or zero from *l is found after a prefix. Generally, the prefix is a labial stop, *b-, added to either a simple or a prenasalized lateral, or *s- added to a prenasalized lateral. As in Tibetan, the mark of earlier prenasalized laterals is sometimes a labial nasal, sometimes a dental stop.

The argument for prenasalized laterals in Gyarong follows that

initiated in Tibetan studies. When the two languages show the same phenomena on a broad scale, and these phenomena reflect changes predating the origin of written Tibetan, we infer a period of common development at an early stage, not loans.

The reconstruction of prenasalized laterals in Tibetan begins with the observation (Li 1933) that in verb paradigms which have in the perfect tense no prefix, the present tense shows an a-chung prefix (a) where the root has a stop initial (a-bub-pa, bub 'to be turned upside down'), an a-chung prefix followed by an epenthetic dental stop where the root has a spirant initial (a-t-šhi-ba, ši 'to die'), but a lateral followed by a dental stop where the root has a lateral initial (ldog-pa, log 'to return'). That is, the sequence *a-l- produced an epenthetic stop, the a-chung was lost, and the l and d metathesized.

A phonetic explanation for the first of these changes, the production of an epenthetic stop, was proposed in Chang 1971: II.10 ff. That is, a-chung was a nasal, and the dental stop was a transition to the lesser strictures of spirant or liquid (l, r). Support for the assertion that a-chung was a nasal comes from varied sources. Tibetan transcriptions of Chinese Buddhist texts of the eighth to tenth centuries discovered at Tun-huang write ag- for Northwest Ancient Chinese ŋg-. In written Tibetan, only a-chung and m occur before aspirated stops and affricates, and neither m nor a-chung occurs before other liquids or before spirants.

In modern Lhasa Tibetan the medial reflex of a-chung is nasality (e.g. WT a-bras 'rice', Lhasa tɛ̃ɛ̀; WT ša 'meat', Lhasa šã̄; Lhasa šã̄mtɛ̃ɛ̀ 'fried rice with meat'). In the modern Chamdo dialect of Tibetan this nasal reflex of a-chung is also found initially (e.g. WT a-bu 'worm', Chamdo $mb\gamma^{3}$). Gyarong, too, illustrates the nasal nature of a-chung, e.g. WT a-dug-pa 'to have, Tz. ndut, Ts. kendud, Kham-to kënduu; WT a-then-pa 'to pull', S kanthân; WT a-bag 'mask', S mbâk; WT a-phreŋ 'a row', S təmprieŋ; WT a-ded-pa 'to drive (cattle)', Tz. na-, no-, S kono.

Written Tibetan does not show a-chung preceded by other prefixes. There is, however, evidence that it was preceded by two prefixes, *b- and *s-, and that by the time of written Tibetan sequences made up of these prefixes followed by a-chung and the initial of the base had already undergone a number of changes. When the initial of the base was a lateral, the result was md- from *b-a-l- (mdoŋs-pa 'blind' beside ldoŋs-pa ⟵ *a-l- and the prefixless loŋ-ba), zl- (and possibly ld-) from *s-a-l- (ldum-po, zlum-po 'round'), bzl- from *b-s-a-l- (cf. Chang 1971: IV.1-5, X.27). That Tibetan zl- does not derive simply from *sl- may be inferred from written Tibetan doublets in zl- and ld-, such as zlum-po, ldum-po 'round' and from modern Lhasa Tibetan forms which correspond to written Tibetan forms in zl- without ld- doublets but which imply a prenasalized origin (e.g. zla-ba 'moon; month', Lhasa tawā̄, šũũtaā̄ (-Nt- ⟵ *ld- ⟵ *a-l- or *s-a-l-).

Another Tibetan reflex of prenasalized laterals is ž, either alone or preceded by b- ~ g- (cf. Chart 6). For Tibeto-Burman cognates which have preserved the *l, Lepcha, with l-, ly- is a particularly good source. Bodman 1971: 3, apparently on the basis of these Tibetan ž : Lepcha ly correspondences, proposed reconstructing ly- as one source of Tibetan ž-. We know, however, that Lepcha Cy- could derive from an *sC- cluster via *sCy-. Cy- is, for example, the normal causative formation corresponding to C- (Mainwaring 1898: vii, Benedict 1943), e.g. WT mnam-pa 'to smell' : Lepcha nóm; WT snam-pa 'to smell' (causative) : Lepcha nyóm. To show that the -y- of Lepcha ly- corresponding to Tibetan (-)ž- was not of an *sl- origin would require evidence from outside Lepcha. On the basis of the *-bd- of Gyarong 'four' and the *(-)l- of certain Burmese cognates to Tibetan forms with (-)ž-, Nishida (1960: 159) set up Common Tibeto-Burman clusters of *-bdl- to account for the ž : l correspondences. (Nishida's CTB 'four' is, for example, *z-bdli.) We agree with Nishida in reconstructing *-dl- for a common stage beyond that of Tibetan or Gyarong. We go a step farther, however, and reconstruct a stage at which the predecessor of this *-dl- was *a-l-

Like Nishida, then, we find a clue to the solution of the ž : l problem in Gyarong. In most cases, the Gyarong cognates indicate nasality, either directly with a labial nasal instead of the frequent labial-stop prefix ('field', 'bow', 'side') or in the dental stop

which was epenthetic between nasal and lateral ('four' and possibly 'marrow'). We posit for Tibetan as well as for its Gyarong cognates prenasalized laterals where the lateral changed to y. In the Tibetan examples with ž, as in Gyarong 'four', the nasal was lost after the *a-d-l- stage. In the Gyarong forms with -mň- ← *-my- the nasal had merged with a preceding *b- prefix but had not produced an epenthetic stop. (Where the nasal had merged with the *b- prefix and produced an epenthetic stop, the *-l- was lost in both Tibetan and Gyarong: see section 6 below.) Lepcha implies neither a labial prefix nor a nasal element, but shows a predilection for the *s- prefix. To the already proposed *a-l- → ld- (e.g. ldog-pa 'to return') and *b-a-l- → md- (mdoŋs-pa 'blind', mdan-pa 'cheek', mda 'arrow'), we add *a-l- → a-dž- (a-džag-ma 'grass' [cf. Kham-to -lak in ökölak 'to graze'], a-džig-pa 'to disappear' [Suo-mo kəŋglək]), *a-l- → ž- (e.g. žiŋ 'field', žan-pa 'weak', žum/žim 'cat'), *b-a-l- → bž- (bžes-pa 'to get, take', bžeŋs-pa 'to get up', bži 'four') ~ gž- (gžon-pa 'young', gžu 'bow', gžuŋ 'marrow', gžogs 'side'). 'Joke', with spirant followed by -l- in both Gyarong and Lepcha, suggests another possible source for Tibetan ž: *s-a-l- (and compare 'oil, fat, grease', WT žag, Tz. -zdar ← *s-a-lag). Charts 7 and 9 show the posited intermediate stages for these reconstructions. Note that these stages are in a sense abstractions; between the two d's of *ddl, for example (Chart 9, stage 6) there may be assumed to have been a vowel. *dy- → *dž- has already been

posited to account for the absence of *dy, *ty in Tibetan to parallel by, phy, gy, khy (Chang 1971: V.4, 5), *dž- to ž- to account for two different types of causative verb paradigms to noncausatives with initial sequences a-d-ž- in the present, ž- in the perfect, one with a-d-ž-, b-tš-, g-ž-, tšh-, the other with a-d-ž-, b-ž-, g-ž-, ž- (present, perfect, future, imperative) (Chang 1971: VIII.1 ff.). That is, *s- in the perfect had devoiced the voiced affricate of the first type, which was then invulnerable to the deaffrication of voiced affricates; the second type had original spirant initials. A-chung in the present had created affricates (*a-ž- → a-d-ž-); either these affricates were produced after the general deaffrication of voiced affricates or, after nasals, voiced affricates were not deaffricated. The production of epenthetic stops between a-chung and l must, however, be placed earlier than was tenable from purely Tibetan evidence (i.e. after the deaffrication change). It is necessary to posit this to explain the change from *dl to *ž; evidence that the *a-l- → *a-d-l- → *dl- changes were not limited to Tibetan also points to the earliness of this change.

Alternations within Tibetan support the contention that in at least some dialect of Tibetan there was an *l to y change: lag 'hand' : honorific phyag; lug 'sheep' : phyugs 'cattle'; las (*lad-s) 'action [doing]' : byed-pa, byas (*b-lad-s → b-yas) 'to do'; logs 'side' : phyogs 'side, direction' (and gžogs 'side'). It is noteworthy that here and where l alternates with ž the number of honorific-nonhonorific

pairs is out of proportion to the total number of alternations, and it is always the nonhonorific which has l, the corresponding honorific which has y or ž: laŋ-ba 'to get up' : honorific bžeŋs-pa (*b-a-leŋ-s-pa); len-pa 'to get, take' : honorific bžes-pa (*b-a-len-s-pa).

1. *b-l- → Gyarong py-/pi, p-

'arrow'

WT mda, Tz. keptsi, S kəpie, K kepii, C kipi

Tibetan: *b-a-la → *m-a-la → *m-a-d-la → *mdla → mda

Gyarong (with *kV- prefix): *b-la → *b-ya → *bye → *pye (S -pie) → *pyi → pi, with Tzu-ta affrication of *pi to ptsi

'to warm'

WT slam-pa 'to parch, to make brown by exposing to heat', Tz. ptsye 'to warm oneself at a fire', Ts. kəwapiɛd 'warm (of clothes)', S kanəpyems 'to warm oneself with fire', kəmpya 'warm (of water)'

Tibetan: *s-lam (cf. L lyam ← *s-lam 'to warm up food')

Gyarong: *b-lam → *b-yam; *b-yam → *pyam → S -pya, *b-yam → *b-yem → *pyem (S -pyem-) → *pye (Tz. ptsye)

Chang (1971: IV.10) connected WT lde-ba 'to warm oneself' with WT d-ro-ba 'to be warm' and s-ro-ba 'to warm, make warm'; lde-ba may, however, be more directly related to these Gyarong forms, with the nasal implicit in lde-ba (← *a-leb-ba?) that of S -mpya (*a-b-l-?).

'to get, to bring, to seize'

WT len-ba, (b)loŋs, Tz. pit 'to bring over', Ts. -piɛ, -pin (1st pers.sg.) 'to bring over', -yan in ŋanəyan 'to seize', S kaypya 'to seize', K -kapii 'to get', C nakopye 'to seize'

Gyarong: *b-let → *b-yet → *pyet (C -pye) → *pyit → pit (Tz. pit, Ts. *pit, K -pii); *b-len → *b-yen → *b-yan → *pyan → S pya

2. *gl- → Gyarong ky-, ť-, tš-

'musk deer'

WT gla-ba, Tz. tše (tšamso [m.], tšamu [f.], S tša (tšapho [m.], tšamo [f.]), C kye (kyamso 'musk')

'eagle'

WT glag, Tz. stšak (*s-gl-)

'possibility'

WT glags, Ts. sa-ťhiɛ (*sa-gl-), S -tša- (tətšan 'to be possible for you'), C nakyes 'to be possible'

Gyarong shows here the same correlates as to written velar + y sequences (cf. Chart 3), and the immediate inference is that in Gyarong *gl- changed to *gy-.

3. *a-l- → Gyarong tš-

The correlation of Tibetan ld- : Gyarong tš- is found in 'to pour': WT ldugs-pa (← *a-lugs-pa), lugs : Tz. tšu, tši.

Tibetan: *a-lugs → *a-d-lugs → *d-lugs → ldugs

Gyarong: *a-lugs → *a-d-lugs → *d-lugs → *dyugs →
*tyugs → *tšugs → tšu, tši. (Cf. Chart 20 for examples of the fronting of *u to i after palatals.)

Tz. tšu, tšuŋ- 'stone' may be another instance of *a-l- yielding Gyarong tš-. The n- of Kachin nlung 'stone' would then be a direct reflex of the nasal *a.

Tibetan: *a-loŋ → *a-d-loŋ → *a-d-roŋ → *droŋ →
*dro → rdo

Gyarong: *a-loŋ → *a-d-loŋ → *d-loŋ → *dyoŋ →
*dyuŋ → *tyuŋ → tšuŋ

4. *b-a-l- → Gyarong *-bd- ~ *pt- 'four'

WT bži, H ži, Tz. keudži, Ts. kəwudi, S kəudi, K köudii, W koplii, P kopli, C kimpli

Tibetan: *b-a-li → *b-a-d-li → *b-d-li → *b-d-yi →
*bdži → bži

Gyarong: *b-a-li → *b-a-d-li → *b-d-li → *b-d-yi →
*-wdyi → -wudi, -udi, -udži

Hanniu follows the Tibetan line of development from *b-a-li (losing the *b-, as does modern Lhasa Tibetan, with ži). Tzu-ta, Tsa-ku-nao, Suo-mo, and Kham-to diverge as shown in the suggested

derivation above. Wassu, Pati, and Chos-kia (at least in its variants of 'four' in 'fourteen', shatshedpli, and 'forty', kiplishatsai) derive simply from *b-li.

The Gyarong loss of *-y- before -i- is also found in 'arrow' and 'to get, to bring' (1. above). The change of a labial stop to a labial semivowel or vowel is seen in, for example, WT bžugs-pa 'to sit' (honorific), Ts. kəwuzugs, kəwazugs 'please sit down!' and 'rope', C tibre (WT a-phreŋ-ba), Tz. teurei, Ts. təuri, S təurie. Where other Gyarong dialects have a dental stop followed by i, Tzu-ta has most often a palatal affricate. For example: 'hat', S, W, C tarti, Tz. tartši; 'cloud', Ts. ztim, S zdiem, C sdim, Tz. zdžim; 'wall', Ts. zti, S zdei, K äsdi, Tz. zdi, zdži.

Tzu-ta ptsiu 'marrow' may also derive from *b-a-l-, as Tibetan gžuŋ 'spinal marrow' does. This would imply that at a stage where Gyarong 'marrow' was *ptyu it joined forms in *pty- from *py- (stage 1a in the development of affricates from labial stop + y sequences) in undergoing the next change, to *ptsy-. (It is also possible that ptsiu derives from *b-l- (→ *b-y- → *py- → ptsi-). Suggested derivations:

Tibetan: *b-a-luŋ → *d-a-d-luŋ → *ddluŋ → *gdluŋ → *gdyuŋ → *gdžuŋ → *gžuŋ

Gyarong: *b-a-luŋ → *b-a-d-luŋ → *bdluŋ → *bdyuŋ → *bdyu → *ptyu → ptsiu

5. *b-a-l- → Gyarong my-, mv̆-

In a number of forms, Gyarong shows the *l to y change after labial nasal prefixes. For example:

'bow'

WT gžu, Ts. samv̆e, S ŝəmv̆a, K šamv̆ee, C shimnye

Tibetan: *b-a-lu → *d-a-lu → *d-a-d-lu → *d-dlu → *gdlu → *gdyu → *gdžu → gžu

Gyarong (with *ša- prefix): *b-a-lu → *m-a-lu → *m-lu → *m-lo → *m-yo → *m-ya → *m-n-ya → *m-n-ye → mv̆a, mv̆e

'field'

WT žiŋ 'field, land, earth'; luŋ-pa 'native place; valley' (Lhasa luŋpʌ̄ 'place'), Tz. temv̆e, Ts. temv̆iɛ, W mnakatsho 'to work in the field' (mnak- 'field', katsho 'to work'?), K temv̆ek

Tibetan: *a-liŋ → *a-d-liŋ → *dliŋ → *dyiŋ → *džiŋ → žiŋ

Gyarong: *b-a-luk → *m-a-luk → *m-luk → *m-lok → *m-lak → *m-yak → *m-n-yak → *m-n-yek → *m-n-ye → mv̆e

'full'

Sa. lu?[2], Tz. tameŭu, S kəmv̆ot, C kimyod

Gyarong: *b-a-lot → *m-a-lot → *m-lot → *m-yot (Chos-kia) → *m-n-yot → *mv̆ot (Suo-mo) → *mv̆o → *mv̆u (Tzu-ta)

From just four Tibeto-Burman languages, Tibetan, Gyarong, Lepcha, and Trung, we see considerable divergence in the selection of prefixes for these words. Tibetan and Gyarong 'bow' and 'field', like Trung

məli 'place', derive from forms with prenasalized laterals. Gyarong once again shows its preference for labial initials, with *b- in all forms, while there is a Tibetan prefix deriving from *b- only in 'bow'. Lepcha evidences no nasals and a labial for just 'full' (blyót-ta 'full length' ← *b-s-lot or *s-b-lot; cf. S kapyot 'to fill' [causative to kəmŏot 'to be full'] ← *b-s-lot or *s-b-lot). Lepcha has spirant prefixes for 'bow' (sǎ-lí) and 'land; earth; place' (lyaŋ ← *s-liŋ); for 'bow' this coincides with the first of Gyarong's several prefixed elements.

It should be noted that, though all Tzu-ta and Suo-mo forms here show nasalization of the *my- ← *ml- sequence, this is not true of every instance of *my- ← *ml-. For example: WT ldoŋ-ba 'to become blind' ← *a-loŋ-ba, Tz. mye ← *m-yo ← *m-lo ← *b-a-lo.

Both 'bow' and 'field' appear to be characterized by an *i/*u alternation. We posit for these forms in Gyarong a lowering from *u to *o conditioned by the initial nasal. The velar-stop ending of Gyarong 'field' lowered this *o to *a; in 'bow', with its open syllable, a preceding *y could bring about the *o to *a change. In both 'bow' and 'field', *a was then fronted to e or ɛ in the Tzu-ta, Tsa-ku-nao, Kham-to, and Chos-kia dialects. For 'bow', Lepcha, with sǎ-lí, is one of the Tibeto-Burman dialects with -i. Tibetan *liŋ 'earth' and *luŋ 'place' bear distinct meanings which are comprehended by the one Lepcha form lyaŋ (*s-liŋ) 'land; earth;

place'. Like Lepcha, Trung has -i for 'place' (məli) where Tibetan has u.

Other instances of Gyarong stop endings where Tibetan has nasals support the identification of Tibetan -ŋ and Gyarong -k in 'field'. For example: WT len-pa 'to get; to bring', Tz. pit (*b-let; 1. above), WT nyin 'day', Tz. -ňit.

6. *b-a-l- → Gyarong md-

In at least Tibetan, Gyarong, and Kachin, there is evidence that a labial nasal followed by a dental stop may imply a proto-base with a lateral initial. In some instances the lateral is found in related Tibeto-Burman dialects; in Tibetan, there are two examples, one of a doublet (ldan-pa, mdan-pa 'cheek'), the other of a triplet (loŋ-ba, ldoŋs-pa, mdoŋs-pa 'blind') from which we can reconstruct the sequence of changes which led from a lateral preceded by a labial and a nasal to md-: *b-a-l- → *m-a-l- → *m-a-d-l- → *mdl- → md- (cf. Chang 1971, particularly X.26-8). In other instances, the reconstruction of bases with lateral initials requires comparative evidence. For Tibetan mda 'arrow' we may cite Kachin pəla, where there was no nasal; for Kachin məta 'lick', Tibetan ldag-pa (*a-lag-pa), where there was no labial, is relevant. There are several Gyarong examples of this phenomenon:

'to arrive': WT s-leb-pa, (b)s-leb-s, Tz. medya 'he arrived', K kuukuumedä döö̈ ŋwos 'she arrived'

'to return': WT ldog-pa (*a-log-pa), log, K kookömödöö̈ döö̈ ŋwos 'he returned'

'servant': WT g-yog-po (*b-log?), mi-lag, C tamdo (*b-a-lo, with prefixed ta-); cf. L ǎyok (*ǎlok?), ká-plók 'work' and C tunyagmo (*a-log-mo) 'servant', timyagmo (*b-a-log-mo) 'attendant' (f.)

'able': Tz. nemdak (*b-a-lak ⟵ *b-a-lek, with ne- prefixed); cf. L lyek 'able' ⟵ *s-lek

'sting': WT mduŋ (noun; *b-a-luŋ?), Tz. temdar 'stinging' (*b-a-lar), mdai 'to sting'; cf. L 'sting' a-lím; Kachin palen, balen 'the sting of a bee'

'to fall': WT ltuŋ-ba (*a-lhuŋ), lhuŋ, Tz. nadai, Ts. kəwuliɛt, S kəmdam, C kiltuŋ, kilto. Tz. -dai ⟵ *-draC-ba ⟵ *-dlaC-ba ⟵ *a-laC-ba; Ts. -wuliɛt ⟵ *b-lat; S -mdam ⟵ *b-a-lam. Cf. also Lu. tla, tlâk; tlu, tlûk (not from a height), L hlat, glo, klo, and Trung aklai; note that a Trung velar before l may derive from a dental: Trung khlu 'six', WT drug.

7. *s-a-l- ⟶ Gyarong sny-, zd-, ts-, tsVl-

In one form, Gyarong has relatively direct reflexes for the *s-a-l- sequence, that is, spirant for spirant, nasal for a-chung, y for *l: Tz. snye, snya- (*s-a-lo ⟵ *s-a-log), causative to ye, ya- 'to return' (*lo ⟵ *log); cf. WT z-log-pa (⟵ *s-a-log-pa, Chang 1971: IV.5) 'to cause to return: to drive back ... to send back'.

To see a pattern in the other Gyarong reflexes of *s-a-l-, i.e. zd-, ts-, and tsVl-, it is helpful to examine the reflexes of *s-a-r-, which undergo in large part the same changes as *s-a-l-.

We base our reconstruction of *s-a-r- on such alternations in

written Tibetan and the spoken Tibetan of Lhasa (in parentheses below) as the following (cf. Chang 1971: IV.5 ff.):

	*a-r-	*s-a-r-	
	a-d-r-	s-r-	s-k-r-
(1)	a-d-re-ba, a-d-re-s (teè 'to get mixed')	s-re-ba (tēè 'to cause to get mixed')	
(2)	a-d-rog-pa (tɔ̀ 'to be startled')		s-k-rog-pa 'to frighten' (tɔ̄ɔ̀ 'to cause to be startled')
(3)		s-reg-pa 'to burn, roast' (tāà 'to roast')	ǰa-skrag (ǰāptāà 'roast meat')
(4)		srum 'meat' (hon.)	skrum 'meat' (hon (-tūm̀)
(5)		sras 'son' (hon.) (sɛ̄ɛ̀) sras-mo 'daughter' (hon.) (sɛ̄ɛ̄mō, tɛ̄ɛ̄mō)	

For the correspondence Written Tibetan dr- : Written Burmese khr- (Lolo kh-, tsh-) Nishida (1960: 161) reconstructs Common Tibeto-Burman *dr-. For Written Tibetan sr- : Written Burmese khr- or Lolo kh-, tsh- he reconstructs *sdr- (e.g. 'to burn', Common Tibeto-Burman sdreg, sdrug

Common Lolo khruu.) Under this interpretation Tibetan, in the pre-written stage, would be assumed to have lost the *-d- between *s- and *-r-; in the post-written stage there would have to be an epenthetic dental stop in the same environment to produce such modern forms as those listed above. This is, of course, possible. In a parallel to our reconstruction of an earlier *a-l- for Nishida's *dl we, however, reconstruct *a-r- for *a-d-r- and *s-a-r- for Nishida's *sdr-, with *sdr- as just one of the possible intermediate developments of *s-a-r-. (Proto-Tibetan *sdr- yielded written Tibetan rt-; cf. Chang 1971: VII.23-5. That is, if the dental did not change to a velar before r, the sequence dental + r was subject to metathesis.)

We posit two lines of development for *s-a-r- in Tibetan, one in which the a-chung was lost without producing an epenthetic stop, the other in which it was lost after the production of such a stop. These two developments may be attested within written Tibetan (srum, skrum; sreg, -skrag); again, written Tibetan and modern Lhasa Tibetan may attest to just one development (s-k-rog-pa, tɔ̀ɔ̀), or written Tibetan may represent one development, modern Lhasa Tibetan the other (s-re-ba, tɛ̀ɛ̀). Tzu-ta, with mu- for 'to fear', supports the reconstruction of a base in *a-r- for 'to fear, to frighten, to startle'; that is, *b-a-rog → *m-a-ro → *m-ro → *mo → mu, with no stop, but with a nasal to attest to the reconstruction of the nasal a-chung. (*mr- also yields Gyarong m- in 'rotten': Tz. mai, S -rak 'to become rotten' [WT a-d-rul-ba, rul-ba 'to become rotten'].)

The sharing of such later changes as metathesis and the loss of *-r- with proto-sequences of *s- + labial stop + *-r- lends further support to the derivations we propose here.

*spr-, *sbr-, and prenasalized *l and *r, which may be preceded by *b- or *s- prefixes, are among the initial consonantal clusters we posit for the prehistory of both Gyarong and Tibetan. (The nasal element, a-chung, appears to have been an unstressed nasal which assimilated to the point of articulation of a following sound; in origin it may have been a stressed prefix of the form *NV--perhaps the na- of Gyarong?) These clusters developed in Gyarong into dental affricates, dental affricates followed by r/l, and dental spirants followed by stops. We give detailed examples of these developments in the following pages. Charts 7 and 8 summarize these developments for Gyarong, Charts 9 and 10 for Tibetan. We posit two sets of partially similar changes; our aim is to posit for Gyarong only changes for which there is evidence in Gyarong. So we account for the voiceless stops of Gyarong through just one incident of devoicing, while for Tibetan we posit devoicing of stops through a preceding s- in the pre-written stage and a general devoicing change in the post-written stage. We have chosen what seem to us the most plausible sequences of changes. We have, for example, derived the doublets zlum-po, ldum-po 'round' from one proto-sequence, *s-a-lum, through different changes; we could derive them from different proto-forms (*s-a-lum, *a-lum).

The changes we posit are as follows:

Gyarong changes. (The numbers here correspond to the columns in Charts 7 and 8.)

1. An oral stop may change to a nasal before a nasal.

   A labial stop may change to a dental before -r-.

2. The sequence of a-chung + l/r may give rise to an epenthetic dental stop following the a-chung.

3. Noninitial a-chung may be lost.

4. A voiced stop voices a preceding s-.

5. A-chung assimilates to the point of articulation of the following sound.

   A-chung is lost.

6. -l- is lost after md-.

   -l- may change to -y- after nasals and after stops not preceded by spirants.

   A dental stop may change to a velar before -r-.

7. -b- may change to -w-.

   Stops are devoiced, except after voiced sounds. (Devoicing is also found after voiced initials in Tsa-ku-nao.)

8. Postconsonantal -r- may be lost.

9. Before l/r, s-t is metathesized.

10. A vowel may develop between an affricate and -l-, and between -w- or a nasal and a stop.

11. -l- is lost after a spirant + stop sequence. (The order of spirant and stop is immaterial.)

Postconsonantal -r- may be lost.

Between m- and -y-, there may be produced an epenthetic -n-.

Tibetan changes (Charts 9 and 10).

1. An oral stop may change to a nasal before a nasal.

A labial stop may change to a dental before any consonant other than the prefix s-.

s- changes to z- before the sequence -a-l-.

2. The sequence of a-chung + l/r may give rise to an epenthetic dental stop following the a-chung.

3. A-chung may be lost.

4. s- devoices an immediately following voiced stop.

5. A-chung may be lost.

6. A dental stop may change to a velar before dentals, palatals, and r.

7. l is lost after md-.

-l- may change to -y- after nasals and spirants and after stops not preceded by spirants.

8. dy → dž; zy → ž.

9. Voiced affricates not preceded by a-chung are deaffricated.

A consonant followed by a sequence of a stop and a lateral is lost.

10. Sequences of a dental stop followed by l or r which are not preceded by a nasal undergo metathesis.

Examples which illustrate these changes are as follows:

A. Gyarong Dental Affricates:

'son, daughter'

WT sras 'son' (hon.); sras-mo 'daughter' (Lhasa sɛ̄ɛ̀ 'son', sɛ̄ɛ̄mō, tɛ̄ɛ̄mō 'daughter'

Ts. tətsï, tsa 'son' (ʔamutsa 'cousin' [m.]; [ʔamu 'aunt']); K -tse 'son', C mitsapu 'daughter' (mi 'woman', pu 'child')

Tibetan: *s-a-r- → WT sr-

Gyarong: *s-a-r- → *s-a-d-r- → *sdr- → *str- → *tsr- → ts-

'monkey'

WT spra, spre, spreu, sprel (Lhasa pīu ['monkey'], pēe- [pēepāà 'monkey's hide'], tēe ['monkey year'])

Tz. ketsu, Ts. kətsï, C kitsui

Gyarong: *spr- → *str- → *tsr- → ts- (with *kV- prefix)

'to say, speak'

WT zla-ba/zlo-ba, bzlas, bzlos, zlos

Tz. tsai, tso (tsa-, tso-); tse, tsi; Ts. katsï, katsə (-tsi-, -tsəi-, -tsei); S katsəs (nətsəs 'he says'); K (kaa-)tsös 'he said', kätsöŋ 'I say', C kotsis

Tibetan: *s-a-l- → *z-a-l- → zl-

Gyarong: *s-a-l- → *s-a-d-l- → *sdl- → *stl- → *tsl- → ts-

Wolfenden's positing for the Kham-to forms of a root with a nasal ending, *tsön 'say', which he then identified with Tibetan gsuŋ-ba (1936: 198) stemmed, in part, from his failure to recognize the basic

features of the Gyarong conjugational system, in which for verb bases ending in either a vowel or velar stop the velar nasal ending is the mark of the first person singular, the dental nasal ending that of the second person singular: cf. Tz. tsaŋ, tsoŋ, Ts. kətsiŋ, K kätsöŋ 'I say', Tz. tsan, tson, Ts. -tsin 'you say'. K tötsön taakaatsös dö̈ö̈ ŋwos 'he told him to say' is, more literally, 'he told him "you say"'. (Wolfenden 1936: 200: "I am inclined to believe that the very fluctuating final ṅ [ŋ] which gave rise to this conjecture [i.e. that Gyarong has pronominal suffixes] is an element called forth mainly by consonantal harmony.")

B. Gyarong Dental Affricates + r/l:

'to twist'

WT sgrim-pa

S katsri

Tibetan: *s-a-r- → *s-a-d-r- → *sdr- → sgr-

Gyarong: *s-a-r- → *s-a-d-r- → *sdr- → *str- → tsr-

Lepcha has brí (i.e. b-ri) 'to twist', a-brim 'twisted (as cotton or thread)'. (Note the same use of Tibetan sgrim in Lhasa qūpʌ̄ tim̀ 'to twist thread'.) Lepcha also has bryek (*bs-rek) and bryók (*bs-rok) je for 'twist'; Lepcha *rek may provide a link to Tibetan and Gyarong forms for 'twist' with lateral initial and, in Gyarong, velar ending: WT sle-ba (*s-leg-ba?), Chos-kia kowaleg (*b-leg).

An alternative hypothesis, that Tibetan sgrim and Gyarong tsri derive from *s-brim via *s-drim has the disadvantage that *s- should

devoice a following voiced stop in Tibetan, if there were no intervening a-chung. The labial to velar change in Tibetan would offer no problem; cf. phrag ~ khrag (stoŋ, stoŋ-phrag 'a thousand', khri, khri-khrag 'ten thousand').

'moon, month'

WT zla(-ba) (Lhasa tawā, šũũtāā)

Tz. tselaŋei, Ts. tsïliɛ, S tsə(i)la 'moon', tsïla 'month', W tsela 'moon', tietsla 'month', K tsäliää 'moon', tetseliää 'month', C tsile 'moon, month'

Tibetan: *s-a-l- → *z-a-l- → zl-

Gyarong: *s-a-l- → *s-a-d-l- → *sdl- → *stl- → *tsl- → tsVl-

C. Gyarong Dental Spirants followed by Dental Stops:

'pea'

WT srad-ma (Lhasa tēmā, tēmā)

Tz. sta- (stalar '[round] pea'); Ts. stag, W tasto, C dastag

Gyarong: *s-a-r- → *s-a-d-r- → *sdr- → *str- → st-

For the -d : -g correlation, cf. 'half': WT phyed(-ka) : Tz. epha, Ts. phag, S -phak (swaŋphak 'midnight'), K aphak, C wuphag.

'to frighten'

WT s-krog-pa (*s-a-rog-pa), causative to a-drog-pa (*a-rog-pa)

Tz. nastšar (nastšaŋ 'I frighten'; -stšar, with na- prefix)

Tibetan: *s-a-r- → *s-a-d-r- → *sdr- → *str- → skr-

Gyarong: *s-a-r- → *s-a-d-r- → *sdr- → *str- → *st-
→ *sty- (epenthetic y) → stš-

In Gyarong, *o regularly lowers to a before velar stops; in Tzu-ta, final velars (stops and nasals) may yield -r.

'cloud'

WT sprin-pa

Tz. zdžim, Ts. ztim, S zdiem, C sdim

Tibetan: *sbr- → spr-

Gyarong: *sbr- → *sdr- → *zdr- → *zdr-/*ztr- → zd/zt

Before -i(-), Tzu-ta regularly has a palatal affricate correspondin to the dental stop of other Gyarong dialects. The -m of Gyarong appears to have been produced in assimilation to the *-pa suffix.

'lunar eclipse'

WT zla-a-dzin

Tz. zdazen, S zlazin

Tibetan: *s-a-la + -a- + zin → *z-a-la + -a- + d-zin → zla-a-dzin

Gyarong: *s-a-la + zin → *s-a-d-l- → *s-d-l- → *z-d-l- →
Tz. zd-. (The source of S zl- in this compound, as in zlalhak 'extra month; intercalary month', is not clear: *z-d-l- → zl-? *s-a-l- → *z-a-l- → zl-?

'fat, oil, grease'

WT žag

Tz. -zdar (wezdar 'its fat'), W ždar 'pig fat'

Tibetan: *s-a-l- → *z-a-l- → *zl- → *zy- → ž-

Gyarong: *s-a-l- → *s-a-d-l- → *sdl- → *zdl- → zd

D. Gyarong Dental Spirant followed by Velar Stop:

'to burn'

WT s-reg-pa 'to burn, roast' (Lhasa tāà)

s-krag in ša-skrag 'roast meat' (Lhasa šāptāà ← *ša- + bskrag)

Tz. ski, waski 'to burn, scorch', S kawaski 'to scorch'

Tibetan: *s-a-r- → sr-

*s-a-r- → *s-a-d-r- → *sdr- → *str- → skr

Gyarong: *s-a-r- → *s-a-d-r- → *sdr- → *sgr- → *skr- → sk-

After the loss of the final *-g, Gyarong 'to burn' participated in the general raising of *-e to -i. On the dental to velar change before *-r-, see Chart 11, III.

*Cr- Clusters

*Cr- clusters are affected, in both Tibetan and Gyarong, in varying degrees, by a number of possible changes: loss of the initial, changes in its place of articulation, loss of the *-r-, and changes in the sequence of the initial and *-r-.

In the number of examples it affects, loss of the initial is perhaps the least significant of these changes, and also the most difficult to identify. In Gyarong *ro 'anger' (Tz. ra, K -roo, C taro), for example, has the initial of WT sro (or khro) been lost, or does Gyarong show the prefixless base, to which Tibetan had a prefixed correspondent (perhaps *s-a-ro)?

A number of examples show changes in the place of articulation

of the consonant preceding *-r-: labials change to dental (Tibetan, Chart 13: II.A, B, III; Gyarong, Chart 13: I.D, III), dentals to velar (Tibetan, Chart 11: I.C, II, III.A; Gyarong, Chart 11: III, IV), and labials to velar (via dentals? Tibetan, Chart 13: II.C; Gyarong, Chart 13: I.E, F). We regard as tentative the classification among *dr clusters of examples which have gr in written Tibetan but retroflex stops or affricates in Tzu-ta, Tsa-ku-nao, and Suo-mo (Chart 11, I.C.). There are certainly examples of *dr changing to gr in Tibetan, and written Tibetan dr corresponds to retroflex stops and affricates in Gyarong. And yet there are nagging questions. Is there in Gyarong, in addition to the many examples where the velar of *gr clusters remains velar (Chart 12), a subset of such clusters which yields retroflex stops or affricates? Does W ktru-tru 'lamp' represent a transitional stage in this process?

The loss of *-r- is not uncommon in modern Lhasa Tibetan. For example: 'son' (hon.), WT sras, Lhasa sɛ̄ɛ̀; 'rice', WT a-bras, Lhasa ʈɛ̄ɛ̀, but also pɛ̄ɛ̀; 'a nomad's yak-hair tent', WT sbra-gur, Lhasa ʈʌqūu, pʌqūu; 'an uncut sheet of paper', WT šog-bu gre-ga (*bre-ga), Lhasa šūqū ʈheqā, pheqā. Gyarong shows the loss of *-r- in a number of *Br and *Gr clusters (Charts 12, I.B, 13, I.C). Kham-to appears to simplify *Dr to *D; if Wolfenden's transcription is accurate in this respect, however, Kham-to is the only Gyarong dialect reported in which dentals followed by r coalesced with simple dentals. (In historical work, then, Kham-to forms with dentals must be carefully

compared with forms in other Gyarong dialects. Wolfenden himself, after correctly relating kuutok 'six' to WT drug, slipped on -tup 'sew' [WT a-drub-pa, drub], speculating a connection with *tuu 'meet' [1936: 198].)

Simplification is the dominant change among nasal + r clusters. In one instance, both the r and the nasal are present, and in the same order as in Tibetan: 'to borrow', WT brnyan-pa, Tz., Ts., and S rŋa-, C kornge. Generally, however, where the nasal is a labial, the r is lost; otherwise, it is the nasal which falls by the way: 'to become rotten', *b-a-rul → *mrul → Tz. mai, S -mak- (WT a-d-rul-ba); 'to fear', *b-a-rog → *mrog → *mog, S kanəmo, Tz. mu- (WT a-d-rog-pa); 'peacock', Tz. meptsye (but also morye ← *mra [WT rma-bya]); 'to wither', WT rnyid-pa, Gyarong *ri, S li; 'to find', WT rnyed-pa, Gyarong *red, Tz. ra-, C kore; 'mane', WT rŋog, Gyarong *rog → *rag, S -lwa (talwa).

Gyarong forms in rC- have been cited as evidence for a Tibeto-Burman *r- prefix. A closer examination of these forms does not support such an interpretation. As in Tibetan, the three prime sources of preconsonantal r are metathesis, *s before nasals, and a variety of consonants before velars.

(1) Metathesis of *Cr to rC

Charts 11-13 list numerous examples of *Cr to rC metathesis. The Tibetan metathesis of dental stop + r is independent of environment and quite thorough: examples of a voiceless dental stop followed

by r, such as tri-šu-la 'trident' (Sanskrit triśūla) are late loans; forms with a voiced dental stop followed by r are suspect of originating in *br, though without additional evidence we would hesitate to reconstruct a labial. There is such evidence for 'smell' (Chart 13, II.A) and 'six' (Chart 13, III). In Gyarong metathesis, on the other hand, there is a strong element of environmental motivation. *Br clusters unprefixed by tV-, for example, rarely metathesize (Chart 13, I.A); after tV-, exceptions to metathesis are rare (Chart 13, I.B). This is also true of *Gr clusters: Kham-to 'wing', with taa-, has metathesis (taarkom); Tsa-ku-nao has no tV- and no metathesis in pryekhrom 'chicken wing'. The adjectival prefix kV- has the same effect (cf. Chart 12, II). Exceptions are rare enough to support the suggestion that Tz. rgu 'rock' (Chart 11, IV.B) derives from WT rdo 'stone', not from a common *dro, and that the Tzu-ta cognate to rdo is, rather, tšu 'stone'.

In the same environments, *sr- generally metathesizes to rs/rz:

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo
bridle	srab	srab		
slit	srubs	srib		
life	srog	tersa	rsag	
ounce	sraŋ	tarsaŋ		təsraŋ
dense, firm	sra-ba			kərzəp

(2) *sN → rN

This change is seen in a number of Tibetan forms, such as s-nur-ba, r-nur-ba 'to crush', causative to nur-ba 'to get crushed, crumble to pieces' (cf. Chang 1971: II.1 ff.). Gyarong shows the same change; the Lepcha reflex of *sC is, rather, Cy. For example:

(a) 'to be extinguished, die' (causative: *s-m-)

S kərmiek, Tz. rmir (*s-mik) 'to extinguish (a fire)'

cf. Lepcha mak 'to die, said of man, animal, tree, fire'

myă̆ ← *s-mi(k) 'to allow to die or to cause to die [said e.g. of animals or fire]'

Archaic Chinese *smwyat

(On the Gyarong velar ending corresponding to a non-Gyarong dental, cf. 'to divide', WT a-byed-pa, phye(d), Tz. phak, phyak.)

(b) 'deep' (*s-n)

S kərnaks, Tz. kerňak (*s-nak ← *s-nok ← *s-nuk)

cf. Trung rna

Lepcha nyŭŋ-bo ← *s-nuŋ

Liang-shan Lolo nhu^{55}

(c) 'red' (*s-n-)

Tz. kewerni (sewerni-, sewernya- 'to make red'), Ts. kəwurni, kəwurnə, S kəwurňie, C kiwurni, W orni, K kaawuurnii (Gyarong *sniC, with a final consonant evidenced by the Suo-mo breaking of -i to -ie)

cf. Lepcha sa-nyim, ka-nyem: nyem, nyim ← *s-nim, *s-nem

(3) *s, *d, *l ⟶ r before Velars

a. *s (cf. WT sked-pa, rked-pa 'waist', Tz. -skhye, WT rgya 'seal')

'box', WT sgam, Ts. rkam

'magpie', WT skya-ga, Tz. khartšak, Ts. khorta

'needle', WT khab, but Archaic Chinese *skum, Ts. rkɛp, rkɛk

b. *d (cf. WT dkan, rkan 'palate')

'mercury', WT dŋul-tšhu, S rŋultsʰə

'nine', WT dgu, but Lhasa -rqū in cūrqū 'nineteen', S rgupa 'ninth',
H cirge 'nineteen'

'rare', WT dkon, K karkun

'winter', WT dgun-ka, Ts. rkomkhɛ, C rgunkhe

'temple', WT dgon-pa ('monastery'), Tz. genbye, Ts. rgenpiɛ, (r)kenpiɛ,
C rgunpe

c. *l

'husk', WT lgaŋ-bu, Tz. -rkhwak

The Deaffrication of *s- + Affricate Clusters

A change which may follow the development of affricates from stop + r clusters is the deaffrication of *s- + affricate clusters (Chart 14). This change, however, mainly involves affricates which correspond to Tibetan affricates or stops followed by y.

Gyarong deaffrication in this situation is of two sorts: STS ⟶ ST and STS ⟶ S (where TS, S represent dental, palatal, and retroflex affricates and spirants). Though ST deaffrication is found in all dialects and S deaffrication in all but Kham-to and Chos-kia,

neither sort is found in all dialects for the same form. This helps us to identify deaffricated affricates even when we are not certain of a Tibetan cognate (Chart 14: 'to deposit' and 'to hit').

Where we do have Tibetan cognates we find no s-. Tibetan is even less tolerant of s- + affricate clusters than Gyarong, with just one example of such a combination (stsol-ba 'to give'). STS → TS appears to be the favored sort of simplification in Tibetan; however, we also find STS → S in, for example, *nyis-tšu [g-nyis 'two', b-tšu 'ten'] → nyi-šu 'twenty' (cf. Li 1933: 140-1, Chang 1971: VI.1 ff.). In external sandhi we find simple deaffrication in, for example, šig 'one' as an enclitic alternant of tšig after s. For WT a-tshod-pa, btsos 'to boil', we reconstruct *a-ts-, *bs-ts-, with the *s- causative prefix in the perfect as in other verbs for cooking processes (s-kol-ba, bs-kol 'to boil'; s-reg-pa, bs-reg-s 'to roast, bake'; r-ŋod-pa, br-ŋos ← *s-ŋod-pa, *bs-ŋos 'to parch, roast, fry'). C kowastse (ko- + *bs-ts-), then, preserves the original s- + affricate cluster, while Tz. stu deaffricates, though in a different way than Tibetan. The *s- + affricate cluster inferred for Tzu-ta and Suo-mo 'wealthy' is also implicit in the written Tibetan allomorphs for 'wealth(y)', with -by- in dbyigs 'wealth' alternating with phy- (*s-by-) in phyug-pa 'wealthy'. WT phyin-pa 'to go' may also derive from *s-by-; cf. a-byon-pa, byon 'to go'. And the devoiced stop of WT a-khyags-pa 'to feel cold' (cf. graŋ-ba 'cold') implies the *s- of S kəməstak, K kaamiišteea.

Voice and Aspiration

On the reconstruction of voice and aspiration contrasts for Tibeto-Burman the view most widely held has perhaps been that among stops there was a contrast in voicing and that the aspiration of voiceless stops was a secondary development. The situation of written Tibetan would then be not far removed from Proto-Tibeto-Burman: there is a widespread contrast of voiced unaspirated and voiceless aspirated stops; the relatively small number of voiceless unaspirated stops in absolute-initial position may be interpreted as made up of loans and the residue of a shift from unaspirated to aspirated which occurred initially and after nasals. That Tibetan had undergone merging of an earlier contrast in aspiration is, however, a possibility to be considered.

Voice

When we attempt to correlate voice and aspiration in Gyarong and Tibetan we find a number of snags. We can, however, establish some facts.

Tibetan voiced stops are more numerous and occur more frequently than do Gyarong voiced stops. There is, for example, a group of Tibetan voiced stops in absolute-initial position to which correspond Gyarong voiceless unaspirated stops (Chart 15). These are generally common words, not late loans, and we may tentatively assume that Gyarong underwent here a simple process of devoicing.

Voiced stops which followed other voiced sounds--nasals, r, and

z/ẓ--escaped this devoicing process for the most part (Chart 16). Exceptions to this rule appear to be most common in the Tsa-ku-nao dialect. (There are, however, instances of divergent recordings of the same Tsa-ku-nao form, sometimes with voicing, sometimes without. These transcriptions are given in different places and it is not certain that the differences would have survived collation and checking.)

Gyarong z and ẓ derive from *s. Gyarong had regressive assimilation in voicing before stops, i.e. a voiced stop voiced a preceding *s to z, where Tibetan had progressive assimilation, i.e. *s could devoice a following voiced stop. The source of this and other divergent developments in Tibetan and Gyarong may have been a difference in stress, so that the Lhasa dialect of Tibetan, for example, has lost prefixes and developed a phonologically significant tonal system, while in Gyarong there are numerous prefixes and tones are not contrastive.

Gyarong retains voicing after voiced sounds, but voiced sounds do not bring about voicing of voiceless ones; so, for example, after nasals Gyarong voiceless stops correspond regularly to Tibetan voiceless stops (Chart 17). The change of *s to z must, therefore, have preceded the devoicing of voiced stops.

In roughly a dozen cases Tibetan has a voiced stop preceded by another consonant and one or more Gyarong dialects has the voiced stop but not the preceding consonant. (Generally, where the form is attested

in more than two Gyarong dialects there is some dialect which has the voiceless stop. Of course this is also true, though to a lesser extent, of voiced stops which retain a prefix.) For example: 'bee', WT sbraŋ-ma, Tz. brastak, K brastak; 'egg', WT sgo-ŋa, Tz. pragrom ('a chicken egg'), S tagam, C pagom (but Tz. -kwam and Ts. -kuan); 'penis', WT sgro-ba, Tz. tegzo; 'to shout', WT a-grags-pa, Tz. gye, gya-; 'Chinese', WT rgya-bo, Ts. gəpa (but Tz. kepye, W kapa, C kipe); 'China', WT rgya-nag, Tz. džana. One possible explanation for the Gyarong voicing in these examples is that Gyarong, too, had the preceding consonant we see in Tibetan and that this consonant was lost only after the devoicing change had run its course. And for 'temple', Ts. rgenpiɛ, rkenpiɛ (beside kenpiɛ) and C rgunpe preserve the r- reflex of WT d- (dgon-pa 'monastery') which Tz. genbye has lost.

But what, then, of those instances where neither Tibetan nor Gyarong has a preceding consonant but both languages have voiced stops? For example: 'sand', WT bye-ma, Tz. bimiɛ; 'poison', WT dug, Tz. tado, C tadog (but S tuk). Should we infer a lost consonant here, too? Certainly Gyarong has prefixes where written Tibetan does not. For example: 'boat', WT gru, S zgru (*s-gru); 'tent', WT gur, S zgâr; 'origin', WT byuŋ-khuŋs, S mbyuŋkhuŋ. And the nasal of P mole 'ox' (WT ba-glaŋ) implies a lost prefix (a) for the other Gyarong dialects: Tz. balye 'bull', Ts. baliɛ (also pali), S bəla 'cow', C bhole. If we prefer not to assume a lost prefix, do we assume that the devoicing

change did not reach these forms, which constitute a simple residue? And if we choose this explanation, do we also apply it where Tibetan has a prefix?

If conditions for the retention of voicing are ambiguous, it is clear that though voiced sounds either remained voiced or changed to voiceless in Gyarong, there was no established process of voicing in initial or isolated syllables. (There is some voicing after nasals in second syllables, e.g. 'mud', WT a-dž̌im-pa, Tz. tsembo or 'official', WT blon-po, S wlənmbo, and there are rare and apparently random instances of voicing in initial clusters which are restricted to one dialect, such as Tz. rdže 'wild mule', but WT rkyaŋ, Ts. rt̬iɛ, and S rtšaŋ.)

The absence of a general voicing process in Gyarong enables us to see the extent in time over which the metathesis of stop + r clusters took place. Where Tibetan has unmetathesized clusters of voiced stop + -r-, Gyarong metathesis is of two sorts. One must have preceded the Gyarong devoicing of voiced stops, since voicing has been preserved after the -r-, e.g. 'dance', WT bro, Tz. targye, C targe Where the r- is followed by a voiceless stop in Gyarong we may assume that metathesis followed devoicing, e.g. 'catty', WT bre, Tz. taterpyet; 'mule', WT dre, Tz. tarkye; 'bank, shore', WT a-gram, S tərkə.

Aspiration

Corresponding to Tibetan voiceless aspirated stops in absolute-

initial position, Gyarong has both aspirated and unaspirated initials (Chart 18). Though the published Trung material is far more limited than the Gyarong, we find a number of close Trung cognates with voiceless unaspirated initials to Gyarong forms which have unaspirated initials where Tibetan has aspirated ones (Chart 18, III). Where both Tibetan and Gyarong have aspirated initials, Trung has either noncognate forms or forms with quite different phonetic developments (Chart 18, IV). (The Trung prefix də-, for example, which we find in dəgəi 'dog' occurs before words with voiced initials; before words with voiceless initials, Trung has tə-, e.g. təkhri 'mule'.) The Gyarong words with voiceless unaspirated initials may represent an earlier linguistic stratum which shared a common development with Trung, while the words with aspirated initials come, at least in part, from a later wave of Tibetan loans which entered Gyarong after the shift of voiceless unaspirated stops to aspirated in Tibetan. But what was the phonetic quality of the initials in this Rong stratum? Could it have been voiced, as in Lepcha a-bo 'father', bŭk 'stomach'? Devoicing would then account for the Gyarong initials. What would be the source of the Tibetan voiceless aspirates?

Where Tibetan has a voiceless aspirated stop preceded by a-chung, the Suo-mo and Chos-kia dialects have in a few cases a reflex with a nasal: 'a row', WT a-phreŋ, S təmprieŋ; 'to drag', WT a-then-pa, S kanthân; 'wheel', WT a-khor-lo, C nkorlo; 'a rosary', WT a-phreŋ-ba, S mphsoŋwâ; 'to be born' (hon.), WT a-khruŋ(s)-pa, S kəŋkhsuŋs 'to

be reincarnated'; 'to wander', WT a-khyam-pa, S kanəntšhâpntšhâp. (These are forms which, with the exception of 'rosary' and 'wheel', do not happen to be recorded in the material on the other dialects.) Other forms with a-chung before a voiceless stop in Tibetan have no reflex for the a-chung. (Even in written Tibetan, of course, there are many doublets with and without a-chung.) Gyarong once again has two sets of words, one with unaspirated initials, the other with aspirated initials: (1) 'to fight', WT a-thab-pa, Tz. tep, tap, C kotibtib; 'to weave', WT a-thag-pa, Tz. katyak, S tətak, C titeg kope; (2) 'accordance', WT a-tšham-pa, Ts. tšhadpiɛ; 'to be enough', WT a-khyed-pa, Tz. tše, Ts. the; 'rosary', WT a-phreŋ-ba, Tz. phramu, Ts. phriawee; 'wheel', WT a-khor-lo, Ts. khuerlo, khuerlau; 'to wipe', WT a-phyi-ba, Tz. ptshi, Ts. kaphis, S kophyis, C kophyis. Should we once again assume earlier and later strata? The occurrence of 'rosary' in the posited later stratum would give some support to such an assumption. But if some aspirated voiceless-stop initials are of this origin, are all? Or has Gyarong has some shift to aspirated initials of its own, whether initiated by the introduction of Tibetan forms with aspirated initials or by the shift of voiced to voiceless stop initials within Gyarong? In Chart 18 we have tried to give forms which are recorded in a number of Gyarong dialects and with consistent absence or presence of aspiration. There are, however, cases where the evidence is not so uniform. Do we assume that these forms represent earlier and later strata, or do we assume that both

derive from an earlier stratum, and that the aspirated initials represent an independent change? For example: 'pig', WT phag, Tz. pyak, pag-, S pak, W paak, P pa, but Ts. pia and phia, H phaa, K phyak, C phag; 'water', WT tšhu, Tz. tshe-, tetse, Ts. tsî, S tətsî, tshi, W teč'i, P teči, K teč'ii; 'bellows', WT kholmo, Ts. kolmu, C kolmu, Tz. kharmu; 'to see', WT mthoŋ-ba, Tz. meto, meta-, K methoo.

One indication that there was, or is, in Gyarong a process of aspiration may be seen in Gyarong names for animals, which often begin with kV- or khV-. This may occasionally be part of the first member of a compound, as in S khəsphas 'snow pig' (khəs- : WT kha-ba or gaŋs 'snow'). In 'ant', it may be the correlate of the Tibetan g- of grog-ma (cf. Chart 12, I.A), though Trung has sro. In most cases where the Tibetan cognate can be identified, there is no Tibetan correlate for this syllable. For example: WT sbal 'frog', Tz. khaspye, S khaspa; WT sbrul 'snake', Tz. khorei, Ts. khəauri, K khaaurii, C kadbri. The Gyarong classifier may share a common origin with the Trung classifier -kə, though this is not prefixed to nouns but is rather compounded with the numeral ti- 'one' and follows the noun in a nominal phrase, e.g. namye 'cat', namye tikə 'a cat', akoi tikə 'a monkey', putšhi tikə 'a sparrow'. The Trung classifiers' source in independent nouns is often apparent (e.g. ana 'ear', ana tiana 'an ear'), but for -kə we cannot identify such a noun. At any rate, the semantic range

of this Trung classifier is far closer to Gyarong kV-, khV- than is the Tibetan g-, though Gyarong kV-, khV- is not limited to names of animals (cf. S kazgur 'a hunchback', kaipi 'pasture, meadow', Tz. kemṭser 'a mill', kherkye 'dust', khepaktu 'a cave', Ts. kərmakhu 'opium'). Phonetically, the point is that there appears to be one morpheme here with aspirated and unaspirated alternants, particularly in Tzu-ta, Tsa-ku-nao, and Suo-mo. One environment unique to the alternant with aspirated initial in these dialects is the presence of a palatal spirant, or a retroflex spirant which derives from a palatal, following the vowel of the classifier: Tz. khesṗet 'domestic animals', Tz. khaspye, S khâspa 'frog', Tz. khesṭsek 'a leopard', Ts. khəsṭsig (but K kesčik, C kishtsig), Tz. khasňe 'spider', C khashne. There is, however, partial environmental overlap: Tz. kernek 'silverfish [the insect]', but kherdži 'earthworm', kepyar 'jackal', kebyar 'a leech', but khepas 'a food fly' (K kopos 'a fly', C kipos).

There are also, in addition to correspondences of Tibetan voiced stops and Gyarong voiceless unaspirated stops (Chart 15), instances of Gyarong voiceless aspirated stops corresponding to Tibetan voiced stops. In part, these occurrences may be defined by their environments. In Suo-mo, for example, stops are aspirated before -s-: 'bright, clear', WT gsal-ba, S kəkhŝal (but Tz. keŋakšar, K keksaar, C kigsal); 'gold', WT gser, S khsər; 'a stallion', WT gseb, S khsiep; 'three', WT gsum, S kəsam, but khsumpa 'third'; 'to watch, guard', WT sruŋ-ba, bsruŋs, S kaphsruŋ (but psruŋi 'we are going to protect'). In several forms

the aspirated stop is found after s- in other dialects as well as Suo-mo: 'to apply', WT sdom-pa, Ts. kesthiam 'I have applied it'; 'noise', WT sgra, grag-pa, Tz. skhwak (beside zgrye); 'to take out', WT a-don-pa, bton (*b-s-don), Tz. sthan 'I take out'. (This is found only among stops of voiced origin; where s- is followed by a voiceless stop in Tibetan, Gyarong has unaspirated stops: 'to boil', WT skol-ba, Tz. skye; 'to give birth', WT skyed, Tz. stšit; 'language', WT skad, Tz. skye, Ts. skiɛ, S təska, C ske; 'glue', WT spyin, Tz. span, Ts. spin, S spən.) In one example, Tibetan has s- preceding a voiced stop, and though Gyarong does not have the s- it has voiceless aspirated stops: 'lamp', WT sgron-ma, Tz. tɐthu, Ts. tatshu, S tatsho, W č'uč'u (ktru-tru).

There are, however, also examples of voiceless aspirated stops of voiced origin which are not definable in terms of environment. Where Tibetan has a-chung followed by a voiced stop and Gyarong has no correlate for the a-chung there are, for example, forms with unaspirated initials and also forms with aspirated initials: 'cushion', WT a-bol, Tz. taptsiu, S tapyo, C taphyo; 'to drag', WT a-dren-pa, Tz. ti; 'a measure for grain', WT a-bo, S po; 'mud', WT a-džim-pa, Tz. tsembo; WT a-bar-a-bar 'pock-marked'; Tz. pɐrtsha 'smallpox scar'; 'rice', WT a-bras, Tz. khre, S and W khri; 'to walk', WT a-gro-ba, Ts. kəkhruo, causative sakhri, Tz. causative sago; 'to tremble', WT a-dar-ba, Tz. tshartshar (for the Tzu-ta affricate, cf. 'to suck', WT a-thuŋ-ba, Tz. tshok, tshak). And there are forms with voiced stops in Tibetan

and voiceless unaspirated stops in one Gyarong dialect, voiceless aspirated in another: 'elbow', WT gru-mo, S təkru but Tz. tekhru; 'possibility', WT glags, Ts. sa-v̌thiɛ, but S -tšv̌a- and C nakyes 'to be possible'. The occurrence of aspiration in such examples suggests a process of aspiration which followed, or overlapped, the devoicing change.

If Gyarong has had both devoicing and aspiration changes, we cannot use Gyarong voiceless stops of either variety as evidence in reconstructing Tibeto-Burman features of voice or aspiration. A more promising feature of Gyarong for reconstruction is its retention of voiced stops after other voiced sounds. For example: Tibetan, unlike Gyarong, does not have voicing of *s- to z- before voiced stops. On the contrary, there is evidence that in Tibetan *s- could devoice following voiced stops, and that (perhaps as part of the same process), the *s- could then be lost. This evidence consists, in part, of doublets, such as sbug(s), phug 'hollow, cavity', in part, of causative pairs with a voiced-stop initial in the noncausative member, a voiceless-stop initial, either alone or preceded by s-, in its noncausative counterpart. Examples with s- in the written Tibetan causative are gon-pa 'to put on (clothes, shoes)', bs-kon (pft. causative) 'to dress, to clothe another person', a-bub-pa, bub 'to be turned upside down', s-pub-s (pft.) 'to cause to be turned upside down, i.e. to put upside down', a-byiŋ-ba, byiŋ 'to sink in, sink down, to be swallowed up', causative s-pyiŋ-ba, s-pyiŋ-s 'to sink, to lower,

to let down'. The spoken Tibetan of Lhasa has more examples of this sort, where written Tibetan has ph- in the perfect causative but the Lhasa high-tone syllable with unaspirated labial-stop initial implies retention of the *s- through the stage in which initial unaspirated voiceless stops were aspirated. So, for example, written Tibetan has a-bud-pa, phud 'to pull off', where phud derives from *s-bud (→ *s-pud → *pud → *phud); the spoken forms of Lhasa are pīì (*s-bud → *s-pud → *pud) 'to cause to come (or go) out (or off ...)', causative to phiì (*bud) 'to come (or go) out (or off)'. That is:

	1	2	3	4	5
Written Tibetan	*s-bud	*s-pud	*pud	*phud	phud
Lhasa	*s-bud	*s-pud	*s-pud	*s-pud	*pud

Examples with (a) a stop preceded in Gyarong by z-, or a voiced stop preceded by s-, or (b) a voiced stop followed by -y- in Lepcha, to which there corresponds in Tibetan either a voiceless aspirated stop or s- followed by a voiceless unaspirated stop provide evidence for the claim that *s- could devoice stops in Tibetan, that following this change the *s- could be lost, and that the then initial stop would be subject to a general aspiration change:

(1) Lushai per, phei, phêng 'flat', per, phêk 'flat and thin'
WT spaŋ (*s-baŋ) 'board, plank, slab, slate'
S kazbazba 'flat and level' (*s-ba → zba), zbyaŋšaŋ 'a wooden board for writing' (*s-baŋ → *zbaŋ → zbyaŋ)

(2) WT spun 'brother; sister', phu-bo, pho-bo, phun 'older brother' (*s-bun)

Tz. tazbo 'brother' (*s-bun → *s-bon → *s-bo → zbo)

(3) WT khram-pa (*s-gram-pa → *s-kram-pa → *kram-pa → khram-pa)

L grám grám 'quickly'

Tz. ŋazgro 'quickly' (*s-gram → *s-grom → *zgrom → zgro)

ŋa- is an adjectival prefix; cf. ŋatser 'salty', ŋamartsye 'peppery', ŋazur 'painful' (WT zur-mo 'pain')

(4) WT stod (*s-dod) 'upper part'; cf. dod-pa 'to project, be prominent, come up'

Ts. stu, stə, ztə 'upward'

(5) WT tšhag-tšhag byed-pa 'to clap' (*s-brak → *s-byak → *s-pyak → *pyak → *phyak → tšhak)

C tishblag kolad 'to clap', Tz. tarptshi 'clapping' (Chart 13, II.D)

Trung abe

L bryǎk (*s-brak) 'to clap'

(6) WT phyugs 'cattle' (cf. lug 'sheep'; *s-b-lug-s → *splugs → *plugs → *pyugs → phyugs)

Ts. spog, kəsbog (*s-b-lug → *s-b-log → *s-b-og, with loss of *-l- as in 'year', WT lo, Gyarong *b-lo → *bo → *po, W pu, tiepo, Ts. piɛ, tapiɛ, Tz. -pye, S təpä, K pye, C tepe)

Vowels

Vowels in Open Syllables

Where written Tibetan has -i in open monosyllables, -i is also reported for the Tzu-ta, Wassu, Pati, Hanniu, Kham-to, and Chos-kia dialects. Tsa-ku-nao and Suo-mo have, in addition to -i, -ə; for 'dog', Tsa-ku-nao has -iɛ (Chart 19).

In Gyarong correspondents to Tibetan disyllabic nouns with one intervocalic consonant, there is some lowering, which may be attributed to the following consonant. In 'excrement', i is retained throughout: WT phyi-sa, Tz. eptshi, tši, Ts. phi(s), C ti(b)phyi; lowering is found in some dialects in 'coral' (WT byi-ru, Tz. ptsyeru, Ts. piɛrie, C byuru), 'rabbit' (WT ri-boŋ, Tz. kalye [*-rib-?], Ts. kaliɛ, K kaalee, C kali), and 'smell' (WT dri-ma, Tz. werer, Ts. tsimiɛ, K de, C wuri [*bri]).

In verb bases with -i, Tibetan has a -ba suffix in the present tense, and we must consider the possibility that Gyarong, too, had this suffix and that it affected the vowel. For 'to die', however, where written Tibetan has ši-ba, Tsa-ku-nao has simply kaṣi, Kham-to has -šii. For WT rtsi-ba 'to count', Tsa-ku-nao has, without endings, rtsi. Before Gyarong conjugational endings, Tzu-ta has, however, two parallel paradigms with stems rtsi-, rtsa-, e.g. rtsiu or rtsau 'he counts', rtsiŋ or rtsaŋ 'I count'.

Where other Gyarong dialects have i Suo-mo frequently has a breaking of i to ie. There is, however, not a single example of this

where written Tibetan has i in an open syllable. There are cases where written Tibetan has i in a closed syllable or where we find no Tibetan cognate but some Gyarong dialect has a consonantal ending: 'tree, wood', WT šiŋ, Tz. si, S ŝie; 'cloud', WT sprin-pa, Tz. zdžim, Ts. ztim, C sdim, S zdiem; 'hair', Tz. tarňek, Ts. rňi, S tarňie. Suo-mo, then, appears to imply a lowering in i to ie before a consonantal ending so that even where we find no Tibetan cognate and where there is no closed syllable in any Gyarong dialect we may reconstruct a final consonant: 'foot', Tz. tami, Ts. tami, S tamie (Gyarong *-miC); 'red', Tz. kewerni, Ts. kəwurni, kəwurnə, W orni, K kaawuurnii, C kiwurni, S kəwurňie (Gyarong *kV-b-s-niC). For 'red' we find the ending without looking too far afield: Lepcha 'red' is nyim (*s-nim), nyem (*s-nem), sǎ-nyim, kǎ-nyem. And if the Tsa-ku-nao breaking of i to iɛ, though rarer than the Suo-mo breaking, has the same implications, Ts. ťhiɛ 'dog' may imply the *-n of Archaic Chinese *khwian. (The schwa alternant to i of Tsa-ku-nao and Suo-mo, which sometimes appears almost to be in free variation with i, may be a late phenomenon.)

If the presence of i to ie breaking in Suo-mo implies an earlier closed syllable, the converse is not true. That is, the absence of breaking does not imply an earlier open syllable. It may only mean that the final consonant had been lost before the Suo-mo breaking change was in effect. If Gyarong *mri 'person' (Chart 13, I.B), for example, is related to Archaic Chinese *myen, a final *-n was lost

with no clue in Gyarong to its earlier presence.

-u is lowered to -o after p- in Tsa-ku-nao, to -öö in Kham-to ('child', WT bu, Tz. -pu, S, P, and C tapu, K taapöö 'boy', Ts. tapu, po, tapo; 'grain, seed', WT a-bru, C tirpu, Ts. rpo, K taapöö); we have posited a general Gyarong lowering of *-u to *-o, conditioned by the labial nasal, in *mlu (*b-a-lu) 'bow' (cf. above, in the discussion on prenasalized laterals). There are several examples where -u is retained after a velar or velar followed by -r- ('nine', WT dgu, Tz. keŋgu, Ts. kəŋgu, S rgupa ['ninth'], W kunguu, P kongu [but H ngö], K kuŋguu; 'elbow', WT gru-mo, Tz. tekhru, S tɐkru; 'boat', WT gru, S zgru). There is, however, a fairly general fronting after Gyarong palatal and retroflex initials which correspond to written Tibetan palatals or a stop followed by y, and isolated incidents after r and after a velar followed by an epenthetic r but preceded by a sibilant (Chart 20). If fronting of *u to i depends on the initial, lowering of the i, in whole (to e) or in part (to ie or iɛ) implies an ending: final consonants often lower preceding vowels in Gyarong, and we have seen the correlation of the Suo-mo breaking of *i to ie with consonantal endings. The inference that these were not originally open syllables is not without support even in Tibetan. Beside the common word for 'water', tšhu, there is the honorific tšhab. Tz. -tse 'water' may, for example, derive from *tšeb ← *tšib ← *tšub. And 'ten' has a *-p ending in Archaic Chinese *d̂yəp.

The main change of -e in open syllables is one of raising (Chart 21). In part the environments for this change are those in which -u is fronted to -i, that is, after palatal or retroflex initials which correspond to written Tibetan palatals or a stop followed by y. It also occurs, however, after labials and dentals (with an exception in 'time', WT tshe, Ts. tsɛ, K ketsää) and may be better viewed as an unconditional change and stated in terms of the environments of the exceptions. After a Gyarong velar, then, there is an example of -e lowering to -a in WT dre 'mule', Gyarong *rke (with a dental to velar change, as in Lepcha kre, and metathesis): Tz. tarkye, Ts. (ta)rka, W tarka, K taarkee, C tarka-. Other instances of lowering where there is a suffix in Tibetan indicate that the initial consonant of this suffix brought about the Gyarong lowering: WT brtse-ba 'to love', S kaptsâ 'to value, pity' (cf. WT deb 'book', S tətha); 'near', WT nye-ba, Ts. -rnai, where the i appears to be the palatal onglide before labials of, for example, 'mushroom', WT ša-mo, mog-ša, Tz. taimo [ta-i-mo], taimok, S kəpaymok. This suffix may also have inhibited the raising of *e to i in Ts. -lei 'center' (WT lte-ba, Tz. teli).

In S kəstšie 'to grow' (WT skye-ba, skyes 'to be born, grow') we encounter once again the breaking problem. Does S -ie in this example derive from the raised vowel in an open syllable that we see in Ts. kəsti? Is it then a counterexample to our inference that i broke to ie only in closed syllables through the lowering brought

about by a following consonant? Or was there a consonant here, too, as in C nakiskyis? A third, and perhaps the best, possibility is that S kəstšie is an example of *e breaking to ie through a partial raising of the vowel where in other dialects or other examples there is a raising throughout the vowel. In support of this possibility is the Tsa-ku-nao back-vowel breaking to uo which appears to be either partial raising of *o (from *u) or partial retention of the high vowel u after, for example, retroflex initials (e.g. WT drug 'six', Ts. kətsuo, where the lowering of *-u to -o depends on the final velar stop). We would be inclined to interpret examples of WT -eb, S -ieb in this way, too, rather than assume an intermediate change (i.e. *-eb → *-ib → -ieb), particularly in view of the lowering in WT deb 'book', S tətha. [See WT gseb 'stallion', S khsiep 'stud', WT rdže-ba 'to barter', S rdiep tsuŋ kapa 'to buy in large quantities' (with Suo-mo deaffrication, as in WT mtshul-pa 'muzzle', S təmthər or Tz. tentšwe 'sickle', S təntua).]

*-o undergoes changes of raising, lowering, and fronting which are in part complementary. Though the main change of *-e was, as we have seen, one of raising, this change appears to affect only the residue of other changes for the *-o vowel and is absent from the Chos-kia material. Examples of raising without fronting are 'head', WT mgo, Tz. taku, Ts. tago, gu, S tako, W laku, P taku, K taakoo, taakuu, C tago; 'lungs', WT glo-ba, Ts. taglo, glu, slu, W tašlu, K taašloo, taašluu, C taglo; 'fat', WT tsho-ba, tshon-po,

Tz. ketshu, S kətsho, K kotshuu, C kitso; 'lake', WT mtsho, Tz. ptshu, Ts. mtshu, S mtshu.

The conditions for the fronting of *o to e are a preceding *(-)r- or *-y-; this *-y- may be epenthetic. After *(-)r- there is also subsequent raising to i (Chart 22). Tz. neda- 'to walk' suggests a possible intermediate stage berween *o and e; and compare WT sro, khro 'anger', K -roo, C taro, but Tz. ra.

As Tsa-ku-nao lowered *-u to -o after p-, so *-o may be lowered to *-a after labials in Suo-mo, Tzu-ta, and possibly Tsa-ku-nao and Chos-kia (Chart 22, 'tooth' and 'barley'): -ye, -yɛ, -iɛ may derive from *-a via *-ya; Chos-kia may front *-a(-) to -e(-). 'Tooth' shows the same vowel reflexes as 'year'; 'barley' shows quite different ones, but we do not reconstruct different vowels. The source of the difference lies in the presence or absence of a following suffix, *-ba, which we see in Tibetan. This accounts for the final -i of Gyarong 'barley', a palatal onglide before labials. For the source of the -w- in the Tzu-ta, Suo-mo, and Chos-kia forms for 'tooth' and 'barley', it may be useful to consider the development in southern Ch'iang dialects of a -w- in 'tooth'.

Southern Ch'iang postlabialized consonants, that is, consonants followed by -w-, derive from their prelabialized counterparts, that is, consonants preceded by a labial, which is in this environment a stop, p- This is a direct parallel to the palatalization of consonants in Lepcha:

Lepcha *sC → *sCy → Cy

Southern Ch'iang *pC → *pCw → Cw

The nature of the southern Ch'iang evidence is this: where two dialects, Chiutzu Ying and Jota Chai, have pC-, four other dialects, Waszu, Lopu Chai, T'aop'ing Hsiang, and Tsengt'ou Hsiachai, have Cw- except where there is a postconsonantal -y-. One disyllabic word even offers two manifestations of this phenomenon: Chiutzu Ying bdzaptsɯ 'bitter buckwheat', Tsengt'ou Hsiachai dzwatswɯ. In a number of instances Chinese, Tibetan, or Gyarong cognates provide confirmation that the -w-, not the p-, is secondary. For example: 'candle', Chiutzu Ying laptsɯ, Archaic Chinese *lâp̌yuk, Tsengt'ou Hsiachai latswɯ; 'broom', Chiutzu Ying bdza, WT phyag-ma, Tz. saptsya, Tsengt'ou Hsiachai dž̌yæ, Jota Chai dž̌yæ, Waszu dzwa; 'to melt', Chiutzu Ying bdzɯ, S kaptsi, Jota Chai dž̌vi, Waszu dzwur. For 'tooth', Chiutzu Ying psɯ, Jota Chai psɯ, Lopu Chai swu, Tsengt'ou Hsiachai swɯ, we know of no non-Ch'iang cognate with a labial prefix, though the postlabialized consonant followed by a is quite common, from Burmese to Gyarong. The Ch'iang dialects, like Gyarong, are spoken in Szechuan. Common developments or loans would be possible. But then why, of the labialized forms listed in Chang 1967: 434-5 for the Ch'iang dialects, does only 'tooth' have Cw in Gyarong (Tz. teswye, S təswa, C tiswe)? 'Barley', if it is the same word in Ch'iang, Tibetan, and Gyarong, is more directly related in Tibetan so-ba and, for example, Tz. swai; the Ch'iang dialects all have a voiced dental affricate initial (e.g.

Chiutzu Ying dzw) and no labialization.

The labialization of *-a is in some ways less problematical. Though 'to be' has a labial prefix in WT mŋa-ba and Tibetan has khwa beside kha-ta for 'crow', the requirement for labialization appears to be no more than a preceding velar or labial (cf. Chart 23); when this condition is met, *Ca changes to *Cwa, *Cwo, and finally Co. This change is most regular in Tsa-ku-nao. -o from *-a may then participate in the raising of *-o to -u. This is most characteristic of Wassu; it is absent in, for example, Kham-to after nasals.

Where *-a is not labialized it is either retained or raised and fronted to -e, depending on the dialect and form. This change may be accompanied or preceded by the appearance of an epenthetic -y-, again depending on the dialect and form: see Chart 24 for examples. Further raising to -i is seen in 'ear' and 'nose' (Pati) and in 'arrow' and 'warm' (all dialects except Suo-mo; Suo-mo is one step behind the other dialects in this regard, with -a for -e, and -ie for -i).

The source of the -i of S ki, C koui 'crow' (Chart 23) is one problem in this group of words. The Gyarong forms for 'crow' may not derive from an open syllable: Tibetan has beside khwa, kha-ta; the -t- of Tibetan appears to be cognate with the *-t of Archaic Chinese *kwât. Just how this might account for the Suo-mo and Chos-kia forms is, however, not clear: S ki ← *kit ← *kat?

as S -ri 'thread' derives from *-rin ← *-ran? (cf. WT sran-bu).

Another problem is that, among the forms which undergo fronting of *-a, not labialization, are two words with velar initials: 'mouth' and 'order' (Chart 24). We have assumed, however, that *kha 'mouth' does not derive from the oldest Rong stratum (cf. above under Aspiration and *bka 'order' gives the appearance of being a late borrowing from Tibetan.

Changes before Common Tibetan-Gyarong Velar Endings

A common change before velar stops is the lowering of back vowels: *u to o (uo, au in Tsa-ku-nao), *o to a (Chart 25). With longer preservation of the ending, *o from *u may lower once more, to a. For example: 'deep', L nyuŋ-bo, Liang-shan Lolo nhu^{55}, S kərnaks, Tz. kerňak; 'to suck', WT a-thuŋ-ba, a-thuŋs, Tz. tshok, tshak. We assume that the nasal : oral alternation in endings was present before and through the lowering changes, since the occurrence of these changes before nasal endings is questionable. Retention of the stop in composition may have been the source of the keyo, keya- alternation in Tz. 'sheep' (*lug).

The change of *u to o is found in all Gyarong dialects. That of *o to a is more a characteristic of Tzu-ta, Tsa-ku-nao, and Chos-kia; the Kham-to and WPH material is too limited to permit us to say more than this. The initial makes some difference in determining whether or not there is lowering, but it does not inexorably decide the fate of the vowel. After palatals and y, for example, this change is

inhibited (cf. 'to run', WT rgyug-pa, Tz. rdžu, nardžek, Ts. kənartšiu, S kardžuk, K -naarǰyuk, C kinargyug), but in 'sheep' (*yug ← *lug) there is general lowering except in Kham-to. If we infer from a form like Tz. keyo 'sheep' that the *u to o change preceded that of *l to y (i.e. *lug → *log → *yog), what do we say about K akeyuu? Probably we can only say that the *l to y change may very well have preceded the *u to o change and that for some speakers the *-g had more influence in effecting the lowering change while for others a palatal or *-y- had more influence in inhibiting it, or that in one word the ending was more influential, in another the initial: Tsa-ku-nao has for 'direction' (WT phyogs) phiogs, -ptšhog, for 'paper' (WT šog-bu) ṣagṣag and ṣagṣug, for 'to be allowed' (WT tšhog-pa) kətsĥog but also ma tsĥag 'one isn't allowed'. C gyumbrug, gyundrug 'dragon', without lowering but also with the Gyarong tV- and metathesis of *mr (*a-br) to rm, is probably of later Tibetan origin.

A corresponding lowering of back vowels before velar nasal endings is missing. There is no example of Gyarong -o(ŋ) where written Tibetan has -uŋ, and no indisputable example of -a(ŋ) where written Tibetan has -oŋ. The Tzu-ta alternants meta, meto- 'to see' (WT mthoŋ-ba) must remain a question until the problem of verb-base alternations in general has been settled. *-oŋ may have lowered to *-aŋ in Tz. serla 'ring' (WT ser-mo 'finger', ʔa-loŋ 'ring'), but in the absence of supporting examples it is possible

serla derives rather from an alternant with a stop ending (*ser-lok). The -a- of S kartšaŋ 'to stretch out' (WT rkyoŋ-ba) may have been fronted from *-o- by the preceding *-y-; cf. S toŋdən, Tz. tyaŋden 'a ritual bowl for pure water'). The few instances where Tz. -e(ŋ) corresponds to -uŋ also appear unrelated to the *u to o lowering before velar stops but may represent the same change as in WT rgyug-pa 'to run', Tz. rdžu, nardžek: WT gduŋ 'a beam', Tz. žagdeŋ; WT khuŋ 'a hole', Ts. khuŋ, Tz. khepɔ; Ts. khuŋ 'tiger', Tz. kheŋ.

More common before *-ŋ is either the retention of height in back vowels or raising: *u remains u, *o remains o or is raised to u, *a remains a or is raised to o. For example: 'to appear', WT a-byuŋ-ba, Ts. kənbyuŋ, S kəmbyuŋs, C kinbyung; 'to bury', WT skuŋ-ba, Tz. seku; 'blind', WT loŋ-ba, Tz. kalu, Ts. (ka)lu, S kalo, C diddmu; 'thousand', WT stoŋ-phrag, Tz. stuŋtshu, Ts. stoŋtshu, K stoŋ, C stongtso; 'trade', WT tshoŋ, Ts. tshoŋ, S tshuŋ, C tshoŋ; 'ounce', WT sraŋ, Tz. tarsaŋ, S təsraŋ; 'light (in weight)', WT yaŋ-po, Tz. keyo, Ts. kəyo, C kiyo; 'dream', WT rmaŋ-lam, Tz. ŋarmo; 'cold', WT graŋ-ba, Tz. kewado, Ts. kəwadzuo, C dawandro, tiwandro. Where the *-a- was preceded by *-y- and the *-ŋ has been retained, the *a has also been retained; where the *-ŋ has been lost, the *a has been fronted to -e or -i ('wild mule', WT rkyaŋ, Tz. rdže, Ts. rtiɛ, S rtšaŋ; 'far', WT rgyaŋs, Tz. kektšhi, Ts. kətšhi, W teč'i, K kökč'ii, C rekhyi).

The velar-stop ending had, in many cases, no effect on a preceding -a, which was simply retained, even after the epenthetic -y- (e.g.

'black', WT nag-po, Tz. kenak, Ts. (kə)nag, S nak, W kona(k), K kanak, C kinag; 'pig', WT phag, Tz. pyak, pag-, Ts. pia, phia, S pak, W paak, P pa, H phaa, K phyak, C phag). Where a Gyarong dialect has e, i, or o, the preceding consonant may have played a role. For example: 'robbery', WT džag, Tz. temdzek; WT šag(-ma) 'small stones, gravel', K -še 'rock', WT brag 'rock', C preg (but pragkod 'rock cave', and Tz. prak, Ts. prag, S prak); 'shoulder', WT phrag-pa, C tarpheg, but Tz. tarpyak, Ts. rpia, S tarpak; 'one', WT phrag, khrag, Tz. targai, Ts. tərkɛ(i), W trki, K tergee; 'hand', WT lag-pa, C tayag ('arm'), tayog (but Tz. tayak, Ts. [ta]yag, W and P teya, H lapo, K -yak); WT ka-lag 'mud', S kəblo; WT lhag 'more than', S kəro 'surplus', Ts. ruo (for the l : r correspondence, cf. WT luŋ-pa 'furrow, hollow, groove', Ts. kalwue, kəlwe 'to make hollow or empty; to scoop out'; karwiɛr 'to make hollow', rwaŋr 'I make hollow'); WT a-džag-ma 'grass' (*a-lag; cf. K -lak in ökölak 'to graze'), S -dzok- in rdzoko 'grassy mountain', with Suo-mo dentalization; 'pea', WT srad-ma, W tasto (but Ts. stag, C dastag).

There does not appear to be any common Gyarong lowering of front vowels before velar endings, oral or nasal, though the evidence corresponding to WT -eg is too scanty to permit any valid generalization Only in Tzu-ta are there examples of both *i lowering to e and *e to a before the stop ending: 'a while, a moment', WT dar-gtšig, Tz. tartshek; 'leopard', WT gzig, Tz. khestsek (but Ts. khəstsig, K kesčik, C kishtsig, S zuk), 'to push upward', WT rdegs-pa, Tz. ta. In addition

to its -ig in 'leopard' and 'flea' (tsisig, WT a-dre-šig 'bed-bug'), Tsa-ku-nao has -i in 'pearl' (muti, WT mu-tig). Suo-mo has two instances of -ək(-) for *i before a velar stop: 'line', WT thig, S thəks; 'sort, species', WT rigs, S -rəks (tərmiwərəks 'human race'); for *-ek it has -âk in kaphâk 'to cut' (transitive to kəmbâk; WT a-breg-pa).

When, then, corresponding to Tibetan *-yig, Tsa-ku-nao has -ag we must consider the possibility that Tibetan raised *-ag to -ig after *-y-: 'eye', WT myig, mig, Tz. temňa, Ts. (te)mňag, S təmňak, W temniak, H temnyi, P temniok, K temňak, C timyeg; 'one', WT gtšig (*b-tyig), Ts. kətiag, S kətiek, P kotie, K ketiak. We might correlate the difference in the vowel reflexes for 'eye' and 'one' in, for example, Suo-mo with the difference in the preceding consonant, but we might also be wrong in this. Archaic Chinese has *tyak for 'one' (in e.g. 'one bird') but *myok for 'eye' (and cf. P temniok). The Gyarong alternants for 'one' in 'eleven' and 'alone' may themselves show raising, whether in Tibetan or in Gyarong: 'eleven', WT btšu-gtšig, Tz. satšek, Ts. satig, S ŝtŝatiek, W šatie, H čekči, K sčiiotik, C shatsatig; 'alone', WT gtšig, Gyarong *s-tšig, Ts. ši, K yeščii, C shchi.

The general reflex of *-iŋ is -i, with some lowering to -ie(-) or -ee in Suo-mo and Wassu: 'name', WT miŋ, Tz. termi, Ts. -rmi, W krmien, K nörmii, C -rmi; 'tree, firewood', WT šiŋ, Tz. si (but seku 'treetop', and seŋtsan 'a large tree'), Ts. sï, ši, S ŝie, W šie 'tree' (šee 'wood'

K ši^{o}; 'heart', WT snyiŋ, Tz. teṣ̌it, Ts. ṣni, ṣnə, W teš̌ni, K teš̌nii, C tishni. Where a reflex of the *-ŋ was retained in medial position and was followed by a syllable with a back vowel, there are some a and o reflexes but also oral : nasal alternation: 'tree', WT šiŋ, Tz. ṣakphu, P šakpu (but C shingphung); 'carpenter', WT šiŋ-bzo-ba, Tz. ṣauzuwye, C shongbzowa, Ts. ṣəŋbzowiɛ, ṣïwuzuweɛ, ṣïuzu kəpis (the last characterized by Chin 1949: 262 as an older form, going back to "tibétain ancien").

There are four homophonous Tibetan forms in -eŋ to which we have Gyarong correspondences, all different in either initial, vowel, or ending: 'cord, rope', WT a-phreŋ-ba, Tz. teurei, Ts. təuri, S təurie, C tibre; 'to love', WT a-phreŋ-ba, Tz. warer (wareŋ 'I love'); 'a row', WT a-phreŋ, S təmprieŋ; 'rosary', WT a-phreŋ-ba, Tz. phramu, Ts. phriaweɛ, S mphṣoŋwâ. Again, -a- and -o- correlate with occurrence in a nonfinal syllable followed by a back vowel in the next syllable, and as in 'carpenter' appear to be characteristic of later loans; both 'a row' and 'a rosary' obviously derive from a later stratum than either 'a cord' or 'to love'.

Changes before -r are in some ways similar to those which are conditioned by the velar-stop ending. So, though *-u- is retained in Tsa-ku-nao and Kham-to, it is frequently lowered in Suo-mo, Chos-kia, and Tzu-ta. That it is lowered not only to o, but also to a before r may be attributed to the preservation of the ending, which permitted two incidents of lowering. (The former presence of a velar-stop

ending can often only be inferred from the vowel change and from comparisons with Tibetan, where the ending may be preserved.) For example: 'sour', WT skyur-ba, Tz. ketsur, Ts. stˇyr, S kətsˆor, K kačyuur, C kichor; WT zur-mo 'pain', Tz. ŋazur 'painful', Ts. (kə)zur, kəzïur 'pain', S kəzor 'to be painful'; 'to carry', WT a-khur-ba, Tz. kapkur, kapkor, kapkar, C kobkor; 'tent', WT gur, S zgâr.

As before the velar stop and nasal endings, Tzu-ta also has e where Tibetan has u: 'corner', WT zur, Tz. -zer (S zur, C -zur).

*a is generally preserved before -r, except for some fronting after y/i: 'rain', WT tšˇhar, Tz. tsharna, Ts. tsˆharna(g), S tsˆhar-; 'summer', WT dbyar, Tz. petsyar, Ts. potsïɛr, S pətsar, C dbyarkhe; WT mar 'butter', Ts. miɛr 'cream'.

The raising of *-e- in 'to squeeze', WT btšˇer-ba, Tz. ktsi, presumably followed the loss of the *-r.

Changes before Common Tibetan-Gyarong Dental Endings

Where written Tibetan has -a- followed by dental endings and the Gyarong correspondences have -y-, original or epenthetic, before the vowel there is generally fronting to -e-, except in Wassu and Suo-mo; of course, since the epenthetic -y- is so rare in Suo-mo there are few opportunities for such fronting. (Chos-kia has fronting even without the -y-.) For example: 'eight', WT brgyad, Tz. warye(t), Ts. wuaryed, wuaried, S wuryat, W waria, P worie, K woryät, C wuryed; WT rdal-ba 'to spread', Tz. terdye 'the process

of covering (the roof)'; 'hell', WT dmyal-ba, Tz. ptshimye, Ts. myalwiɛ, ňalwiɛ, S ňatwâ, C dmyalwe; 'frog', WT sbal-pa, Tz. khaspye, S khaŝpa; 'to borrow', WT brnyan-pa, Tz. rŋye, rŋa-, Ts. and S rŋa-, C kornge; 'language', WT skad, Tz. skye, Ts. skiɛ, -skɛ, S təska, C ske; 'kitchen', WT bkad-sa, Tz. kwye, S kha, C tabke.

Where the *-a- was preceded by *r- or *Cr-, fronting was also common, often followed by raising to -ie or -i (Chart 26; compare Chart 22).

Though less frequent than with *-a, there are a few examples of labialization where we posit *-a- with dental endings. Two occur, like the examples in *-a, after velar and labial initials: Tz. kwye 'kitchen' (WT bkad-sa); and 'medicine', WT sman, Tz., Ts., and C sman, but S smon, W smou (sic!), and C snombhe (sic!) ['doctor']. The source of the -o- in S taŝot 'comb', kasaŝot 'to comb' is unclear'(cf. WT sad, Tz. sas̱at ['to comb'], Ts. s̱ad, C tashed).

If endings played no active part in any of the above changes, neither need we posit their loss; in their presence they merely remained neutral.

*-o- before dental endings was subject to three changes: lowering (to a), fronting (to e), and raising (to u, with possible subsequent fronting to y or i).

Since there is residual raising of *-o to -u in open syllables,

where Tibetan has an ending and Gyarong does not, raising may have followed the loss of the ending in Gyarong. For example: WT rŋod-pa, brŋos 'to fry', Tz. rŋu 'to stir fry'; WT stod 'upper part', Ts. stu, stə, ztə 'upward', C to 'up'; WT smyon-pa 'insane', Tz. lamu 'insane person' (but S kəpsňo, C kibsmyo, kib̀snyo); 'lamp', WT sgron-ma, Tz. tẹthu, Ts. tạṣhu, W č'uč'u (ktru-tru) (but S tạṣho). Where Gyarong has the dental ending there are indications, in the form of doublets and breaking, that a preceding palatal affricate played a part in the raising: for 'fault' (WT skyon), Tsa-ku-nao has both stšyn (*-on → *-un → -yn), where raising was apparently effected by the preceding consonant, and stšyan, with lowering, apparently effected by the ending. In S kasətšhuat 'to withdraw' (WT gtšod-pa) there is breaking, with both raising (*o → u) and lowering (*o → a) in the same word. From Ts. təstshuo 'hour' (WT tšhu-tshod, W testsha[t] 'the first hour') we might infer that a dental affricate could also cause raising. It is difficult to see how the preceding consonant could have anything to do with the raising of *-o- in K karkun 'rare' (WT dkon-pa) or Ts. slaupun 'teacher' (beside slaupon; WT slob-dpon), yet see Ts. spos, spuos, spuas 'incense' (WT spos).

*-o in open syllables was fronted after *(-)r- or *-y- to -e, which could be raised after *(C)r- (cf. Chart 22). Only in one, or possibly two, of the examples of the fronting of *-o- where written Tibetan has a dental ending is there, however, a preceding *r or *y:

'to move', WT skyod-pa, S kastšies; WT myon-pa 'insane', Tz. mei 'to become insane' (*myon-pa → *myo-pa → *myoi-pa → *myei-pa → *mei-pa → mei?). In the other examples, fronting should probably be attributed to the dental ending, whether it is still present or not: 'teacher', WT slob-dpon, Tz. slapen; WT dgon-pa 'monastery', Tz. genbye 'temple', Ts. rgenpiɛ (but C rgunpe); 'curtain', WT yol-ba, C yelwe; 'to boil', WT a-tshod-pa, btsos, C kowastse (ko- + *b-sts-); 'to take out', WT a-don-pa, bton, Tz. sthi, stha-.

Lowering is the one change which indisputably implies an ending: the lowering of *-o in open syllables was highly restricted, to one possible environment, following a labial. Examples: 'to boil', WT a-tshod-pa, btsos, Tz. (s)ta, tye; 'to ride', WT žon-pa, Tz. nestso, nestsa-, C nishtaou (W ganesčo); 'to deliver', WT sprod-pa, Tz. stso, stsa-; 'to boil', WT skol-ba, Tz. ska-, skya-, skye; 'bellows', WT khol-mo, Tz. kharmu (Ts. and C kolmu); 'porcelain, china', WT (d)kar-yol, C karrgyal, Tz. kardžar, Ts. kartša; 'incense', WT spos, Tz. spat (C spos).

After a labial stop, *-u in open syllables was either retained or underwent lowering, e.g. WT bu 'child', Tz. -pu, Ts. -po. Given a labial-stop initial and a dental-stop ending, however, the possible changes are rather those of fronting and unrounding: 'to lose (money)', WT a-bud-pa, Tz. naptshi (na- + *phid), Ts. -phi, kaphid, S kaphŝət, C kophud; 'to blow', WT a-bud-pa, Tz. phru-, S kaphlu, but Ts. ʔapiɛ

(*ʔapid). Where Gyarong has fronting but no ending in these examples, the vowel change must be assumed to have preceded the loss of the ending. In K tesčyii 'lineage' (WT brgyud), on the other hand, the preceding consonant is one which could have brought about the vowel change even after the loss of the ending.

After other initials the dental-stop ending correlates with the lowering of *u to o: 'pocket', WT khud-pa, Ts. kod; 'to rub', WT a-drud-pa, S kakhsot. 'To be', WT a-dug, S ndo, K -nduu, -ndöö (Tz. ndut, Ts. dud, -ndud) should probably be included among the examples of Gyarong *-ud with lowering. The alternative, to suppose that the lowering of *u to o, öö in Suo-mo and Kham-to preceded a change from *-g to *-d, is rendered less attractive by the fact that all other Kham-to correspondences to WT -ug show either -o(o), -ok or -uu, -uk, never -öö, and -uu, -uk only after -y-.

Before *-l and *-n there are again both fronting and lowering (or both, where corresponding to *u, Gyarong has either e or ö). Examples: 'silver' WT dŋul, Tz. paŋei, W paonge, K pöŋii, C pongii; 'snake', WT sbrul, Tz. khorei, Ts. khəauri, K khaaurii, C kadbri; 'constantly', WT rgyun-du, S rdžin, C dirgyinma; WT mthun-pa 'to agree, harmonize', Ts. kemthen 'friend', S kamthən 'harmonious', samthən 'girl friend' (C ngisemthun 'friend'); 'neck', WT mgul, Tz. temki, Ts. (tə)mgə, S təmki, K temköö, C timgi; 'magic (tricks)', WT a-phrul, S mm̆aŋŋdoŝpro (but sprulpâ 'changes, transformations'), C myagshpro; 'slow', WT gul-gul, Tz. keŋgon; WT spun 'brother; sister', phu-bo, pho-bo, phun

'older brother' (*s-bun), Tz. tazbo (*s-bun) 'brother'. Though for 'winter', WT dgun-ka, Ts. rkomkhɛ (C rgunkhe), the order of the changes *u to o and *m to n is not certain, since *u is also lowered to o before m, it is perhaps more likely that the vowel change came first.

The dominant change in the front vowels *i and *e before dental endings is that of lowering, *i to e, ie, or a, *e to a. Examples of the lowering of *i: 'to cheat', WT a-brid-pa, a-drid-pa, Tz. rye ura-; 'tripod', WT sgyid-bu, Tz. stše, S stšâ; WT rnyid-pa 'to wither', S kəlei 'withered'; 'axe', L prít, Tz. sarpye, Ts. sərpiɛ, C sharpe; 'sweat', L čít, Tz. testye (Ts. stsid, C tashtrid); 'day', WT nyin, K šnii, šnee (Tz. -ňit, Ts. ʔasni, ʔasnə, S sňi); 'glue', WT spyin, Tz. span (S spən, Ts. and C spin); 'message', WT (a-)phrin, Tz. tekprei, C tagpre ('messenger'); 'neck', WT mgrin, Ts. (te)mgre; 'two', WT gnyis, S kənies, W kones- in konestsha(t) 'second hour', H nie, p kones, K kenes (Ts. kənəs, C kinis); 'lunar eclipse', WT zla-a-dzin, Tz. zdazen (S zlazin); 'to go', WT phyin-pa, W nač'en (and kopči, Tz. tshi, Ts. katšhi, K keč'ii).

In a few cases, there is raising of *e to i or ie after consonants which we have seen correlated with raising elsewhere: 'to bear, give birth', WT skyed-pa, Tz. stšit (C kiskye); 'sibling', WT mtšhed, Tz. tetsi (Ts. tŝe); 'to know', WT mkhyen-pa (hon.), S kəmtšhien 'knowing in advance, having magic power'; 'to know', WT šes-pa, Tz. se-, ŋasi, Ts. kasi, kasu, S kanəmŝi 'to be familiar', K -šii (C koshu); 'to drag',

WT a-dren-pa, Tz. te, ti. In just as many cases, the ending brings about lowering without this sort of preceding consonant having had any effect. For example: 'to open', WT a-byed-pa, phye(d), S kaphya (H č'ie, C kophye), 'to slide, slip', WT a-dred-pa, S kəndzap (Ts. katsɛp, katsɛip); 'strength', WT šed, Tz. teksat; 'silk', WT gos-tšhen, Tz. khwastsan (Ts. kogstsen, C kogshtsen); 'glass', WT šel, C gshal; 'amber', WT spos-šel, S spoŝâl. In 'to seize', WT len-pa, Gyarong *len → *yan, Ts. ŋanəyan, S kaypya, it seems likely that the *l to y change preceded that of *e to a, though the lowering of *-e- to -a- before dental endings is also seen after more neutral initials, as for example, 'to drag', WT a-then-pa, S kanthân.

If the normal lowering of *-i- was to -e-, then the correspondence of Gyarong a to Tibetan i, as in 'tripod', WT sgyid-bu, S stšâ, appears to represent a double lowering, with S *-ed from *-id undergoing the *-e- to -a- change along with forms such as 'amber', WT spos-šel, S spoŝâl. Similarly, if the normal lowering of *-e- was to -a-, Gyarong o corresponding to Tibetan e appears to have undergone first an *-e- to -a- change and then an *-a- to -o- change. For example: 'to pick, pluck', WT a-byed-pa, phye(d), S kaphot (Tz. phet, phat); 'to do', WT byed-pa, bya, Tz. pye, pa-, po- (Ts. kəpiɛ, -pa, S kapa, W kopai, K -pai, -piee, C kape).

After velar and labial initials, *-a in open syllables was labialized, becoming either *-wa, *-wo, or *-o. We have also noted

examples of this change in *-a- before dental endings. We might include S kaphot and Tz. po- among such examples, positing a sequence of changes from *e to *a to o, but as with S tasot 'comb' (WT šad) there are also forms, chiefly verbal, with nonlabial, nonvelar initials which have -o(-) (or -u, perhaps raised from *-o), corresponding to WT *e. Examples: 'to drive (cattle)', WT a-ded-pa, Tz. na-, no-, S kono-; 'to find', WT rnyed-pa, Tz. rye, ra-, ro (C kore); 'soft', WT mnyen-pa, Tz. kemenu; 'to know', WT šes-pa, Ts. kaṣi, kaṣu, C koshu.

Changes before Common Tibetan-Gyarong Labial Endings

Before labial endings vowels are also subject to different changes, which for the most part cannot be correlated with differences in preceding consonants.

In lowering, *i changes to ie, e, and (presumably via *e), a; *e to a; *u to o (and via *o to a); *o to a. Examples: 'house', WT khyim, Tz. tsam, Ts. tsim, tsam, S tsiem, tsam, P čiem, C tichem; 'law', WT khrims, Ts. krims, k(h)ram(s), S -khsəm, ndzəklâms (C khrims); 'mud', WT a-džim-pa, Tz. tsembo; 'to arrive', WT sleb-pa, Tz. ya-, medya, K medä; 'book', WT deb, S təṭha (Tz. tethye, Ts. təthiɛ, C tithe); 'to finish', WT a-grub-pa, sgrub-pa, Tz. ko, Ts. nakuɛ, natəkuai, nasako; 'to sew', WT a-drub-pa, drub, C titrob; 'three', WT gsum, Tz. (ke)som, sam, Ts. kəsom, kəsam, S kəsam, W kosom, P kosom, H san, C kisam (K kesum); 'smallpox', WT a-brum-nad, C tadbram, Ts. tauran [*-bran or *-bram-n]; 'teacher', WT slob-dpon,

Tz. slapen, Ts. slaupon, slaupun; 'ice', WT tšhab-brom, S tarpam (Tz. tarpom) [ta- + *prom → tarpom]; 'thick (in diameter)', WT sbom-pa, Tz. keipam, S kəypam. There also appears to be lowering of *i to *e and a in Gyarong 'needle': Tz. tekyep, Ts. kɛp, rkɛp, rkɛk, C takeb, K takak- (takakčie 'needle-case'). Derivation from *-a-, as in WT khab, would be difficult for Tsa-ku-nao, with its -ɛ-; in no other example does Tsa-ku-nao have ɛ or e corresponding to WT a before a labial ending. Note, however, that Archaic Chinese 'needle' is *kjim or *skim (Chang 1969), and that *s- before velars is one source of Gyarong r- (as in 'box', WT sgam, Ts. rkam). We may, then, posit both *s- and an *i vowel for Tsa-ku-nao 'needle'.

Vowels may also be raised before labial endings, though this change is less frequent than that of lowering. Examples: 'to arrive', WT sleb-pa, Tz. ye, yi, Ts. ye pu, yi pu; 'to come', WT pheb-pa, Tz. pe, pi, S -pi, K -pheeii, -pwii; 'bank, shore', WT a-gram, S tərkə; 'to assemble', WT a-dzom(s)-pa, S kəndzəm, K zooim, C kindzum; 'buckwheat', WT bra-bo, Gyarong *brab → *brob → *brub → *bru → *wru → rwu: Tz. terwu, Ts. tərwu, S turwu, W taru, K öruwuu. (Chin [1949: 236] says "Le mot 'sarrasin' est bra'u (brahu) en tibétain, mais rwu en jyarung: b > 0 et ɦ > w; c'est ainsi que r est devenu une lettre suscrite en jyarung". In written Tibetan, however, 'buckwheat' is bra-bo, and the cluster *br- is generally retained in Gyarong (with at most a change in the place of articulation of the stop) or

metathesized. On occasion, the *-r- may be lost (cf. Chart 13, I.C); the loss of the *b- would, however, be without parallel. Nor does Chin's explanation account for the -a- of the Tibetan form.)

The labialization or rounding of *e and *a to o, and of *i to u is fairly frequent: 'rat', WT byi-ba [byib-], Tz. peyiu, C puyu ['mouse'] (Ts. poyi, W pui, K peeyii); 'to suck', WT a-džibs-pa, Tz. metši, stšu- (C komiskyib); 'house', WT khyim, K č'om (via *č'em or *č'am); 'to come', WT pheb-pa, Tz. po-, Ts. kəpu, kəpo; S kapo, W kopun, K -phöö, -pu; 'bridge', WT zam-pa, Tz. tazom, C dazom, W zung; WT mnam-pa 'to smell', Tz. menom 'fragrance', K de minom 'smell, give off an odor'; 'quickly', WT khram-pa, Tz. ŋazgra-, ŋazgro; 'buckwheat', WT bra-bo, Gyarong *brab ⟶ *brob (cf. above under raising). (*a is, however, often retained before labial endings, except in Chos-kia, which may have -e- corresponding to the -a- of other dialects: 'to fold', WT ltab-pa, Tz. rtap, S kaltâp, C koldeb; 'boundary', WT sa-mtshams, S santsham, C santsem.)

After *-r-, *-u- is fronted in two examples: 'a slit', WT srubs, Ts. srib; 'to sew', WT a-drub-pa, drub, Tz. ṭep (*ṭip? ṭem, ṭam 'I sew'), Ts. tsu-, tsue-, katsup, but also tsa- (⟵ *tse- ⟵ *tsi?).

Endings: Tibetan-Gyarong Variants

In a number of cases, corresponding to a written Tibetan dental or velar ending, Gyarong has a labial (Chart 27). Enough of the time

Tibetan has a -pa ~ -ba suffix so that we may assume that the Gyarong labial goes back to a form with this suffix, and that the ending assimilated to the place of articulation of the suffix before this was lost. For example: *-tson-pa 'prisoner' → *-tsom-pa → *-tsam-pa → *-tsam-p → *-tsam. Ts. kəmim 'to taste' implies *myoŋ-ba → *myaŋ-ba → *myam-ba → *myim-ba → mim. For 'egg', WT sgo-ŋa, and 'pan', WT sla(ŋ)-ŋa, we reconstruct the *-ba suffix. The most common correspondence in the modern Tibetan dialect of Lhasa for WT -ŋba- is -ŋ̄ā; we assume that in 'egg' (Lhasa qoŋ̄ā) and 'pan' (Lhasa lā̄ŋ̄ā) either this change took place earlier than in such forms as WT loŋ-ba 'a blind man' (Lhasa loŋ̄ā), a-phreŋ-ba 'rosary' (Lhasa thā̄ŋ̄ā), goŋ-ba 'collar' (Lhasa qhɔ̱ŋ̄ā) or that traditional spellings for 'egg' and 'pan' were less entrenched. (More rarely, Lhasa has a -w- reflex for WT -b- in such cases: WT gsaŋ-ba 'secret', Lhasa sā̱wā̄. S mphsoŋwa may derive from a Tibetan dialect with this reflex for 'rosary'.)

In two Tsa-ku-nao examples the labial cannot be explained in this way: rkomkhɛ 'winter' (WT dgun-ka) and skuzub 'body' (the written Tibetan honorific sku-gzugs; skuzub is among the terms with sometimes hybrid pronunciations introduced into Gyarong by lamas who had been in Lhasa [Chin 1949: 265]).

Where Tibetan has a labial or velar ending and Gyarong has a dental, there is, in a few cases, in either Tibetan or Gyarong, a dental following the labial or velar to which one may assume

assimilation of the preceding consonant (as an alternative to its loss, as in 'iron', WT ltšags, Ts. ltŝas): 'to give', WT a-bogs-pa, S -mbot (*-mbogs → *-mbods → *-mbots → -mbot) in pyambot 'to feed the dead body to vultures' (pya- 'bird'); 'shape', WT dbyibs, Tz. espet; 'smallpox', WT a-brum-nad, C tadbram, but Ts. tauran (*brum-nad → *brom-nad → *bram-nad → *bran-nad → bran?). In 'nasal mucus', WT snabs, Ts. snap, S təsnâp, but Tz. tesňan, nasality or its absence is an added complication, as it is within Gyarong in S kanəpyâms 'to warm oneself (with fire)', Ts. kəwapiɛd 'warm'.

In other cases there is no dental following the velar or labial; we must for now simply list these examples: 'to be, to have', WT a-dug-pa, Tz. ndut, Ts. dud, -ndud; 'trousers', WT rkaŋ-snam, Tz. kasnan; 'accordance', WT a-tšham-pa, Ts. tŝhadpiɛ; 'heart', WT snyiŋ, Tz. tesňit.

Gyarong examples of a velar ending where Tibetan has a dental or labial are fewer, and for the most part their origins even more obscure: 'half', WT phyed(-pa, -ma, -ka), Ts. phag, S -phak, K aphaak, C wupag, Tz. epha; 'to divide', WT a-byed-pa, phye(d), Tz. phak, phyak; 'to scrape', WT a-brad-pa, a-drad-pa, Tz. grek; 'pea', WT srad-ma, sran-ma, Ts. stag, S tasto, C dastag, Tz. sta-; 'needle', WT khab, Ts. (r)kɛp, rkɛk, W takak- (but Tz. tekyep, C takeb), 'stirrup', WT yob-tšhen, Tz. yaktsan; WT kh(y)em 'shovel, spade', Tz. kwa, S kâk 'spade'. (Note in this connection

'extinguish': Archaic Chinese *smwyat, S kərmiek, L mak, mya.) In light of the Tsa-ku-nao doublets for 'needle', the -k of S kâk 'spade' might be considered an instance of articulatory lag or regressive assimilation of ending to initial (*kep → *kap → kâk). Such an explanation could of course also be offered for some of the other variations in Tibetan-Gyarong correspondences.

More often than not, *-l(-) has either been lost in Gyarong, or has changed--to r, n, or a stop, t in alternation with k. The front variant, t, is found where written Tibetan has e or a preceded by y or r (where the a may be presumed to have been farther front than after other consonants): 'to bring', WT skyel-ba, S kaskhiet (Ts. stě); 'hell', WT dmyal-ba, S ňatwa (Tz. -mye in ptshimye, Ts. myalwiɛ, ňalwiɛ, C dmyalwe); WT khral 'tax', Tz. pkhrat 'to levy taxes'. After e and a preceded by other consonants, the l which is not lost is either retained as l (e.g. in Suo-mo) or changes to r; there is no stop reflex: 'glass', WT šel, C gshal; 'amber', WT spos-šel, S spôsâl; 'clear', WT gsal-ba, Tz. (ke)ŋakšar, S kəkhsâl, K keksaar, C kigsal; 'a load', WT khal, Tz. kharmye, S khalma, C khalme. Suo-mo, unlike Tzu-ta and Kham-to, has back reflexes (r, k in Suo-mo) only after vowels corresponding to WT u: 'muzzle', WT mtshul-pa, S tamthər (*-mthul → *-mthur → -mthər); 'to become rotten', WT a-drul-ba, rul-ba, S -rak- in koraktsêi 'we are causing it to become rotten', ŋaraktsêu 'he is causing it to become rotten' (*-rul-tsê- → *-ruk-tsê- → *-rok-tsê- → -rak-tsê-). (Tzu-ta has mai 'to become rotten'.)

Tzu-ta, which has r after a corresponding to WT a, also has r after a corresponding to WT o: 'bellows', WT khol-mo, Tz. kharmu (Ts. and C kolmu); 'porcelain, china', WT (d)kar-yol, Gyarong *kar-g-yol: Tz. kardžar (C karrgyal, Ts. kartša). After Tz. o corresponding to WT u, the reflex is a nasal: 'slow', WT gul-gul, Tz. keŋgon.

Several other consonants, in addition to l and r, yield final r, especially in Tzu-ta. Examples: 'bile', WT mkhris-pa, Tz. temkhrer (Ts. temkhrəs); WT tsan-dan 'sandal-tree', Tz. tsandar 'sandalwood'; 'thread', WT sran-bu, Tz. rer (S tari, C tiri); 'an uncut sheet of paper', WT gre-ga (*br-; Chart 13, II.C), Tz. taptshyar (cf. also tamtshyar 'a slice'); 'to frighten', WT skrog-pa, Tz. -stšar; 'fat, oil, grease', WT žag, Tz. -zdar, W ždar; 'to help', WT grogs byed-pa, Tz. ko, ka-, but Ts. kəkoar, S kakor, C kikor kope; 'jackal', WT -spyaŋ, Tz. kepyar; 'sting', WT mduŋ, Tz. temdar; 'to love', WT a-phreŋ-ba, Tz. warer (wareŋ 'I love').

In alternations of nasal and oral endings, it is generally, though not always, Tibetan which has the nasal. In two of these pairs, the nasal appears to be the result of assimilation to a suffix beginning with a nasal: Tz. 'day', -ňit in pesňit, pusňit 'today' (cf. K pešnii, pešnee 'today', ašnii, ašnee 'day'), WT nyin, nyin-mo, nyi-ma; 'windpipe', WT lkog-ma (*klog-ma), kru-kru, S khruŋkhruŋ. More often, there is nothing in the environment to account for the nasal, and denasalization must be considered as an

alternate possibility. In a few instances, *s may have denasalized a preceding *ŋ: WT graŋ-ba 'cold', Tz. kewaḍo (*-aŋ), WT a-khyags-pa 'to feel cold', S kəməŝtak 'cold' (Chart 14); 'deep', L nyuŋ-bo, S kərnaks (cf. above, under *Cr Clusters); WT maŋ-po 'many', maŋ-ba, maŋs 'to be numerous', Ts. ʔaməw̌as 'they will be numerous', wamyas, mw̌as 'many', W temnia(k) 'many' (Chart 4); 'to suck', WT a-thuŋ-ba, a-thuŋs, Tz. tshok, tshak. For the most part, we are at a loss to account for the alternation: 'husk', Tz. -rkhwak, WT lgaŋ-bu; 'stone', Ts. yilog, S džiluk, K rgyiilik, Tz. tšu, tšuŋ- (*a-luŋ); 'to take out', Tz. sthat, K kastöt, kasköt, C kothed, WT a-don-pa; WT phyid-pa (*prid-pa) 'to freeze', Tz. tarpan 'frozen' (ta- + *prin); 'to get, to bring', Tz. pit (*b-let), WT len-pa; 'to wander', S -ntšhâp, WT a-khyam-pa.

In four Gyarong-Tibetan pairs, there is in addition to the oral : nasal alternation a difference in the place of articulation: 'nasal mucus', WT snabs, Ts. snap, S təsnâp, Tz. tesw̌an; 'accordance', Ts. tŝhadpiɛ, WT a-tšham-pa; 'shovel, spade', S kâk; WT kh(y)em; 'heart', Tz. tesw̌it, WT snyiŋ. (-t for non-Rong -ŋ is fairly frequent in Lepcha: 'heart', L a-lŭt, Lu. lung; 'lamp, light', L mí-glót, WT sgroŋ-ma; 'hard', L a-gró́t, WT kyoŋ, mkhraŋ (*kroŋ, *b-a-kraŋ); L kó́t 'satiated', WT a-graŋ-ba, a-graŋs 'to be satiated'.)

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Chart 1

Epenthetic y/i in Gyarong

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
ear	rna-ba	ternye	rna, rňe /rnye/	tərna	trna W trni P	ternää	dirrne
language	skad	skye	skiɛ	təska			ske
meat	ša	ṣye	šiɛ	ša	zie phuzo W	äsiää	shapo
pig	phag	pyak (pa-, pag-)	pia, phia	pak	paak W pa P phaa H	phyak	phag
road	lam	-lye	-liɛ	-la-	teri W	liää-	-lam
tooth	so	teswye	syɛ, šiɛ -syə	təswa	so H	soo, (te)siee	tiswe
hat		tartši (*tartyi)		tarti	tarti W		tarti
pain	zur-mo	-zur	kəzur, kəziur	kəzor			

Chart 2

The Affrication of Labial + y/i Sequences

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
coral	byi-ru	ptsyeru	piɛrïɛ				byuru
cushion	a̱-bol	taptsiu		tapyo		daapyuu	taphyo
to wipe	a̱-phyi-ba	ptshi	kaphis	kophyis- (ŝnaphŝis 'handkerchief')			kophyis
bird	bya	prye, pra-	potsïɛ 'bird' (piɛ 'cock', pamu 'chicken')	pya-	pai- W pie P		pe
summer	dbyar	petsyar	potsïɛr	pətsar			dbyarkhe
direction	phyogs		phiogs (lhuptšhogs 'south')				

Chart 2 (cont.)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
outside	phyi	eptshi	phi	wuphŝi		ǰ'ii	
to use	spyod-pa	ptṣo					
to go	phyin-pa	ṭshi	katŝhi		kopči, nač'en W	keč'ii	

Chart 3

The Affrication of Velar + y Sequences

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
to be enough	a-khyed-pa	tše	the, kəthiɛ				
to wander	a-khyam-pa			-ntšhap-			
to be born; to grow	skye-ba, skyes	stšewye	kəsti 'to be born'	kəstšie 'to grow'			nakiskyis
to give birth	skyed-pa	stšit					
to be happy	skyid-pa	stšit 'to be comfortable'	kəstid	kəstšət 'comfortable'		kesčyit	
wild mule	rkyaŋ	rdže	rtiɛ	rtšaŋ			

Chart 3 (cont.)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
tripod	sgyid-bu	stše		stš̆a̍			
to change (intr.)	a̤-gyur-ba, gyur			kəndžur			
to change (tr.)	sgyur-ba, bsgyur			kaptšur			
money	rgyu	derdžu	rtši̍, tarkɛi	zardži, tərdži, təzardži	zie W		
to run	rgyug-pa	rdžu, nardžek	kənarti̍u	kardžuk		-naarǰyuk	kinargyug
house	khyim	ṭ̤am	tsi̍m, tsa̍m	tsi̍em, tsa̍̍m	čiem P	č'om	tichem
sour	skyur-ba	ke̤ṭ̤ur	sty̍r	kətsor		kačyuur	kichor

Chart 4

The Nasalization of *my Sequences

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
eye	myig, mig	temn̆a	(te)mn̆ag	təmn̆ak	temniak W temniok P mnyi H	temn̆ak	timyeg
steamed bread	mog-mog	temn̆a	(tə)miau				
I am not	man	mn̆aŋ	miaŋ				
person	myi, mi	[termi	-rmə	təmi	trmi W	termii	tirmi]

-mn̆i- [*-myi-] in tamn̆itshi 'one generation'

(This compound may be a Tibetan loan; cf. Lhasa metsē 'human life'.)

Chart 4 (cont.)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
many	maŋ-po; maŋ-ba, maŋs 'to be numerous'	kemeňe	wamyas, mňas; ʔaməňas 'they will be numerous'		temnɪa(k), teminia W		wamyas, wamyes
	[*myaŋ-s ⟶ *myak-s ⟶ *myak/*myɛs ⟶ *mya/*mye]						
cat		meňaŋ					
	[*myaŋ; cf. Trung namye, Lepcha šimyaŋ]						

Chart 5

*l- → Gyarong y-

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WHP	Kham-to	Chos-kia
hand	lag-pa	tayak	(ta)yag		teya W, P lapo H	-yak	tayag ('arm'), tayog
sheep	lug	keyo, keya-	keyüo	kəyo	keyo W koyo P li H	akeyuu	kiyo
to arrive	s-leb-pa	[medya 'he arrived']	ye pu, yi pu (pu 'to come')			[-medä]	
to return	ldog-pa, log	ye, ya-				[-medöö]	

Chart 6

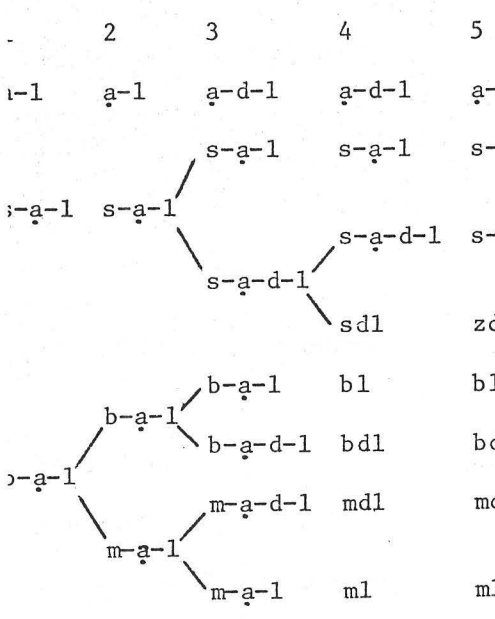
Tibetan ž with Tibeto-Burman l Cognates

(Numbers in parentheses indicate the sections under *(C)l-, *Cy- Changes in which a form is discussed in detail.)

	Gyarong	Tibetan	l-		Gyarong	Tibetan	l-
to get, to bring	Tz. pit (1)	bžes-pa	WT len-pa L le(n)	joke	S təsl̂â	ga-(g)ža, ga-ša	L lyóp (*s-l-)
to get up		bžeŋs-pa	WT laŋ-ba, L luk	young		gžon-pa	L lyón (*s-lon)
field, place	Tz. temně (5)	žiŋ	L lyaŋ (*s-liŋ)	bow	Tz. s̩amně (5)	gžu	L sǎ-lí Lu. thliŋ
weak		žan-pa	L lyǎn (*s-lan)	marrow	Tz. ptsiu (4)	gžuŋ	Sa. tlhy̩[33]
cat		žum, žim	L a-lyŭ	side	Tz. emňi	gžogs	WT logs
four	Tz. keudži (4)	bži	L fǎ-lí, Lu. pa-li				L a-blyǎŋ

Chart 7

The Development of Prenasalized Laterals in Gyarong



[1] Following stage 12 are the changes *(p)ty- → *(p)tsy- → (p)tš-.

[2] *s- has the Gyarong alternant reflexes s-, ṣ-, z-, ẓ-, and r-.

[3] *-y- is lost before i.

Chart 8

The Development of *spr, *sbr, *s-ạ-r, and *b-ạ-r in Gyarong

1	2	3	5	6	7	8	9	10	12	
spr	str	str	str	str	str	str	str	tsr	ts	Tz. -tsu 'monkey'
sbr	sdr	sdr	zdr	zdr	zdr	zdr	zd	zd	zd	S -zdiem 'cloud'
						ztr	zt	zt	zt	Ts. ztim 'cloud'
					sgr	skr	skr	sk	sk	Tz. -ski 'to burn'
s-ạ-r	s-ạ-r	s-ạ-d-r	s-ạ-dr	sdr					tsr	S -tsri 'to twist'
						str	str	tsr		
					sdr				ts	Ts. tsa 'son'
							st	st	st	Ts. stag 'pea'
	b-ạ-r	b-ạ-r	b-ạ-r	br	br	pr	pr	pr	pr	Tz. pri- 'to tear'
b-ạ-r	m-ạ-r	m-ạ-r	m-ạ-r	mr	mr	m	m	m	m	Tz. mu- 'to fear'

Chart 9

The Development of Prenasalized Laterals in Tibetan

1	2	3	6	7	8	9	10	11	
a̤-l	a̤-l	a̤-d-l	a̤-d-l	a̤-dl	a̤-dy	a̤-dž	a̤-dž	a̤-dž	a̤-džag-ma 'grass'
			dl	dl	dl	dl	dl	ld*	ldugs-pa 'to pour'
					dy	dž	ž	ž	žiŋ 'field'
s-a̤-l	z-a̤-l	z-a̤-l	zl	zl	zl	zl	zl	zl	zlum-po 'round'
					zy	ž	ž	ž	žag 'fat'
		z-a̤-d-l	zdl	zdl	zdl	zdl	dl	ld	ldum-po 'round'
b-a̤-l	b-a̤-l	b-a̤-d-l	bdl	bdl	bdy	bdž	bž	bž	bži 'four'
	d-a̤-l	d-a̤-d-l	ddl	gdl	gdy	gdž	gž	gž	gžu 'bow'
	m-a̤-l	m-a̤-d-l	mdl	mdl	md	md	md	md	mda 'arrow'

* *dl- from *a-l- may also change to *dr- (→ rd-) if our proposed derivation of WT rdo 'stone' from *a-luŋ is correct.

Chart 10

The Development of *spr, *sbr, *s-ạ-r, and *b-ạ-r in Tibetan

1	3	4	5	6	7	
spr	spr	spr	spr	spr	spr	spra 'monkey'
sbr	sbr	sbr	spr	spr	spr	sprin-pa 'cloud'
		s-ạ-d-r	s-ạ-d-r	sdr	sgr	sgrim-pa 'to twist'
s-ạ-r	s-ạ-d-r	sdr	str	str	skr	skrum 'meat' (hon.)
	s-ạ-r	sr	sr	sr	sr	srum 'meat' (hon.)
b-ạ-r	b-ạ-d-r	bdr	bdr	bdr	bdr	bdral (also dral) 'to tear' (pft.; present a-dral-ba; cf. ral-ba 'torn')

Chart 11

*dr- Clusters

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
I. Tzu-ta retroflex stop, Tsa-ku-nao/Suo-mo retroflex affricate							
A. Written Tibetan dr-:							
to sew	a-drub-pa, drub	ṭep	kaṭṣup			-tup	titrob kipe
bell	dril-bu		ṭṣïlpo	ṭṣolwu			trolwu
B. Written Tibetan rd-:							
to spread	rdal-ba	ṭi, ṭe-		kaṭṣie			kodri
to push up	rdegs-pa	ṭa-					
grain	rdog-pa		kəṭṣuo	ṭṣo-			
C. Written Tibetan gr-:							
cold	graŋ-ba	kewaḍo (naḍa 'to be cold')	kəwaḍẓuo				dawandro, tiwandro
lamp, light	sgroŋ-ma	teṭhu	taṭṣhu	taṭṣho	č'uč'u (ktru-tru) W		

Chart 11 (cont.-1)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
II. Tzu-ta r- + dental, Written Tibetan gr-							
to loosen	a-grol-ba	rda-, rdye- (rdaŋ 'I loosen')		kalda- 'to release, open'			
III. Gyarong velar + r							
A. Written Tibetan dr- (gr-):							
to rub	a-drud-pa			kakhṣot			
elbow	dre-bo, gre-bo, gru-mo	tekhru		təkru			
B. Written Tibetan rd-:							
to beat	rdegs-pa	khrak, khrok					
IV. Gyarong r + velar							
A. Written Tibetan dr-:							
mule	dre	tarkye	(ta)rka		tarka W	taarkee	tarkapu 'colt'

[For unmetathesized velar + r, see Trung (tə)khri, Lepcha kre.]

Chart 11 (cont.-2)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
B. Written Tibetan rd-:							
grain	rdog-pa	terga (zegawu 'granary')		tərgok			tirgag

[The WT rd- : Gyarong rg- correlation is also seen in WT rdo 'stone', Tz. rgu 'rock', C rigu 'stone'. We have, however, derived rdo from *a̤-loŋ rather than simply *dro; cf. Tz. tšu, tšuŋ- 'stone'.]

Chart 12

Common Tibetan-Gyarong Velar + r Clusters

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
I. Written Tibetan velar + r							
A. Gyarong velar + r							
bed	khri		kri	khrə			khri
braclet	sgrog(s) 'handcuffs, fetters'	(e)ẓgra	ẓgra	zgroks			
ant	grog-ma	khara	khurog			korok	korag
B. Gyarong velar							
to be satiated	ạ-graŋ-ba, ạ-graŋs	pkye, pka- (pkaŋ, pkoŋ 'I am satiated')	-maka- 'to be satisfied'	tatəpkân 'you are satiated'			
[Lepcha kót 'satiated']							
to shout	ạ-grags-pa	gye, gya- (*ga-)					

Chart 12 (cont.-1)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
noise	grag-pa	ṣkhwak					
rope	sgrog(s)	-skui					
		(staskui 'a rope connecting yoke and plough')					
C. Gyarong velar + r/r + velar							
bank, shore	a-gram			tərkə			
feather, wing, fin	sgro 'a large feather, a quill feather', rkaŋ 'quill of a feather' (*s-graŋ)		-khrom (pryekhrom 'chicken wing')	tarkham 'feather'		taarkom 'wing'	tarkom 'large feather', tarkhom 'fin'

[Note Lepcha a-kop 'quill', with its labial ending (and with loss of -r-, as in kót 'satiated', above.]

to wind	a-khri-ba, d-kri-ba	rtšip (*krip → *rkip → *rkyip → rtšip)					

Chart 12 (cont.-2)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WHP	Kham-to	Chos-kia
II. Written Tibetan velar + y/velar + r, Gyarong r + velar							
hard	kyoŋ, mkhraŋ	kerko	kərko				kikro

[Tibetan *kraŋ/*kroŋ; Gyarong *kraŋ or *kroŋ, with kV- adjectival prefix]

Chart 13

Common Tibetan-Gyarong Labial + r Clusters

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
I. Where written Tibetan has a labial:							
A. Gyarong has labial + r:							
rock	brag	prak	prag	prak			preg, prag-
bee	sbraŋ-ma	brastak 'a kind of bee'				brastak 'a large bee'	
message	(ạ-)phrin	tekprei					tagpre 'messenger'
rosary	ạ-phreŋ-ba	phramu	phriaweɛ	mphṣoŋwâ			
rope, cord	ạ-phreŋ-ba	teurei	təuri	təurie			tibre
to love	ạ-phreŋ-ba	warer (wareŋ 'I love')					
smallpox	ạ-brum-nad	tauran					tadbram

Chart 13 (cont.-1)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
B. Gyarong has r + labial:							
shoulder	phrag-pa	tarpyak	rpia	tarpak			tarpheg
catty	bre	taterpyet	tərpiɛ				tetirpe
buckwheat	bra-bo	terwu	tərwu	turwu	taru W	öruwuu	
	[*brab → *brob → *brub → *bru → *wru → rwu]						
dragon	ạ-brug	tarmo	tarmau	tarmok		taarmo	gyumbrug, gyundrug
name	myiŋ, miŋ	termi	-rmi		krmien W	nörmii	-rmi
	[*mriŋ (← *ạ-briŋ? cf. Trung aŋprəŋ and Lepcha a-bryaŋ from *s-a-briŋ, with a from *i as in lyaŋ 'field' from *s-liŋ); for the *-r- to -y- change in Tibetan before -i-, cf. the following and also ạ-khril-ba, ạ-khyil-ba 'to wind'.]						
person	myi, mi	termi	-rmə	tərmi	trmi W	termii	tirmi
	[*mri; cf. Lepcha ma-ro]						
to freeze	phyid-pa	tarpan 'frozen'					
	[*prid/*prin]						

Chart 13 (cont.-2)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
C. Gyarong has labial:							
to cut	a-breg-pa,			kəmbâk 'to crack			kophog
	breg(s), ___,			open by itself',			
	brog(s) 'to cut off, to mow'			kaphâk 'to cut open'			
to shake	sprug-pa	pha-					
		(phaŋ 'I shake')					
D. Gyarong has retroflex (i.e. *Br → *Dr):							
to deliver	sprod-pa	ʂtʂo, ʂtʂa-					
slave	bran		tanʈʂhɛ təmə (f.)				
now	(a-)phral	ʈʂe-	ʈʂai				chi ti
E. Gyarong has velar + r (i.e. *Br → [*Dr?] → *Gr):							
rice	a-bras	khre		khri	khri W		nbreskar
					mrass W [Muphing]		
to scrape	a-brad-pa,	grek					
	a-drad-pa						

Chart 13 (cont.-3)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
F. Gyarong has r + velar:							
dance	bro	targye					targe
one	phrag,						
	khrag	targai	tərkɛi, tərkɛ		trki W	tergee	

[WT stoŋ-phrag 'thousand', khri-khrag '10,000'; Tzu-ta stuŋtshu targai '1,000', Tsa-ku-nao khriṭṣhu tərkɛi '10,000', poro tərkɛ 'a horse']

II. Where Gyarong has a labial:

A. Written Tibetan has dental + r:							
smell	dri-ma	werer	ṭṣimiɛ			de	wuri

[Lepcha ri, Lushai rim 'smell' show prefixless forms of this word. Tibetan *b-ri → *d-ri; Lhasa preserves the labial medially in, for example, khīpṭī 'dog's smell' (cf. Chang 1971: X.14). Gyarong *b-ri → *w-ri in Tzu-ta and Chos-kia, *dr in Tsa-ku-nao and Kham-to (or is the *dr a later derivative from Tibetan?). Tzu-ta -r suggests *-n (cf. 'thread', WT s-ran-bu, Tzu-ta rer, Chos-kia tiri)--*rin-ma → *rim-ma?]

Chart 13 (cont.-4)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
B. Written Tibetan has r + dental:							
to kick	rdog-pa	taẓbrok 'kicking'		tazbro (kalât)			
	[WT rdog ← *drog ← *brog; Tzu-ta taẓbrok ← ta- + *s-brok]						
C. Written Tibetan has velar + r:							
to tie	ạ-grogs-pa	prak		kaprak			
	[*ạ-brogs]	[*brok]					
an uncut sheet							
of paper	gre-ga	taptshyar					
	[Lhasa has šūqū ṭheqā, šūqū pheqā here: *breg → WT greg; *breg → Lhasa and Gyarong *beg. *beg → Lhasa pheq-, → Tzu-ta *bag → *bar → *pyar → ptshyar.]						
to lead	ạ-khrid-pa	pit					
to rescue	sgrol-ba	rmu					
	[WT s-grol ← *s-ạ-brol; Tzu-ta rmu ← *mru ← *mrul ← *ạ-brul ← *ạ-brol]						

Chart 13 (cont.-5)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
D. Written Tibetan has a palatal affricate:							
to clap	tšhag-tšhag	tarptshi					tishblag
	byed-pa	'clapping'					kolad
	[Cf. Lepcha bryăk (*s-brak), bryek 'to clap'. *s-brag → Tibetan *s-byag → *s-pyag → *pyag → *phyag → tšhag; Tzu-ta ta- + *brag → ta- + *prag → *tarpag → *tarpa → *tarpya → *tarpyi → tarptshi]						
III. Where evidence for a labial + r cluster comes from outside written Tibetan and Gyarong:							
axe		ṣarpye	ṣərpiɛ				sharpe
	[Lepcha prit, Gyarong *ša- + *prit; cf. Tzu-ta ṣa-mnye 'bow']						
six	drug	keṭo	kəṭṣuo	kəṭṣok	kočo W, P	kuutok	kitrog
	[Lushai pa-ruk. WT drug ← *b-rug]				ktrü H		

Chart 14

Deaffrication in *s- + Affricate Clusters

I. STS ⟶ ST

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
to boil	a̤-tshod-pa,	stu, sta-,					kowastse
	btsos	tye, ta-					
I go	phyin-pa	(s̤)ṭs̤heŋ,	tsĥiŋ,				
	'to go'	ṭs̤hiŋ	stəŋ				
		[ṭs̤hi 'to go']					
to deposit		s̤tu, s̤tye		kasĥṭs̤u			kowishite
to hit		sto	tasten 'he				kistsog,
			will hit you'				kistsag
to ride	žon-pa	neṣṭs̤o			ganesčo W		nishtaou
	[*džon]						
cold (1)	graŋ-ba	kewa̤do	kəwa̤d̤zuo				dawandro,
	(*draŋ-ba)	(*b-draŋ)					tiwandro

Chart 14 (cont.-1)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
cold (2)	ạ-khyags-pa			kəməs̆tak		kaamiišteea	
	'to feel cold'						
	[*ạ-s-drag-s-pa → *ạ-s-grag-s-pa → *ạ-s-gyag-s-pa → *ạ-s-kyag-s-pa → *ạ-kyag-s-pa → WT ạ-khyags-pa; *b-ạ-s-kyak → *m-s-kyak → *m-s-ts̆ak → *m-s̆-ts̆ak → Suo-mo -məs̆tak]						
II. STS → ST; STS → S							
ten	btšu	ṣṭṣi	ṣ̆tsi, stiɛ, ṣï	ṣ̆ts̆ie, ṣ̆ts̆o-, ṣ̆ts̆a-	štyie, šetie W ši P	sčii	shtse
warm	tsha-ba		-nasta-, -nasti 'to be warm'	kəstsie, kəssie			diwastse 'hot' kowastsi 'warm'
wealthy	phyug-pa	taṣi 'a wealthy man'	kəmaṭši	kəmaṣ̆ie			

Chart 14 (cont.-2)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
	[*s-byug → WT phyug-pa (cf. dbyig(s) 'wealth'); *s-byu → Gyarong *s-tšu → Tzu-ta *s̤-t̤s̤u]						
alone	gtšig		ši			yeščii	shchi
	'one'		[*s-tšig]				

Chart 15

Correspondences of Tibetan Voiced Stops and Gyarong Voiceless Unaspirated Stops

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WHP	Kham-to	Chos-kia
bird	bya	prye, pra-	potsïɛ	pya-	pai- W		pe
child	bu	-pu	po, tapo, tapu	tapu	tapu P	taapöö 'boy'	tapu 'boy, child'
rat	byi-ba	peyiu	poyi		pui W	peeyii	puyu
to do	byed-pa, byas	pye	kapiɛ	kapa	kopai W	-pai, -piää	kape, kope
rock	brag	prak	prag	prak			preg, prag-
six	drug	keṭo	kəṭṣuo	kəṭṣok	kočo W, P ktrü H	kuutok	kitrog
a bell	dril-bu		ṭṣïlpo	ṭṣolwu			trolwu
musk deer	gla-ba	tše, tša-		tša			kye
to help	grogs byed-pa	ko, ka-	kəkoar	kakor			kikor kope

Chart 16

Noninitial Correspondences of Tibetan and Gyarong Voiced Stops

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	Kham-to	Chos-kia
color	mdog		mdog [mtagkɛ]			umdog
neck	mgul	[temki]	(te)mgə	[təmki]	[temkö̤ö̤]	timgi
mask	a̤-bag			mb̂ak		
to appear	a̤-byuŋ-ba		kənbyuŋ	kəmbyuŋs		kinbyung
to have	a̤-dug-pa	ndut	-ndud, dud		-nduu	ndo
to fall	a̤-gril-ba			kəŋgri		
grain	rdog-po	terga		tərgok		tirgag
money	rgyu	derdžu	[rtši]	zardži		
old	rgad-pa		rgapo	rgatpo		kirgan
				'an old man'		
to run	rgyug-pa	rdzu, nardžek	[kənartšiu]	kardžuk	-naarǰyuk	kinargyug
bracelet	sgrog(s)	(e)z̤gra	z̤gra	zgroks		
	'handcuffs, fetters'					

Chart 16 (cont.)

	WT	Tzu-ca	Tsa-ku-nao	Suo-mo	Kham-to	Chos-kia
a hunchback	sgur-po	tazgular		kazgur		
to exercise	sbyoŋ-ba,					
	sbyaŋs			kazbyaŋ(s)		
to assemble	sdud-pa,					
	bsdus			kawzdu		

Chart 17

Tibetan and Gyarong Voiceless Stops after Nasals

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	Kham-to	Chos-kia
bile	mkhris-pa	temkhrer	(te)mkhrəs			
lake	mtsho	ptshu	mtshu	mtshu		
lips	mtšhu	temṭṣhi	(te)mtŝhe			timch'u
sky	nam-mkha		namkhiɛ		namkhää	
friend	mthun-pa 'to agree, harmonize'		kemthen	kamthən 'harmonious', samthən 'girl friend'		ngisemthun
to see	mthoŋ-ba	meto, meta-			methoo	nasamto
to wander	ạ-khyam-pa			-ntšhâp-		
a row	ạ-phreŋ-ba			təmprieŋ		
clock	tšhu-tshod-ạ-khor-lo			təstshotŋkhorro		

Chart 18

Tibetan and Gyarong Voiceless Stops in Absolute-initial Position

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
I. Unaspirated in Tibetan and Gyarong:							
hard	kyoŋ, mkhraŋ		kərko				kikro
	kərko						
skin	ko-ba					kuu	
II. Unaspirated in Tibetan, aspirated in Gyarong:							
bowl	ko-re,	khui	(tə)khu	(tə)khi	khu W		khu
	koŋ-po						
windpipe	kru-kru,			khruŋkhruŋ			
	lkog-ma [*klog]						
III. Aspirated in Tibetan, unaspirated in Gyarong:							
crow	khwa, kha-ta		ko	ki		kuu	koui
[Trung takka]							
father	pha	ŋapa 'my father'	ʔapiɛ		gapa W		ngape
[Trung (a)pai, Lepcha a-bo]							

Chart 18 (cont.-1)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
flour	phye	tapyet	-pre				-pad
house	khyim	ṭṣam	t̂sim, t̂sam	t̂siem, t̂ŝâm	čiem P	č'om	tichem
[Trung tšəm]							
stomach, intestines	pho-ba	tepu, tepak- (tepakṭṣhu 'navel')	pog, phog	təpo(k)	tapu W	taapuu	tipog

[Trung pa 'belly, stomach', Lepcha (tă)băk 'stomach'. Note that southern Ch'iang dialects differentiate between 'belly' and 'intestine'; Tsengt'ou Hsiachai, for example, has pu 'belly', pɯ 'intestine' (Chang 1967: 427-8). The different glosses for Gyarong dialects (e.g. Tsa-ku-nao pog, phog 'intestines', Chos-kia tipog 'stomach', to WT pho-ba 'stomach') do not appear, however, to imply different words.]

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
life	tshe	etsi 'his life' (-tshi in tamňitshi 'one generation')		tətsi			titseui

Chart 18 (cont.-2)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
IV. Aspirated in Tibetan and Gyarong:							
dog	khyi	khi	ʰthiɛ	khə-	khi W	khyii	khyi
[Trung dəgəi]							
a load	khal	kharmye		khalma			tekhal
mouth	kha	tekhye, kha-	(tə)khei	kha-	tekha W kha H	tekhäää	tikhe
[Trung ňikoŋ; for ňi-, see Tzu-ta ṣňe(t) 'mouth', teṣňapa(k) 'lips', Pati tešnes 'mouth', Kham-to äšnäs, tešnäs 'lip, beak'.]							
salt	tshwa	tshye, tsha- [ŋatser 'salty']	tshiɛ	tshâ	tsha W tsho H		tsha
[Trung sla; kha 'salty']							
wine	tšhaŋ	tše, tša-	tsâe, tshiɛ [tsâiɛ]	tšhâ	č'ia W		khye

Chart 19

Gyarong Correspondences to Written Tibetan -i

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
bed	khri		kri	khrə			khri
dog	khyi	khi	ˇthiɛ	khə-	khi W	khyii	khyi
four	bži	keudži	kəwudi, kəwudə	kəudi	koplii W kopli P ži H	köudii	kimpli
person	myi, mi	termi	-rmə	tərmi	trmi W	termii	tirmi
outside	phyi	eptshi	phi	wuphŝi		č'ii	

Chart 20

Fronting in Gyarong Correlates to Written Tibetan -u

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
ten	btšu	ṣṭṣi	ṣtsi, stiɛ, ṣï	ŝtŝie, ŝtŝo-, ŝtŝa-	štyie, šetie W ši P	sčii	shtse
water	tšhu	teṭṣe, ṭṣhe-; keṣṭṣi 'wet'	tŝi	tətŝi, tŝhi, tŝhə	teč'i W teči P č'inč'ia H	teč'ii	tichü
lips	mtšhu	temṭṣhi	(te)mtŝhe				timch'u
money	rgyu	derdžu	rtši, tarkɛi	tərdži	zie W		
body	sku	teṣkru	təskru, ṣkru, (tə)ṣkhri, ṣṭṣï	təskru		teskuu, teškri	tisskru
horn	ru, rwa	teru	təri			tere	turu

Chart 21

Raising in Gyarong Correlates to Written Tibetan -e

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Chos-kia
flea	a̤-dre-šig		ts̤ï̤s̤ï̤g			
	'bed-bug'					
elephant	glaŋ-po-tše	laŋbṳts̤hi				glangpochae
flame	ltše	mer̤ts̤i				
to be born,	skye-ba,					
to grow	skyes	stšewye	kəsti	kəstšie		nakiskyis
layman	skye-bo		stšiwu			
	'human being'	(minag skye-bo	'layman')			
sand	bye-ma		bimiɛ			kiwig
fire	me		(tə)mə		temi W	
					teme P	
					mnyi H	
life	tshe	-tsi, -tshi		tətsi		titseui
well (adv.)	bde-ba		kəwudi			
center	lte-ba	teli	-lei			ulei

Chart 22

Fronting and Lowering in Gyarong Correlates to Written Tibetan -o

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
taste	ro, bro-ba		ri				kowari (ko- + *bro)
dance	bro	targye					targe
skin	gro-ga, sgro-ba 'bark'	teḍe	təṭṣi			tete	tri, tindri
	[Cf. Lepcha (a)kryu ← *s-(a)kru 'skin']						
to walk, go	ạ-gro-ba	pṭi, neḍi, neḍe, neḍa-	kəwuṭṣiɛ; causative sakhri	kaptṣie			
	[Tzu-ta has as causative sago, sago-, saga-; Tsa-ku-nao also has kəkhruo noncausative, kəsakhru, kəsakhruo causative.]						
to pour	ạ-byo, phyo(s)		spiɛ				

Chart 22 (cont.)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
year	lo	-pye	(ta)piɛ	təpa	tiepo, pu W	pye	tepe
[Gyarong *po ← *p-lo?]							
tooth	so	teswye	syɛ, -šiɛ, -syə	təswa	so H	soo, (te)siee	tiswe
barley	so-ba	swai		swi	sui W	ӓsooi	swei

Chart 23

Labialization and *-a in Gyarong

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
five	lŋa	kemŋo	kəmŋo	-mŋo ('15')	komuu W	kömŋoo	kimgo
				lŋa- ('5th')	komu P		
					ngo H		
I	ŋa	ŋa	ŋo	ŋa	yo W	ŋo	ngo
to be	mŋa-ba	ŋa, ŋwa,				ŋwos	ngos
	(hon.)	ŋu					
mother	ma, ʔa-ma		ʔamo		gomu W	aamaa,	ngumo
						maa-, mai	
old	rga-ba		rko				
	'to be old'						
crow	khwa, kha-ta		ko	ki		kuu	koui
	[Archaic Chinese *kwâ̂t]						

Chart 24

Fronting and Raising in Gyarong Correlates to Written Tibetan -a

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
ear	rna-ba	ternye	rna, rn̆e	tərna	trna W trni P	ternää	dirrne
mouth	kha	tekhye, kha-	(tə)khei	kha-	tekha W kha H	tekhää	tikhe
nose	sna	teṣn̆e	təṣna-	tə̂sna	tešna W tešni P sni Pa. sno H	tešnää	tishne
order	bka		bke				
gun	me-mda [Gyarong *šа- + mda]	ṣamde	ṣamdə			šamdää	
enemy	dgra-ba	ṭepye	gre, grə	grâ			tingre

Chart 24 (cont.)

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
arrow	mda	keptsi		kəpie		kepii	kipi
warm	tsha-ba		-nasta-, -nasti 'to be warm'	kəstsie, kəssie			diwastse 'hot' kowastsi 'warm'

Chart 25

The Lowering of Back Vowels before Common Tibetan-Gyarong Velar Stops

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
six	drug	keṭo	kəṭṣuo	kəṭṣok	kočo W, P ktrü H	kuutok	kitrog
sheep	lug	keyo, keya-	keyüo	kəyo	keyo W koyo P	akeyuu	kiyo
dragon	a-brug	tarmo	tarmau	tarmok		taarmo	gyumbrug, gyundrug
poison	dug	tado		tuk			tadog
ant	grog-ma	khara	khurog			korok	korag
bracelet	sgrog 'handcuffs, fetters'	(e)ẓgra	ẓgra	zgroks			
grain	rdog-po	terga		tərgok			tirgag
life	srog	tersa	rsag				usrog
paper	šog-bu	ṣakṣo	ṣagṣag, ṣagṣug		šou W		shouwu

Chart 26

The Raising of *a between *(-)r and Common Tibetan-Gyarong Dental Endings

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Kham-to	Chos-kia
to scrape	ạ-brad-pa, ạ-drad-pa	grek					
cloth	ras		res	ras			res, resuwe, rasuwe
rice	ạ-bras	khre		khri	khri W mrass W [Muphing]		nbreskaɪ
son	sras		tətsï, tsa (ʔamutsa 'cousin')			katse	mitsapu 'daughter'
thread	sran-bu	rer		təri			tiri
slave	bran		tanṭṣhɛ təmə (f.)				
to tear	ạ-dral-ba	pri, pru; preŋ 'I tear'		koprieŋ 'I tear'			kopre
to spread	rdal-ba [*dral-ba]	ṭi, ṭe-		kaṭṣie			kodri

Chart 27

Labialized Endings in Gyarong

	WT	Tzu-ta	Tsa-ku-nao	Suo-mo	WPH	Chos-kia
prisoner	btson-pa			tə̀ntsâm		timtsem
to slide, slip	a̤-dred-pa		kaṭṣɛ(i)p	kə̀nd̤zap		
cloud	sprin-pa	zdžim	ztim	zdiem		sdim
rosary	a̤-phreŋ-ba	phramu	phriaweɛ	mphṣoŋwâ		
to taste	myoŋ-ba, myaŋs		kəmim			kimnom
egg	sgo-ŋa	-grom, -kwam	-kuan	tagam	poom W pokung W [Muphing]	pagom
		(pragrom 'chicken egg', skwam 'to hatch eggs')				
pot, pan	sla(ŋ)-ŋa 'a large pan'	yom 'pot		tayam 'iron pot'		tayom 'pot