The Tibetan Causative: Phonology

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Contents

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I. Introduction.

Some written Tibetan causatives differ from their noncausative counterparts through the possession of distinctive prefixes (WT s-nyol-ba, bs-nyal, bs-nyal 'to cause to lie down' : WT nyal-ba, ____, ____, nyol 'to lie down'). Others differ by both prefixes and the absence of aspiration (WT s-kol-ba, bs-kol, bs-kol 'to cause to boil' : a̤-khol-ba, khol 'to boil, be boiling'). Yet others, marked by a prefix in the future, have aspiration but lack voicing in the perfect and imperative, in contrast to the noncausative (WT a̤-bye-d-pa, phye [-d, -s], d-bye, phye [-d, -s] 'to cause to open' : a̤-bye-ba, bye, ____, bye 'to open [by itself]').

In spoken Tibetan the causative prefixes are no more. Phonetic changes have occasionally eliminated the formal distinction between causative and noncausative (WT s-du-d-pa, bs-du-s, bs-du, s-du-s 'to cause to get collected' and a̤-du-ba, a̤-du-s 'to get collected' have merged in spoken Tibetan tüǜ [VII.22-3]). More often they have left their mark in differences of tone and aspiration: ŋɛ̀ pūqū ñɛ̄ɛ̄pʌ yǐǐ 'I put the child to bed', pūqū ñɛɛ tɛ̀ šaa 'The child is lying down'; ŋɛ̀ cha̤ qōōpʌ yǐǐ 'I boiled the tea', chū qhūūqǐ 'The water is boiling'; ŋɛ̀ qo̤ chēpʌ yǐǐ 'I opened the door', qo̤ che̤ su 'The door opened (by itself)'.

The production of kʌp : thēè causative pairs, which abound in spoken Tibetan after both nouns and verb bases, was no doubt spurred by the disappearance of causative prefixes. 'close a door', in contrast to

'open a door', is of this sort: ŋɛ̀ qo kʌpʌ yǐǐ 'I closed the door', qo thēè su 'The door closed (by itself)'. From the written Tibetan standpoint, this type of causative differs from its noncausative counterpart in prefix and base. Written Tibetan rgyab-pa has the causative prefixes r-, br-, br-, r-; written Tibetan ạ-thebs-pa, thebs is formally as well as functionally noncausative.

Another causative verb, spoken Tibetan cūù (written Tibetan ạ-dzug-pa, VIII.1), appears after verb bases, causative or noncausative, followed by rʌ or ru: cɪnɪ chū lʌ thɪm su 'The sugar dissolved in the water', ŋɛ̀ cɪnɪ chū lʌ thɪm ru cūùpʌ yǐǐ 'I dissolved the sugar in the water (I caused the sugar to dissolve in the water)'. When the verb base is itself causative, this forms a double causative: ŋɛ̀ yi̱qèè thēētsē kʌpʌ yǐǐ 'I affixed a seal (caused a seal to be put) on the document', kanāà nɛɛ sɔ̈ɔ̈pɛɛ thēētsē chi kaà ru cūùpʌ reè 'They made them affix seals made in China (they caused them to cause to be put on seals made in China)'.

Our concern here is with the causatives which are distinguished by various prefixes and phonetic characteristics such as aspiration and absence of voicing. It is apparent on the face of it that not all of the differences we find in written Tibetan causatives are original: the causative perfect prefix to bases with voiceless velar initials is, for example, bs- (bs-kol : khol 'to cause to boil'; 'to boil'). To bases with voiceless labial initials it is s- (s-pel : phel 'to cause to be increased'; 'to be increased'): b- has been lost by dissimilation. By

investigating the causative types, initial by initial, we may throw light on the less transparent cases, such as the causative perfect for 'to open' (phye : bye), and to trace the different manifestations of the causative to their common source.

The material quoted here is from both the written Tibetan (WT) of the dictionaries, in the transcription used by Li 1933, and from the modern spoken Tibetan (ST) of the Lhasa dialect, in the transcription used in Chang and Shefts 1964.

Our aim in quoting spoken Tibetan material is to extend our knowledge of Tibetan linguistic history as far as possible in two directions, towards Proto-Tibetan and to the modern language. It is not a mere article of faith that knowledge of one stage of a language, whether it be a later or an earlier one, will illuminate any other stage. Phonetic changes are agents of linguistic history: the interplay of different changes and different sequences of changes leads to the diversification of some of what is uniform at an earlier stage. Written Tibetan is itself not void of such diversity: witness doublets such as zlum-po, ldum-po 'round' (IV.2) or ldoṅs-pa, mdoṅs-pa 'blind' (X.26-7). Only after we reconstruct from one source the doublets in zl-, ld- do we understand the development of the spoken Tibetan forms, which in a given instance may reflect a history other than that of the written Tibetan form. Another time, the diversification may lead to only one result in written Tibetan, but to a result in spoken Tibetan which does not derive from its source in the

same way as the written Tibetan form. Though both the written Tibetan and the spoken Tibetan causatives to bases with *b- initials are the result of regular sound changes, the spoken Tibetan line of development exhibits fewer of the pre-written-Tibetan changes. It thus provides a link to the Proto-Tibetan form, and changes our view of the Tibetan verb base in general (VII.7).

Nor can we gainsay the more mundane value of spoken Tibetan as a check on our knowledge of written Tibetan. Ideally, we should classify written Tibetan verbs on the basis of an examination of written Tibetan texts (where, given the nature of texts, written or spoken, vital clues would often be missing). If we rely on dictionaries to determine which verbs are causative and which are not we will be troubled by a diversity of labels, such as 'transitive', 'active', and by uncertainty about the criteria by which these labels were assigned. In spite of centuries of linguistic change in the history of Tibetan, we can sometimes make use of the element of continuity to determine from the vantage point of spoken Tibetan when a dictionary's classification is in error. Jäschke, for example, equates dral-ba, hral-ba, and ral-ba in the meanings 'to tear to pieces' and 'to be torn' (Das follows suit). But hral is in spoken Tibetan rhɛ̄ɛ̄ 'to grind', not 'to tear'; and spoken Tibetan has two forms, rɛɛ 'to get torn' and rɛ̄ɛ̄ 'to (cause to?) tear', which have developed by regular sound changes from ral and dral. It seems fair to infer that these verbs were and are also functionally as well as formally distinct in written Tibetan and that the dictionaries are in error. Just

what the original distinction was it will be our task to investigate here.

One criterion for identifying spoken Tibetan pairs as causative : noncausative is the constructions into which the verbs may enter. So, a verb base which cannot be followed by the suffix -pʌ with a first person pronoun in the instrumental agreeing with the auxiliary yĭĭ cannot be a causative; a verb base which can cannot be a noncausative. Typically (cf. lɔ̀ 'to get turned', II.4), the noncausative verb bases occur in constructions where the nominative agrees with the auxiliaries chu (first person; unstressed) and su (non-first person; unstressed): ŋa suu lɔ̀ chu 'I got turned sideways', qhō suu lɔ̀ su 'He got turned sideways'. When these bases are followed by the suffix -pʌ, there is no agreement in person: rè is used with first and non-first person alike (ŋa suu lɔ̀pʌ rè, qhō suu lɔ̀pʌ rè). Occasionally (cf. qhʌp 'to hide oneself', VII.17), the noncausative verb base is one which can be followed by the suffix -pʌ with the first person pronoun in the nominative agreeing with the auxiliary yĭĭ.

A pair which qualifies as causative : noncausative on spoken Tibetan evidence may still have to be thrown out from a list of historical causatives if the written Tibetan counterpart of the 'causative' cannot be derived from the prefix shared by other causatives. So, while ŋ̄ö̀ö, ŋ hȫö̀ 'to fry', 'to get fried' (ŋè šā ŋ̄ö̀öpʌ yĭĭ 'I fried the meat') and ñḕ, ñhḕ 'to tan', 'to get tanned' (ŋè qɔ̄ɔ̄ ñḕpʌ yĭĭ 'I tanned the leather') both appear to be causative pairs, only written Tibetan rnod

has a causative prefix (r- < *s-); the m- of written Tibetan mnyed derives from *b-, which is not a causative prefix.

In the following, the spoken Tibetan forms given may be derived from the perfect base of written Tibetan, unless otherwise noted. Detailed correspondences link this base with one of the spoken Tibetan bases ('Base 1' in Chang and Shefts 1964). Though spoken Tibetan has distinctions which correspond to those of the suffixes which distinguish perfect from future in written Tibetan, it shows no trace of any reflex for certain of the future prefixes. For example: corresponding to the written Tibetan perfect of lta-ba 'to look', bltas, spoken Tibetan has tɛ̄ɛ̀; the future blta is reflected in spoken Tibetan tā. Corresponding to the written Tibetan perfect of ą-grol-ba 'to liberate', bkrol, spoken Tibetan has t̤ö̤ȫ 'to cause to become untied, i.e. to untie'. The written Tibetan future of this verb, dgrol, has, however, no correspondence in spoken Tibetan, where future forms are derived from t̤ö̤ȫ. dgrol would yield spoken Tibetan *t̤ö̤ö̲ (cf. Appendix 1).

Numbers preceding statements of sound change refer to Appendix 4: Index of Changes from Proto-Tibetan through Written Tibetan to Spoken Tibetan.

II. Bases with voiced nasal and liquid initials.

Causatives to bases with voiced nasal and liquid initials have in written Tibetan the prefixes s- (present), bs- (perfect), bs- (future), s- (imperative). In some cases, we find r- instead of s-. Though the change of s- to r- occurs before all nasals, it occurs more often before ṅ, m, and n than before the palatal ny: dictionary entries for r before ṅ, m, or n are roughly equal to those for s before ṅ, m, or n; rny- entries are less than one-third the number of sny- entries. Also, sn-, but not rn-, may occur before the front vowel e. Evidence supporting the assertion that the prefixes s- and r- have one origin, *s-, is found in (1) the identity of function, since both s- and r- may form causatives, and (2) the existence of doublets, one member with s- and another with r-. Doublets attesting to the single origin of the prefixes s- and r- include, in addition to those in the examples below (A.3, s-nyil-ba, r-nyil-ba; A.7, s-nur-ba, r-nur-ba; A.12, bs-nyad, br-nyad; B.10, s-med-pa, r-med-pa), s-nyen-ba or r-myen-ba 'to stretch one's self, to yawn' and s-mel-ba or r-mel-ba 'to pluck out'.

A. Causatives with s-, bs-, bs-, s-:

1. Causative: WT s-nyol-ba, bs-nyal, bs-nyal 'to lay down; to bed a person'

ST ñɛ̄ɛ̄ 'to put to bed (e.g. a child, a drunk); to cause to lie down', e.g. ŋɛ̀ pūqū ñɛ̄ɛ̄pʌ yǏǏ 'I put the child to bed'

Noncausative: WT nyal-ba, ____, ____, nyòl 'to lie down, to sleep'

ST ñɛ̲ɛ̲ 'to lie down, e.g. pūqū̄ ñɛ̲ɛ̲ tɛ̲ɛ̀ šaa 'The child is lying down'

2. Causative: WT s-nyuṅ-ba, bs-nyuṅ-s, bs-nyuṅ 'to make less, to reduce, to diminish'

Noncausative: WT nyuṅ-ba 'to be little'

3. Causative: WT s-nyil-ba or r-nyil-ba, bs-nyil, bs-nyil 'to pull or throw down; to break down, to destroy ...'

ST ñĭr 'to cause to get unpiled', e.g. ŋɛ̲ɛ̀ tsʌ̄pūū̄ ñĭrpʌ yĭĭ 'I unpiled the haystack'

Noncausative: WT nyil-ba 'to decay, to crumble to pieces'

ST ñi̲r 'to get unpiled; to fall from a pile', e.g. tsʌ̄pūū̄ ñi̲r šaa 'The haystack has collapsed', ri̲ ñi̲r šaa 'There has been a landslide'

4. Causative: WT s-nye-g(s)-pa, bs-nye-g-s, bs-nye-g, s-nyo-g(s) 'to hasten or run after, to overtake'

Noncausative: WT nye-ba 'to be near'

5. Causative: WT s-na-d-pa, bs-na-d, ____, s-no-d 'to hurt, harm, injure'

Noncausative: WT na-ba 'to be ill, to ache'

ST na̲ 'to be sick; to ache', e.g. ŋa̲ napʌ re̲è 'I was sick', ŋa̲ qo̲ napʌ re̲è 'I had a headache'

6. Causative: WT s-nub-pa, bs-nub-s, bs-nub, s-nub(s) 'to cause to perish; to destroy'

Noncausative: WT nub-pa 'to fall gradually, to sink; to decay, decline'

7. Causative: WT s-nur-ba or r-nur-ba, bs-nur, bs-nur 'to crush'

ST nūr 'to cause to be/get crushed (by pressing, not pounding)', e.g. ŋɛɛ̀ šɔ̀ɔqɔ̀ɔ̀ thūmɛ̄ɛ̀ nūrpʌ yĭĭ 'I mashed the potatoes with a spoon'

Noncausative: WT nur-ba 'to crumble to pieces'

ST nur 'to get crushed, mashed', e.g. šɔ̀ɔqɔ̀ɔ̀ nur šaa 'The potatoes (have been and) are mashed'

8. Causative: WT s-loṅ-ba (or s-laṅ-ba), (b)s-laṅ-s, (b)s-laṅ, s-loṅ-s 'to cause to rise, to help to rise'

ST lãã̄ (with or without yaa 'up') 'to help to get up; to set up, erect (e.g. a wooden frame, a tentpole); to wake up; to rouse', e.g. ŋɛɛ̀ mōō lãã̄pʌ yĭĭ 'I helped the old woman get up', qhōṑ ŋa lãã̄ chu 'He woke me up', qhōṑ ŋaa nāmtɔ̄ɔ̀ lãã̄ chu 'He roused groundless fears in me'

Noncausative: WT ldaṅ-ba (or laṅ-ba), laṅ-s, ____, loṅ(s) 'to rise, to get up'

ST lãã̀ 'to get up; to rise, start', e.g. mōō ti lãã̀pʌ reè 'The old woman got up', ŋɛɛ qo lʌ saprāà lãã̀ chu 'My head started itching', ŋa kōŋmɛ̄ɛ̄ lãã̀ chu 'I feel nauseated'

9. Causative: WT s-log-pa, bs-log-s, bs-log 'to turn (round or about, upside down, inside out)' [Jäschke: 'trs. to ldog-pa']

ST lɔ̄ɔ̀ 'to cause to get turned', e.g. ŋɛɛ̀ chūpʌ̄ chĭtãã̄ lɔ̄ɔ̀pʌ yĭĭ 'I turned my robe inside out', ŋɛɛ̀ qhɔ̄ɔ̄ suu

	lɔ̄ɔ̀pʌ yī̲ī̲ 'I turned sideways to him (e.g. to walk through a narrow passage)'
Noncausative:	WT ldog-pa, log, ____, log 'to turn; to return'
	ST lɔ̲ɔ̀ 'to get turned', e.g. ŋɛ̲ɛ̲ chūpʌ̄ chīṭā̄ā̄ lɔ̲ɔ̀ šaa 'My robe (got turned inside out and) is turned inside out', ŋa̲ su̲u̲ lɔ̲ɔ̀ chu 'I got turned (i.e. pushed) sideways'
10. Causative?	WT s-ṅag(s)-pa, bs-ṅag-s, bs-ṅag, s-ṅog 'to praise; to recommend'
	ST ŋā̄à 'to ask for (a favor, a gift); to order (in a restaurant', e.g. ŋɛ̲ɛ̀ qhɔ̄ɔ̄ chōtsȭȍ chi ŋā̄àpʌ yī̲ī̲ 'I asked him for a watch', ... qhȫȫ qhi thū̄ūtǖǜ lʌ yg̲ȍpʌ rʌ chi ŋʌ̄ʌ̄qī yī̲ī̲ 'I'll order whatever he wishes'
Noncausative?	cf. WT ṅag 'speech, talk, word'
11. Causative?	WT s-ṅog-pa, bs-ṅog-s, bs-ṅog, s-ṅog-s 'to vex, to annoy'
	ST ŋɔ̄ɔ̀ 'to dig up (e.g. the earth), to dig out (e.g. earwax), dig around in (e.g. a box, in the attempt to find something)' e.g. ŋɛ̲ɛ̀ sā ŋɔ̄̀ɔpʌ yī̲ī̲ 'I dug up the earth'
12. Causative?	WT s-nyad-pa, bs-nyad or br-nyad, bs-nyad, s-nyod 'to relate, report'
Noncausative	[Cognate with nyan-pa 'to hear, to listen', with a common root *nya? s-nyad-pa would then have the basic meaning of 'to cause to hear'.]

13. Causative? WT s-ma-d-pa 'to bend down, to reach down, to vilify' [The absence of *bs-ma-d in the perfect and future is attributable to the labial initial of the base.]

Noncausative? cf. WT ma- below', ST maa 'down'

14. Causative: WT s-riṅ-ba, bs-riṅ-s, bs-riṅ 'to extend, stretch, postpone'

Noncausative: WT riṅ-ba 'long'

B. Causatives with r-, br-, br-, r-:

1. Causative: WT r-ṅo-d-pa, br-ṅo-s, br-ṅo(d?) 'to parch, roast, fry'

ST ŋ q̈ö̀, ŋ q̈ 'to cause to get fried', e.g. ŋɛ̲ɛ̀ šā ŋöö̀pʌ yī̲ī̲

'I fried the meat'

Noncausative: ST ŋhö̀ö̈ 'to get fried', e.g. šā ŋhö̀ö̈ šaa 'The meat is fried'

The spoken Tibetan noncausative ŋhö̀ö̈ has no written Tibetan correspondent and may be a secondary derivative. formed by analogy to such pairs as pār 'to cause to be increased' : phār 'to be increased'.

2. Causative: WT r-nyog-pa, br-nyog-s, br-nyog 'to trouble, to stir up'

ST ñɔ̄ɔ̀ 'to cause a liquid to become muddied, sullied, by causing sediment to rise to its surface', e.g. ŋ ɛ̲ɛ̀ chū ti̲ ñɔ̄ɔ̀pʌ yī̲ī̲ 'I (purposely) made the water muddy'

Noncausative: WT: cf. nyog-pa 'soiled, dirty, made unclean'

ST ñɔ̲q or ñɔ̲ɔ̀ 'The water (has become and) is muddied', kʰɐ̄rāā qʰi söö̀cā ñɔ̲ɔ̀ nāā šaa 'Your tea (has become and) is stirred up (i.e. the tea leaves have come to the surface, perhaps because the teacup was jostled)'

3. Causative: WT r-log-pa, br-lag-s, br-lag, r-log(s) or br-lag 'to overthrow, destroy; to break, to smash'

ST lɔ̄ɔ̀ 'to cause to fall down, to demolish', e.g. ŋɛ̲ɛ̀ tsīqpʌ̄ lɔ̄ɔ̀pʌ y̲ī̲ī̲ 'I demolished the wall [caused it to fall down]'

Noncausative: WT ldog-pa, log 'to come back, return; to change'

ST lɔ̲ɔ̀ 'to fall down, get demolished', e.g. ŋa̲ su̲u̲ lɔ̲ɔ̀ chu 'I fell down sideways', māà yo̲ō̲nā, qhāŋpā šiṭāā lȯ̲ȯ̀qī re̲è 'If war comes, many buildings will be demolished [there will be debris]'

As in the pre-written-Tibetan stage the one causative, *slog 'to cause to turn; to overthrow, demolish', became differentiated into two causatives, slog 'to cause to turn' (A.9 above) and rlog 'to overthrow, demolish', through the optional sound change of s to r before voiced nasals and liquids, so in the post-written-Tibetan stage the corresponding non-causative, WT log 'to return; to change', became differentiated into two verbs, ST lȯ̲ȯ̀ 'to return' and ST lɔ̲ɔ̀ 'to get turned; to fall down, get demolished', through another optional sound change, the fronting of back vowels after front consonants (cf. WT thuṅ-thuṅ 'short' : ST thüṫüü; WT chuṅ-chuṅ 'small' : ST chücüü). The frequent appearance of the spoken Tibetan auxiliary chīī (WT phyin) 'to go' after log > *lɔ̲ɔ̀ in the meaning of 'to return' may have played a part in activating this change.

4. Causative: WT r-lug(s)-pa 'to purge; to overthrow, pull down'

ST lūù 'to put in disorder', e.g. ŋɛ̀ ñɛɛcɛ̄è lūùpʌ yĭĭ 'I rumpled the bedding'

Noncausative: WT lug-pa 'to fall down'

ST luù 'to fall down, be partially demolished (as opposed to the total demolition of lɔɔ̀)', e.g. thep ŋɛɛ qhãã̀ lʌ luù chu 'The books fell down on me'

A number of other verbs with r followed by nasal or liquid initials are probably also to be derived from the *s-, *bs-, *bs-, *s- paradigm, even though they are not members of causative pairs. The occurrence of rm-, rather than *brm-, in the perfect of examples of 7-11 below is to be attributed to a general change: the prefix b- is lost when the initial of the base is a labial.

5. WT r-ṅa-ba, br-ṅa-s, br-ṅa, r-ṅo-s 'to mow, cut, reap'

ST ŋɛ̄è 'to mow', e.g. ŋɛɛ̀ šĭqʌ̄ ŋɛ̄èpʌ yĭĭ 'I mowed the fields (with a sickle)'

6. WT r-lon-pa, br-lan, br-lan 'to make wet, to moisten'

7. WT r-ma-ba, r-ma-s 'to ask; to wound'

ST mɛ̄è 'to be wounded', e.g. ŋa mɛ̄è chu 'I was wounded', qhō mɛ̃tā thɛ̄è nì, mɛ̄èpʌ rɛè 'He was hit by a bullet and wounded'

8. WT r-mi-ba, r-mi-s 'to dream'

9. WT r-mug-pa, r-mug-s 'to bite; to hurt, to sting; to bark'

10. WT r-me-d-pa (or s-me-d-pa), r-me-s 'to ask; to plough and sow'

11. WT r-mo-ba, r-mo-s, ____, r-mo-s 'to plough'

ST: cf. mȫpā kʌp 'to plough'

C. Causatives with ạ-, *bs-?

Two spoken Tibetan pairs with initial r- appear to be causative : noncausative:

1. Causative? WT ạ-d-ral-ba, d-ral (Nornang [Chang and Shefts 1964.272]: dbral) 'to tear to pieces'

ST rɛ̄ɛ̄ 'to cause to get torn, i.e. to tear', e.g. ŋɛ̀ɛ̀ šūqū rɛ̄ɛ̄pʌ yī̄ī̄ 'I tore the paper (on purpose)'

Noncausative: WT ral (Jäschke 525: ral-ba = dral-ba and hral-ba 'torn')

ST rɛɛ 'to get torn', e.g. šūqū ti rɛɛ su 'The paper got torn'

2. Causative? WT ạ-d-ril-ba, d-ril (Jäschke: 'to fall')

ST rīī 'to cause someone or something to roll; to cause someone or something to fall (on the surface, as opposed to saa "to fall from a height")', e.g. ŋɛ̀ɛ̀ pōlē rīīpʌ yī̄ī̄ 'I rolled the ball', qhȫö̀ pūqū rīīpʌ reè 'He caused the child to fall (pushed the child down)'

Noncausative: WT ril-ba 'to fall'

ST rii 'to roll (of a ball); to fall down (on the surface), fall over', e.g. pōlē riipʌ reè 'The ball rolled', pūqū riipʌ reè 'The child fell down', ʌ̄nī,lhāqpā chē̄pō šipū tītēè kʌpnʌ̄, qhuu riiqī mɛɛ̀ ţɔɔ 'But then, if it's very windy, the tent must fall?'

The derivation of these dr- (or dbr-) perfects is fraught with ambiguity. Because of the r- of the noncausative perfect, our first choice is to consider the d- of the causative (active?) perfect a later development of either b- or the causative bs-:

(1) The d- may derive simply from *b- (cf. Appendix 2). The change of *b- to d- before r- recurs or persists in both pre- and post-written-Tibetan.

(2) dr- may derive from *bs-, through the following changes:

5.	s changes to r before voiced nasals and liquids.	*bs-ral	→ *br-ral	*bs-ril	→ *br-ril
20.	Potential geminate clusters are simplified to single segments.	*br-ral	→ *bral	*br-ril	→ *bril
3.	A labial stop changes to a dental before any consonant other than the prefix s-.	*bral	→ dral	*bril	→ dril

Under this interpretation, we hold that in bs-riṅ, perfect to sriṅ 'to extend' (A.14 above), s- did not make the optional change to r-; in *bs-ral and *bs-ril it did, thus opening the way to further changes.

(3) It is, however, possible that the spelling dbral is historically accurate, and derives from *b-bral. (The verbs 'to tear' and 'to separate' [bral, VII.2] certainly can be interpreted as having a common semantic core.) We would then posit a development for dbrV (> ST rV̄) parallel to that undergone by dbyV (> ST yV̄; cf. X.7-8), in which -b- changes to -w- and is lost. After the loss of the -b- there appeared a second spelling, dral; for the

prefixless perfect we would assume a back formation dating from this time. (dril could, then, also derive from a *dbr- sequence; i.e. *b-bril *d-bril ≻ dril.)

But what, then, of the present forms a̤-dral and a̤-dril? Here we must posit the prefix a-chung; and an a-chung present is part of the causative paradigm of bases with voiced-stop initials. The present forms a̤-dral and a̤-dril derive from *a̤-ral and *a̤-ril through a general change in which sequences of a-chung followed by a spirant or liquid give rise to an epenthetic dental stop following the a-chung: *a̤-ral then becomes a̤-d-ral; *a̤-ril becomes a̤-d-ril.

D. a-chung and the epenthetic dental stop.

That sequences of a-chung followed by a spirant or liquid give rise to an epenthetic dental stop is perhaps most obvious where an affricate following an a-chung prefix in the present alternates with a spirant in the prefixless perfect, as it does, for example, in a̤-tšhi, ši 'to die'. To understand the genesis of this change we must first attempt to determine the phonetic value of a-chung.

The reflexes of written Tibetan initial a-chung before a vowel in spoken Tibetan have in common the low tone, indicating a voiced origin. This may be the only reflex, as in WT ‹ o-ma, ST o̲mā 'milk' or WT ‹ og, ST o̲ɔ̀ (also wa̲) 'below'. Other examples show spoken Tibetan y- corresponding to a-chung: WT ‹ o̤n-ba, ‹ o̤n-s 'to come', ST yo̲ɔ̀ (Roerich 1957. 170, 229 has oŋ-wa for Khams, yoŋ-wa for Central Tibet); WT ‹ ob, ‹ obs

'ditch, trench, pit', ST yo͘o͘pū 'gutter, irrigation ditch, canal' (Jäschke: ˂ob in Khams). ˂aṅ (after vowels) 'ever' alternates with yaṅ (after consonants) even in written Tibetan; both ˂ud and yud are used for 'moment'. (And, according to Jäschke, in Ladakh 'oats' is ˂ug-pa rather than yug-po.)

The medial reflex of a-chung before a consonant is, however, nasality: of the forty-two forms for which we reconstruct on the basis of spoken Tibetan a pre-initial nasal feature (Chang and Shefts 1965), most can be traced directly (1 below) or indirectly (2) to forms with initial a-chung. For example:

(1) WT ạ-dži̇ṅ-pa	:	ST ciŋpʌ 'neck', qũũcīī 'neck' (p.) (cf. qüü 'neck' [p.])
WT ạ-dod-pa	:	ST tôo 'to desire, to want to', chẽtôo 'the desire to do' (cf. chɛ̀ɛ, che 'to do')
(2) WT mgo (< *b-ạ-go; cf. dbu 'head' [p.] < *b-bu)	:	ST qo 'head', rãqō 'goat's head' (cf. ra 'a goat')

Chin P'eng also reports an initial nasal reflex before voiced stops for the Chamdo dialect (but not for the Lhasa or Shigatse dialects), e.g. WT ạ-bu, Chamdo mbɤ³ 'worm'. Although Chin includes Chamdo examples where the nasal has been lost (cf. VII.13), his examples with the nasal reflex far outnumber those without. Richter 1964.32 records such nasals for the 'Lhasa' dialect with absolute regularity. The absence of this initial nasal reflex (further,

the absence of any prenasalized initial stops) in other descriptions of the Lhasa dialect (Chang and Shefts, Chin P'eng, Sedláček) make suspect Richter's claim that the speech he describes is colloquial Lhasa Tibetan. (Could it be some other colloquial dialect, or some mode of reading?)

Parallels in the distribution of the prefixes a-chung and m- also lend support to the assertion that a-chung was a nasal. Only these prefixes occur before aspirated stops and affricates (a̱-kh, a̱-khy, a̱-khr : m-kh, m-khy, m-khr; a̱-tš̌h : m-tš̌h; a̱-th : m-th; a̱-ph, a̱-phr [*m-ph, *m-phr would dissimilate to a̱-ph, a̱-phr]; a̱-tsh : m-tsh). And neither m- nor a-chung occurs before other liquids or before spirants: a-chung (or m- < *b-a̱-) followed by spirants or liquids gives rise to an epenthetic dental stop. m- but not a-chung occurs before other nasals: m-n, m-ny, m-n. These sequences, however, we derive from *b-n̊, *b-ny, *b-n: oral stops optionally assimilate to nasals before a nasal.

The nasal quality of a-chung before consonants is also attested by Tibetan transcriptions of Chinese Buddhist texts of the eighth to tenth centuries discovered at Tun-huang (cf. Clauson and Yoshitake 1929.857-8: ' ... although the letter n̊ is used fairly frequently as a final, the initial guttural nasal denoted with ng- by Karlgren is invariably represented by hg- [i.e. a-chung followed by g], initial n̊- being unknown in these texts.' Luo Charng-peir 1933 has inferred from this a variant pronunciation for the Northwest Chinese dialect of that area, wherein standard [ŋ] was pronounced [ŋg].

The steps by which initial y- and medial nasality derive from one origin--if they do--are not clear, but it is through the assumption of nasality, and in particular a nasal stop, that we can best explain the appearance of an epenthetic dental stop brought about by the combination of a-chung with a spirant or liquid. The dental stop would then be a transition phenomenon: the velum was raised before the stop was released to make way for the lesser strictures of spirant or liquid.

We posit for Proto-Tibetan three prefixes: the nasal a-chung, b-, and s-. b-, s-, and b-s- combine with sequences of a-chung followed by spirants or liquids to yield the written Tibetan sequences shown in the chart below. Combinations of a-chung with a following spirant or liquid were discussed by Li 1933.147-9 and 1958.58-9; section numbers in the chart below refer to discussions and examples in this paper where we posit multi-segment sequences of (1) b-, s-, or b-s-, (2) a-chung, and (3) a spirant or liquid. (See also Appendix 4 for the changes which lead to the results shown here.)

ạ-s ⟶ ạtsh VI.4

b-ạ-s ⟶ mtsh X.28

s-ạ-s ⟶ rts, tsh, s VI.1-2,4

bs-ạ-s ⟶ brts (bts, bs?) VI.4

ạ-z ⟶ ạdz VIII.8

b-ạ-z ⟶ mdz VIII.15

s-ạ-z ⟶ rdz, tsh VIII.15,18

bs-ạ-z ⟶ brdz, bts VIII.15,19

ạ-š ⟶ ạtšh II.10

b-ạ-š ⟶ mtšh

s-ạ-š ⟶ ltš VI.8

bs-ạ-š ⟶ ltš VI.8-9

ạ-ž ⟶ ạdž VIII.10

b-ạ-ž ⟶ mdž VIII.13-4

s-ạ-ž ⟶ rdž, ldž VIII.12,14-5

bs-ạ-ž ⟶ brdž VIII.14-5

ạ-lh ⟶ lt IV.10-11

b-ạ-lh ⟶ lt? [cf. X.32-4: changes 1,10-12,18-9]

s-ạ-lh ⟶ kl IV.11

bs-ạ-lh ⟶ bkl IV.11

ạ-l ⟶ ld IV.10-11

b-ạ-l ⟶ md X.27

s-ạ-l ⟶ ld, zl IV.1-5

bs-ạ-l ⟶ bzl IV.4-5

ạ-r ⟶ ạdr X.30

b-ạ-r ⟶ md? [cf. X.32-3: changes 1,10,12,17]

s-ạ-r ⟶ ld, sr, skr IV.5-10

bs-ạ-r ⟶ bld, bsr (bskr?) IV.8-10

The Epenthetic Stop: Sandhi Combinations

III. Bases with voiceless nasal and liquid initials.

A. Nasals.

Written Tibetan has no voiceless nasals. The voiceless nasals of spoken Tibetan, mh-, ŋh-, and ñh-, all appear to be of relatively late origin. This is particularly clear in the case of mh-, which occurs only in mhā-, a variant of the negative prefix which occurs only with bases which have in isolation voiceless aspirated initials and high tone (e.g. phāà 'to regret, feel sorry', mhāpāà 'Don't feel sorry!'). ŋh- occurs only in ŋhōō 'to get fried', the noncausative counterpart to ŋōò 'to cause to get fried'; ñh- occurs only in ñhēè 'to get tanned', which stands in relation to ñēè 'to tan' (WT m-nyed-pa < *b-nyed-pa) as thūù 'to (chance to) meet' does to tūù 'to go to meet' (WT b-tug-pa or g-tug-pa < *b-tug-pa). From the r- (< *s-) prefixes of r-ṅod-pa 'to cause to get fried' (II.5) we infer an original voiced base, *ṅod. ŋhōò and ñhēè appear to be late developments, formed after the causative prefix was lost and aspiration had become the sole feature distinguishing many causative : noncausative pairs.

B. Liquids.

There is no evidence in the form of prefixless cognates that any of the verbs with initial sequences sr-, bsr-, bsr-, sr- had a base with an initial voiceless rh-. We know, however, that s-, bs-, combined with lh- (as with l-) to yield sl-, bsl-:

1. Causative? WT s-lad-pa, bs-lad 'to mix, adulterate'

ST: cf. lhɛ̄ɛ̀ tā̄ā 'to make an alloy'

Noncausative? WT: cf. lhad 'an alloy'

ST: cf. lhɛ̄ɛ̀ 'anything that is adulterated, e.g. gold mixed with another metal, or wool which is not pure wool'

2. Causative? WT lhe-ba (or bs-le-ba), lha-s 'to twist, plait, braid'

ST lɛ̄ɛ̀, lā (< *bs-lha-s, *bs-lha) 'to braid', e.g. ŋɛ̲ɛ̀ ṭā lɛ̄ɛ̀pʌ yī̲ī̲ 'I braided my hair'

Noncausative? WT: cf. lhes-ma, lhas-ma 'a braid'

ST: cf. lhɛ̄ɛ̄mā 'a braid'

IV. Bases with prenasalized liquid initials.

A. *ạ-l-.

Written Tibetan zl-, ld- represent divergent developments of *s-ạ-l-. (ld- thus has at least two sources: *ạ-l- and *s-ạ-l-. It may have others: *s-ạ-r- [IV.7] and *s-ạ-d-.) The two spellings are at times given for the same morpheme: zlum-po, ldum-po 'round'; zlag-pa (Jäschke), ldag-pa (Nornang: Chang and Shefts 1964) 'to lick'; zla-ba 'to say', lda-gu 'discourse, speech'. At other times, a morpheme is spelled in only one way: zla-ba 'moon; month'; zla-bo 'helper; friend; spouse'; zlog-pa 'to drive back'.

That the a-chung was sometimes (always?) a prefix seems likely in view of the cognate relationship of zlog 'to drive back' with ldog, log 'to turn, return' and slog-pa 'to cause to turn' (II.3).

The ultimate source of the zl-, ld- split appears to have been the earlier loss of a-chung in one line of development. The gradual loss of a-chung apparently began before and overlapped with the appearance of an epenthetic stop between a-chung and liquids. In development (dialect?) A, reflected in written Tibetan alone (as zl-), a-chung in the sequence *z-ạ-l- was lost before, in development B (reflected in written Tibetan ld- and spoken Tibetan tV̲-) after its appearance. (The reflexes of the epenthetic stop are so widespread as to preclude the idea that this phenomenon was dialectal.) That is:

		B	
	*s-ạ-l ⟶ *z-ạ-l	*s-ạ-l	⟶ *z-ạ-l
Loss of a-chung	*z-ạ-l ⟶ zl		
Appearance of epenthetic stop		*z-ạ-l	⟶ *z-ạ-d-l
Loss of a-chung		*z-ạ-dl	⟶ *z-dl
		*z-dl	⟶ *dl
		*dl	⟶ ld

For example: *s-a-lum-po ⟶ zlum-po, ldum-po 'round'

A

4.	s is voiced, becoming z, before the sequence ạ-l.	*s-ạ-lum-po	⟶ *z-ạ-lum-po
9.	The loss of noninitial a-chung begins.	*z-ạ-lum-po	⟶ zlum-po

B

4.	s is voiced, becoming z, before the sequence ạ-l.	*s-ạ-lum-po	⟶ *z-ạ-lum-po
10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*z-ạ-lum-po	⟶ *z-ạ-d-lum-po
12.	Noninitial a-chung is lost.	*z-ạ-d-lum-po	⟶ *z-d-lum-po
18.	A consonant followed immediately by a sequence of a stop and a lateral is lost.	*z-d-lum-po	⟶ *dlum-po
19.	Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.	*dlum-po	⟶ ldum-po

A-type changes, applied to *s-ạ-la-ba, *s-ạ-lag-pa, *s-ạ-la-bo, *s-ạ-log-pa, yield written Tibetan zla-ba (1) 'moon; month', (2) 'to say', zlag-pa 'to lap up' (Nornang), zla-bo 'helper; spouse', and zlog-pa 'to drive back'.

B-type changes, applied to *s-ạ-lag-pa, *s-ạ-la-gu, yield ldag-pa 'to lick' (Jäschke) and lda-gu 'discourse, speech'. First in the changes which account for the transition from ld to spoken Tibetan t-, -Ṽt- is the change from ld to nd:

32. l changes to n before dental stops. ld- ⟶ nd-

(Cf. WT da-lta, ST thā̃tā [thā̃tā, thantā] 'now'; WT dpal-ldan, ST pā̃tɛ̃̄ɛ̃̄ [pā̃tɛ̃̄ɛ̃̄, pantɛ̃̄ɛ̃̄] n.pr. of a man.) This stage is represented medially where morphemes in which spoken Tibetan initial t- corresponds to written Tibetan zl- have noninitial allomorphs with nasality preceding the dental stop. Examples:

	WT	ST	
		initial	noninitial
'moon; month'	zla-ba	tawā	honorific: šũũtāā (cf. lhāqpā 'wind'; honorific: šuulāà)
'to drive back'	zlog	tɔɔ́	qāātɔ̄ɔ̄ šaptɛ̃̄ɛ̃̄ 'a religious ceremony to ward off qāà (the bad luck associated with certain years--one's 13th, 25th years, and so on, i.e. the years following each twelve-year cycle)' sī̀tɔ̀ɔ̀ šaptɛ̃̄ɛ̃̄ 'a religious ceremony to drive off sī (demons, vampires: WT sri)'

'spouse'	zla-bo		qūtā̀ 'spouse' (honorific. ST qū- : WT sku-; cf. thāà 'blood', honorific: qūthāà)
'to lick'	zlag	taà	chʌmtūū matāà! or chʌmtūū mătāà! 'Don't eat the chʌmtūū!'

Two changes lead from nd- to spoken Tibetan t-:

35. Of consonants in initial clusters, all but the final consonant are lost. nd- ⟶ d-

37. Voiced stops in absolute-initial position or preceded by a nasal are devoiced. d- ⟶ t-

This brings us from Proto-Tibetan *s-a-l- to spoken Tibetan t- in the following derivations: *s-a-la-ba ⟶ ST tawā 'moon; month', *s-a-log ⟶ ST tɔ̀ 'to ward off', and *s-a-lag ⟶ ST taà 'to lick, lap up'.

We then reconstruct the same s-, bs-, bs-, s- series of prefixes for zlag (ldag) 'to lick' which we found attested for bases with voiced nasals and liquids (II.1); zlog 'to cause to return' appears to lack the b- in the perfect:

1. Causative? WT z-lag-pa, bz-lag-s, bz-lag, z-log (or l-dag-pa, bl-dag-s, bl-dag, l-dog) ≺ *s-a-lag-pa, *bs-a-lag-s, *bs-a-lag, *s-a-log 'to lick'

ST taà 'to lap up (liquids, of animals); to eat (semi-liquids, of animals or human beings), e.g. ŠimTì omā taàpʌ reè 'The cat lapped up the milk', ŋɛ̀ chʌmtūū taàpʌ yīī 'I ate some chʌmtūū [a mixture of tea, baked barley flour, dried cheese, and butter]'

2. WT z-log-pa, z-log-s, bz-log (< *s-ạ-log-pa, *(b?)s-ạ-log-s, *bs-ạ-log) 'to cause to return: to drive back, repulse (an army); to dispel, expel (evil spirits); to send back; to avert, prevent'

ST tɔ̱ɔ̀ 'to be prevented, warded off, driven off [of great misfortunes, war, famine, epidemic, drought]' (< *s-ạ-log or *ạ-log?), e.g. mu̱qī tɔ̱ɔ̀pʌ re̱è 'Famine was warded off' ['We warded off famine': ŋã̱tsȍ̈o mu̱qī tɔ̱ɔ̀ r(u) cūùpʌ yī̱ī]; šap̱tɛ̄ɛ̄ nāǎ ni, ŋɛ̱ɛ qāà tɔ̱ɔ̀pʌ re̱è 'He (or They) performed a religious ceremony and warded off the bad luck of my inauspicious year)'

B. *ạ-r-.

We reconstruct *s-ạ-r- where we find a causative in WT sr- with a noncausative counterpart in WT ạ-dr- (e.g. s-re-ba 'to mix' : ạ-dre-ba 'to be mixed with'). Though sr- can derive simply from s prefixed to r (as in s-riṅ-ba 'to extend, stretch, prolong', riṅ-ba 'long' [II.5]), we cannot assume a basic r here.

Where written Tibetan has sr- : ạ-dr- we assume a basic *ạ-r-; where written Tibetan has skr- : ạ-dr- we recognize two possible origins for the sequence skr-: *s-ạ-r- or *s-ạ-dr- (e.g. skrog-pa 'to rouse, scare up' : ạ-drog-pa 'to wince, shrink, quiver, start from fear'). Whatever we decide about the origin of skr-, we must posit three lines of development for *s-ạ-r- sequences. A branches off from B and C

when it loses a-chung while B and C retain it. B and C separate when in C d changes to t. Line A leads to WT sr-, and from there to ST s-; line B leads to WT ld-; line C leads to WT skr-, and from there to ST ṭ- (cf. *s-ạ-ras-mo 'daughter' [p.], WT sras-mo [A], ST sɛ̄ɛ̄mō [A] and, more commonly, ṭɛ̄ɛ̄mō [C]. (For details, see IV.7.)

Other examples of the dual development of *s-ạ-r- in spoken Tibetan:

1. *s-ạ-r- ⟶ *s-r- ⟶ s-

The loss of r after a consonant, though relatively rare, is not without parallel: cf. WT phra, ST phā 'gem' in ālōō phʌsūmʌ (rarely ṭhʌsūmʌ) 'an earring with three gems'.

For sras 'son' (p.), ST sɛ̄ɛ̀, we posit *s-ạ-r- rather than *s-r- because of the doublets sɛ̄ɛ̄mō, ṭɛ̄ɛ̄mō 'daughter' (p.). Since we have no variants for the following examples, it is not clear whether the s- derives from *s-ạ-r- or *s-r.

WT	ST
sri 'devil, demon, vampire'	sī
srid 'to be possible'	sīì 'to occur'
sraṅ	sāŋ̄ [a monetary unit]
sru-mo (Jäschke; Nornang: sro-mo) 'maternal aunt'	sōmō

2. *s-ạ-r- ⟶ (*)skr- ⟶ ṭ-

(b)sregs, pft. to sreg-pa; skrag in ša-skrag 'roast meat' (Nornang)	ṭāà 'to roast'

	A	B	C
	*s-ạ-ro → sro 'to warm'	*s-ạ-re → lde 'to warm one's self'	*s-ạ-rog-pa → skrog-pa 'to rouse, scare up'?
9. The loss of noninitial a-chung begins.	*s-ạ-r- → sr-		
10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung		*s-ạ-r- → *s-ạ-d-r-	*s-ạ-r- → ***s-ạ-d-r-**
12. Noninitial a-chung is lost.		*s-ạ-d-r- → *s-dr-	*s-ạ-d-r- → *s-dr-
6. s devoices an immediately following voiced stop.			*s-dr- → *s-tr-
15. A dental stop changes to a velar before dentals, palatals, and r.			*s-tr- → *s-kr-
19. Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.		*s-dr- → *s-rd-	
5. s changes to r before voiced nasals and liquids.		*s-rd- → *r-rd-	
20. Potential geminate clusters are simplified to single segments.		*r-rd- → *rd-	
21. r is fronted to l before dental stops.		*rd- → ld-	

2. *s-ạ-r- ⟶ (*)skr- ⟶ ṭ- (cont.)

srad-ma, sran-ma 'peas'	ṭēmā̄, ṭɛ̄mā̄
srab 'bridle'	ṭʌ̄p
sram 'otter' ('seal'?)	ṭām
(b)sruṅs, pft. to sruṅ-ba 'to guard'	ṭū̀ū
srum, skrum 'meat' (p.)	ṭūpāà 'pork' (p.), sū(ū)ṭūm̀ 'meat' (p.)

For bases in *ạ-r- we have once again the causative prefix series s-, bs-, bs-, s-. For example:

1. Causative: WT s-re-ba, bs-re-s, bs-re, (b)s-re-s 'to mix'

ST ṭēe 'to cause to get mixed together, i.e. to mix', e.g. ŋɛ̱ɛ̀ chū ṭaa o̱mā ṭēèpʌ yīī 'I mixed water and milk'

Noncausative: WT ạ-d-re-ba (< *ạ-re-ba), ạ-d-re-s, ____, ạ-d-re-s 'to be mixed with'

ST ṭeè 'to get mixed together', e.g. chū tʌ nūm ṭe̱è su 'The water and oil got mixed together'

2. Causative: WT s-roṅ-ba, bs-raṅ-s, bs-raṅ, s-roṅ(s) or bs-raṅ 'to make straight, straighten'

ST ṭōò 'to cause to become straight, i.e. to straighten', e.g. ŋɛ̱ɛ̀ cʌ̄ʌquūù ṭōòpʌ yīī 'I straightened the wire'

Noncausative: ST ṭōò (< *ạ-droṅ-s < *ạ-roṅ-s) 'to become straight', e.g. cāŋtā ti̱ yaqō chi ṭōò chu 'This knitting needle got straightened out very well'

One of the adjectives meaning 'straight', bs-raṅ-po, would then derive from the causative. The other two would derive from the noncausative: draṅ-po (with loss of a-chung) and ạ-groṅ(s)-po (≺ *ạ-droṅ-s, with optional change of d to g; note that Jäschke attributes ạ-groṅs-po to Tsang, indicating a possible dialectal distribution for this change).

3. Causative: WT s-ro-ba, (b)s-ro-s, bs-ro, (b)s-ro(s) 'to warm, make warm'

Noncausative: WT d-ro-ba, d-ro-s 'to be warm'

ST ṭhöö̀ 'to get warm', e.g. maa ňīmēè̀ ṭhöö̀pʌ reè 'The butter was warmed by the sun', tha ŋa ṭhöö̀ chu 'Now I am warm'

The initial dr- of dro-ba, dro-s may derive from *ạ-r- ≺ *ạ-dr-, with early loss of the initial a-chung. In one, admittedly less extreme, case we reconstruct from its medial retention in the spoken Tibetan reflex of nasality an initial a-chung before dr- (*ạ-dr- ≺ *ạ-r-?); this is confirmed in written Tibetan compounds. In written Tibetan the initial a-chung is preserved in the verb (along with a-chung-less variants), but not in the noun; in spoken Tibetan it has left no trace initially in either noun or verb:

WT dri-ba 'question'	:	ST ṭhiwʌ̄ (≺ *dri-ba ≺ *ạ-dri-ba?)
WT bka-ạ-dri 'question' (p.)	:	ST qʌ̄ṭī (≺ *bka-ạ-dri)
WT gros-ạ-dri-sa 'the place where advice may be asked, an oracle'	:	ST ṭhöö̀ ṭhisʌ̄
WT ạ-dri-ba, ạ-dri-s; also dri-ba, dri-s (Das)	:	ST qɛ̄cā ṭhiì 'to ask a question' (≺ *dri-s ≺ *ạ-dri-s?)

Apparently related to the base *ạ-ro 'to be warm; to get warm', with e : o ablaut, is the verb lde-ba 'to warm one's self' : WT lde-ba, (b)lde-s, b-lde, lde-s < *s-ạ-le-ba, *(b)s-ạ-le-s, *bs-ạ-le, *s-ạ-le-s.

4. WT s-reg-pa, (b)s-reg-s, bs-reg, (b)s-reg(s) 'to burn; to roast, fry, bake'

ST ṭāà 'to burn, roast, bake, fry', e.g. ŋɛ̱ɛ̀ šā ṭāàpʌ yī̱ī̱ 'I roasted the meat'

Here WT sreg-pa illustrates A-type changes; ST ṭāà and WT ša-skrag 'roast meat' illustrate C-type changes. (Both WT -eg and WT -ag correspond to ST -aà.)

5. Causative: WT s-krog-pa 'to rouse, scare up' (< *s-ạ-drog *s-ạ-rog?)

ST ṭɔ̄ɔ̀ 'to cause to be disturbed, startled, excited (and hence to be dispersed)', e.g. ŋɛ̱ɛ̀ qhȫȫ tā ṭɔ̄ɔ̀pʌ yī̱ī̱ 'I startled (and scattered, dispersed) his horses (e.g. by throwing stones at them'

Noncausative: WT ạ-drog-pa 'to wince, shrink, quiver, start, from fear' (< *ạ-rog?)

ST ṭɔ̱ɔ̀ 'to be disturbed, startled, excited (and hence to be dispersed)', e.g. tā ṭɔ̱ɔ̀pʌ re̱è 'The horse was startled'

C. *ạ-lh-.

To the sequence of changes *ạ-l- ⟶ *ạ-d-l- ⟶ WT ld- (in e.g.

ldog-pa, log 'to return') we find a parallel *a̤-lh- → *a̤-t-lh- → WT lt- (in e.g. ltuṅ-ba, lhuṅ 'to fall'):

10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*a̤-l	→	*a̤-d-l	*a̤-lh	→ *a̤-t-lh
11.	Aspiration is lost in noninitial position.				*a̤-t-lh	→ *a̤-tl
18.	A consonant followed immediately by a sequence of a stop and a lateral is lost.	*a̤-dl	→	*dl	*a̤-tl	→ *tl
19.	Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.	*dl	→	ld	*tl	→ lt

If *a̤-lh- yields lt-, what do *s-a̤-lh-, *bs-a̤-lh- yield? There is reason to believe that these sequences lead to WT kl-, bkl-, in the following way:

10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*s-a̤-lh	→	*s-a̤-t-lh	*bs-a̤-lh	→ *bs-a̤-t-lh
11.	Aspiration is lost in noninitial position.	*s-a̤-tlh	→	*s-a̤-tl	*bs-a̤-tlh	→ *bs-a̤-tl
12.	Noninitial a-chung is lost.	*s-a̤-tl	→	*stl	*bs-a̤-tl	→ *bstl
15.	A dental stop changes to a velar before dentals, palatals, and r.	*stl	→	*skl	*bstl	→ *bskl
18.	A consonant followed immediately by a sequence of a stop and a lateral is lost.	*skl	→	kl	*bskl	→ bkl

We then find the prefix series s-, bs-, bs-, s- in klog-pa 'to read':

WT k-log-pa, (b)k-lag-s, (b)k-lag, k-log (or lhog-s)
(< * s-ạ-lhog-pa, *[b]s-ạ-lhag-s, *[b]s-ạ-lhag.
*s-ạ-lhog)

ST lɔ̄ɔ̀ [from the present], e.g. ŋɛ̲ɛ̀ the̲p ti̲ lɔ̄ɔ̀pʌ yī̲ī̲
'I read this book'

The written Tibetan imperative lhog-s and the cognate spoken Tibetan verb lhɔ̄ɔ̀ 'to be able to read' (e.g. ŋɛ̲ɛ̀ yi̲gī lhɔ̄ɔ̀ chu 'I am able to read') witness to the voiceless lateral initial of the base for 'to read'. s-, bs-, bs-, s- added directly to lh would yield sl-, bsl-, bsl-, sl-; we infer that s-, bs-, bs-, s- were added to a base *a-lhog, which contained a primary prefix.

Another possible source for written Tibetan initial kl- is *b-lh-. *b-l- may change to gl-, as in lan 'an answer', (lan) g-lan-pa (< *b-lan-pa) 'to answer' (cf. Appendix 2). We may assume a parallel change, *b-lh- → k-l-; for the doublets klad-pa (ST lɛ̄pā), glad 'brain' we posit two sequences of changes:

2.	A voiced stop is devoiced before lh.	*b-lhad → *p-lhad	
3.	A labial stop changes to a dental before any consonant other than the prefix s-.	*p-lhad → *t-lhad	*b-lhad → *d-lhad
11.	Aspiration is lost in noninitial position.	*t-lhad → *t-lad	*d-lhad → *d-lad
15.	A dental stop changes to a velar before dentals, palatals, and r.	*t-lad → k-lad	*d-lad → g-lad

k-lub-pa, k-lub-s 'to cover, e.g. the body with ornaments' may also derive from *b-lh-; cf. lhub-pa 'to bind, tie, fasten, e.g. ornaments to the ear' (Jäschke: in Tsang = klub-pa).

We posit devoicing of a voiced stop before no initial other than lh-. (In the voicing alternation of the epenthetic stop we assume no basic alternant.) Though b- may change to g- before voiceless dental stops, it is not devoiced (cf. WT b-tug-pa or g-tug-pa, g-tug-s 'to meet with', ST tūù̀ 'to go to meet' : WT thug-pa 'to meet', ST thūù̀ 'to [chance to] meet'). There are two possible reasons for this: (1) b-tug-pa, g-tug-pa were derived from *tug, i.e. prefixation preceded the shift of voiceless unaspirated stops to voiceless aspirated stops (cf. VII.7 ff.). (2) The phonetic difference we find today between voiceless aspirated stops and the voiceless lateral is of long standing. This difference is that the aspiration of the stop follows the stop's release, whereas the voiceless lateral is preaspirated. (Ladefoged 1967.5-6: 'Sounds in which a period of voicelessness occurs before and during the formation of a stricture are said to be preaspirated.' In spectrograms of current Lhasa speech the vertical line marking the lateral release is preceded and followed by periods of voicelessness roughly equal to each other in duration; in the period preceding the lateral release may be seen negative transitions--from higher to lower frequencies--reflecting the movement of the tongue from the position of rest to the position of articulation.) We infer that the preaspiration of lh- in some instances devoiced a preceding consonant.

V. Bases with voiceless-stop initials.

The causative paradigm for bases with voiceless-stop initials (which may be preceded by a-chung and/or followed by y or r) has in written Tibetan the prefixes s-, bs-, bs-, and s-. When the initial of the base is a labial, the b- of the perfect and future prefixes is lost by dissimilation. For example:

A. *k-

1. Causative: WT s-kol-ba, bs-kol, bs-kol 'to boil'

ST qȫȫ 'to cause (liquids) to boil', e.g. ŋɛ̲ɛ̀ cha̲ qȫȫpʌ yī̲ī̲ 'I boiled the tea'

Noncausative: WT a̤-khol-ba, khol 'to boil, be boiling'

ST qhȫȫ, e.g. chū qhüüqīì 'The water is boiling'

2. Causative: WT s-kum-pa, bs-kum-s, bs-kum, s-kum-s 'to contract, draw in'

ST qūm̀ 'to cause to get retracted, contracted, shrunk', e.g. ŋɛ̲ɛ̀ ūmsūù tüütüü qüpʌ yī̲ī̲ 'I made my sweater shrink (e.g. by boiling it)', 'I made my sweater smaller (e.g. while knitting it)'

Noncausative: WT a̤-khum-pa, khum-s 'to shrink, be contracted'

ST qhūm̀ 'to get retracted, contracted, shrunk', e.g. ŋɛ̲ɛ̲ ūmsūù tüütüü qhūm̀ šaa 'My sweater has shrunk'

B. *t-

1. Causative: WT s-tim-pa, bs-tim-s, bs-tim, s-tim-s

ST tīm̀ 'to cause to be submerged, penetrated', e.g.

qhòo chuu nāā lʌ tīpʌ rèe 'He submerged it in water'

Noncausative: WT thim-pa (or a-thim-pa)

ST thīm̀ 'to merge with, be fused, vanish into', e.g. ŋɛɛ ŋuu qhāāqā thep ñoyāà lʌ thīm̀ su 'All my money vanished in the purchase of books'

2. Causative: WT s-tun-pa, bs-tun, bs-tun

ST tuu 'to cause someone to become friendly, to placate', e.g. ŋɛ̀ɛ̀ ʌ̄qū laà lʌ tūpʌ yīī 'I was nice to (made concessions to) my uncle (to make him happy)'

Noncausative: WT a-thun-pa

ST thuu 'to become friendly; (with or without lō or sāmlō) to agree', e.g. ŋʌñīì thuu chu 'We two became friendly; we got along fine', ŋʌñīì sāmlō thuu chu 'We two agreed'

C. *p-

1. Causative: WT s-pel-ba

ST pēē or pēr 'to cause to be increased (by expansion); to cause to alternate', e.g. ŋātsòo tunʌ̄ pēēpʌ yīī 'We alternated the grains; we caused the varieties of grains to be increased'

Noncausative: WT a-phel-ba, phel

ST phēē or phēr 'to be increased, expanded', e.g. tʌñīī nɛɛ sùu, luù phēr chu 'Counting from last year; my sheep

increased in number', ṭɛ̀ ti phēē chĕpō tuù 'This rice expands a great deal (when it is coooked)'

2. Causative: WT s-por-ba or s-par-ba, s-par, s-par

ST pār 'to cause to get increased; to cause to get added to', e.g. thalō qhāātāà qhi qhāālā pār šaa 'This year the landlord has raised the rent'

Noncausative: WT a-phar-ba

ST phār 'to be/get increased, added to', e.g. thalō ṭũpʌ̄p phār šaa 'This year the amount of grain harvested has gone up', chaqōò phār šaa 'The price of tea has gone up'

3. Causative: WT s-po-ba, s-po-s, ____, s-po-s

ST pōò 'to cause to be transferred', e.g. ŋɛ̀ɛ̀ qhō lhɛ̄ɛ̄sā nɛɛ šiqʌ̄tsē lʌ pōòpʌ yĪĬ 'I transferred him (or: helped him to move) from Lhasa to Shigatse'

Noncausative: WT a-pho-ba, a-pho-s, ____, a-pho-s

ST phōò 'to be transferred', e.g. ŋa phōò chu 'I was transferred (or 'My job ended; I moved on', but never 'I was dismissed')

D. *ky-

1. Causative: WT s-kyil-ba, bs-kyil, bs-kyil 'to bend; to shut up, dam up'

ST kĪr 'to cause a pool [of water] to form; to store water', e.g. ŋɛ̀ɛ̀ tsiŋ qhi nāā lʌ chū kĪrpʌ yĪĬ 'I stored the water in a pit dug in the ground'

Noncausative: WT a-khil-ba 'to wind, to twist, to flow together'

ST khĪr [favored, except with the negative prefix] or khĪĪ

'to form [of a pool of liquid] by itself, e.g. o̲mā khīr šaa 'The [spilled] milk has formed a pool'.

2. Causative: WT s-kyur-ba, bs-kyur, bs-kyur 'to throw (away, off, down); to give up, abandon'

Noncausative: WT a̤-khyur-ba 'to be separated, divorced'

ST khūr or khūū 'to be separated from a position after completion of one's term of duty', e.g. ŋa̲ mʌ̄ʌ̄mī (nɛɛ) khūr chu 'I was discharged from the army'

3. Causative: WT s-kyom-pa, bs-kyom-s, bs-kyom, s-kyom(-s) 'to shake, agitate, stir up'

ST kōm̀ 'to cause [liquid] to get shaken up', e.g. ŋɛɛ̀ cha̲ kȭpʌ yī̱ī̱ 'I shook the tea'

Noncausative: WT a̤-khyom-pa, a̤-khyom-s 'to rock, to wave; to reel, to stagger'

ST khōm̀ 'to get shaken', e.g. cha̲ khōm̀ šaa 'The tea has been (accidentally) shaken'

E. *ty-

There are no dental stops followed by y in written or spoken Tibetan. For two reasons we assume that there were such sequences in Proto-Tibetan, but that they had become palatal affricates by the time of written Tibetan: (1) There is a gap in the distribution of stops followed by y in written Tibetan (by, *dy, gy; phy, *thy, khy), and, though phy occurs in written Tibetan, there are doublets with phy : tšh where we assume phy to represent

the earlier form which went through a stage *thy before becoming tšh (cf. a-phyug[s]-pa, a-tšhug-pa 'to be mistaken'). The changes which led directly from *ty to tšh were completed before the written Tibetan stage; those which went from *py through *ty to tšh took longer, but the correspondence of WT phy : ST ch [tšh] is now regular (cf. WT phyed-ka, ST chēqā 'half', WT phyag, ST chāà 'hand' [p.]). (2) We will posit changes leading from *dy to dž in certain derivations where comparative evidence suggests a dental stop (VIII.88-9).

F. *py-

Causative: WT s-pyaṅ-ba, s-pyaṅ-s 'to suspend, make hang down' ST cāŋ̀ 'to keep (on the body, in the mind)' ['to cause to touch'?], e.g. ŋɛ̀ tūŋʌ̄ soqɔ̄ cāŋ̀pʌ yǐǐ 'I kept a charm on my body', ŋɛ̀ sēm̀ lʌ cāŋ̀ tɛ̀ yöö̀ 'I keep it in mind'

Noncausative: WT a-phyaṅ-ba, a-phyaṅ-s 'to hang down; to cling to' ST chāà 'to touch', e.g. phūŋpóó mhācāàpʌ chɛ̀ ' ... and they don't touch the corpse'

Since we know that b may become d before labials (cf. Appendix 2), we view the forms given by Jäschke as alternates to s-pyaṅ-ba, etc., i.e. d-pyaṅ-ba, d-pyaṅ-s, ____, d-pyaṅ-s, as active but not causative and as deriving from forms with *b- prefixes (cf. d-pog-pa, d-pag-s, d-pag 'to measure; to judge', and, for an example of varying prefixes among nouns, a-phaṅs, d-paṅs ← *b-paṅs, s-paṅs 'height').

G. *kr-

Causative: WT s-krog-pa

ST ṭɔ̄ɔ̀ 'to cause to get churned (i.e. to churn) milk'

Noncausative: ST ṭhɔ̄ɔ̀ (< *[ạ-]khrog[-s]?) 'to get churned (of milk)'

Jäschke cites skrog-pa and dkrog-pa as equivalents, both meaning either 'to stir, churn' or 'to rouse, scare up'. Here we posit, as we did for spyaṅ, dpyaṅ 'to suspend', alternate prefixes, with s-krog a causative and d-krog an active form, deriving from *b-krog. Two other examples of dkr- we would then also explain as actives and deriving from *b-kr-:

1. WT d-kri-ba, d-kri-s 'to wind, wind up'

   ST ṭīì 'to wrap around someone', e.g. pūqōō qāpāā ṭīì! 'Wrap a blanket around the child!'

cf. WT ạ-khri-ba, ạ-khri-s 'to wind, roll, twist' and WT ạ-khril-ba 'to wind or coil around'; ST ṭhīī 'to get wrapped around someone' corresponds to WT ạ-khril (e.g. āwāā lʌ chʌ̄ʌ̄pūū pīṭōò ṭhīī nāāpʌ reè 'The yarn got wrapped around the child')

2. WT d-krug-pa (or b-krug-pa), d-krug-s 'to stir, stir up, agitate'

   ST ṭūù 'to mix up or put in disorder, to disturb'

cf. WT ạ-khrug-pa, ạ-khrug-s 'to be disturbed'

   ST ṭhūù 'to get mixed up or in disorder'

The written Tibetan causative s-prug-pa, s-prug-s, ____, s-prug-s 'to stir up' is undoubtedly cognate with d-krug-pa, d-krug-s; both probably derive from a base *[ạ-]prug. Spoken Tibetan ṭūù is formally derivable from either dkrugs or sprugs.

H. *tr-

There is no *thr- in written Tibetan. That is, there are no forms in which *tr- underwent the pre-written-Tibetan devoicing shift to become aspirated (cf. VII.23): the metathesis of sequences of dental stops followed by liquids had preceded this shift. Examples of written Tibetan tr- (e.g. tri-šu-la [Sanskrit triśūla] 'trident') are, like other examples of voiceless unaspirated stops, late loans, dating from after the shift.

Where, then, are the bases in rt- < *tr-? For doublets in rt- : st- we assume (1) *s-ạ-t-, (2) the optional change of s to r before voiced nasals (including a-chung) as the source of differentiation, and (3) the subsequent loss of a-chung in both variants. So, r-tab-pa, s-tab-pa 'to be in a hurry' *s-ạ-tab-pa; r-tuṅ-ba, s-tuṅ-ba 'to shorten' < *s-ạ-tuṅ-ba (cf. thuṅ-ba 'short'). Where there is no st- variant, two origins are possible, i.e. either *s-ạ-t- or *tr-. For example: r-tqg-pa, br-tag-s, br-tag, r-tog-s 'to consider, search into, look through' could derive from either *s-ạ-tog-pa or *s-trog-pa.

But there is still another place to look for *tr- initials: in verbs with written Tibetan lt-. Take, for example, WT lta-ba, blta-s, blta, lto-s (or blta) 'to look' (ST tɛ̀ɛ̀, tā, e.g. ŋɛ̀ mɔɔ tɛ̀ɛ̀pʌ yī̀ 'I looked at her'). Assume a root *tra with s-, bs-, bs-, s- prefixes; four changes would bring *s-tra, *bs-tra-s to written Tibetan lta, bltas:

19.	Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.	*s-tra	→	*s-rta	*bs-tra-s	→	*bs-rta-s
5.	s changes to r before voiced nasals and liquids.	*s-rta	→	*r-rta	*bs-rta-s	→	*br-rta-s.
20.	Potential geminate clusters are simplified to single segments.	*r-rta	→	*rta	*br-rta-s	→	*brta-s
21.	r is fronted to l before dental stops.	*rta	→	lta	*brta-s	→	bltas.

If we accept the origin of lta in a root *tra we may consider the possibility of a cognate relationship for lta-ba, blta-s, blta, lto-s 'to look' and rtog-pa, brtag-s, brtag, rtog-s 'to consider, search into, look through', the two verbs differing essentially in the presence or absence of the -g- affix, an affix seen also in s-nye-g(s)-pa 'to hasten or run after, to overtake' (cf. nye-ba 'to be near') and b-du-g-pa 'to fumigate' (cf. du-ba 'smoke'). In the a : o ablaut of rtog-pa, brtag-s, a is basic to o. The perfect *bs-tra-g-s would, then, have undergone the first three changes undergone by *bs-tra-s above, omitting only the final change, the fronting of r to l; this omission may have been due to the following back -g-.

Note that modern spoken Amdo, which has prefixes, does not have the prefix l-. The traditional view (see Roerich 1958.28 f.) is that written Tibetan l- became r- in Amdo ^{r}ta-j^{i}o 'to look'. Another possible explanation is that in at least one dialect, represented by written Tibetan, some instances of r- became l-; in Amdo, this change did not take place.

I. *pr-

1. Causative: WT s-pro-ba, s-pro-s 'to make go out'

Noncausative: WT ạ-phro-ba, ạ-phro-s 'to proceed, issue, emanate from'

2. Causative: WT s-prul-ba 'to juggle, ṭo make phantoms appear, to change, to transform (one's self)'

ST ṭüü 'to transform' ('to cause to experience a transformation'?), e.g. lāmɛ̄ɛ̀ qhūyūù lʌ ṭüü nāāpʌ reè 'The lama transformed himself into a cuckoo', ŋɛɛ̀ chi̲ū lʌ ṭüüpʌ yĭĭ̲ 'I transformed it into a bird'

Noncausative: WT ạ-phrul-ba

ST ṭhüü 'to experience a transformation'?, e.g. qhöö mĭ̀ì ṭhüüpʌ reè 'His eyes misled him; what he saw was not real'

VI. Bases with voiceless spirant, voiceless affricate initials.

A change common to the group of initials comprising spirants and affricates is the loss of an immediately preceding s. (There is one exception to this statement in written Tibetan: stsol-ba 'to give'.) A perhaps less common change, limited to the subgroup of voiceless affricates, is deaffrication when s precedes. (s may, however, be lost without having caused deaffrication.) This change may be followed by the loss of the s, as in nyi-šu '20', which derives from *nyis-tšu (cf. g-nyis '2', b-tšu '10') by way of *nyis-šu. Thus Li assumed (1933.140-1) that where in cognates voiceless spirants alternate with voiceless affricates the affricate is basic and that an *s- prefix accounts for the deaffrication of tsh to s and tšh to š. That is, sib-bu 'a sort of smallpox, measles' would derive from the addition of an *s- prefix to the tshib- of tshibs 'measles'.

The deaffrication of voiceless affricates when s precedes is, however, not followed by the loss of the s when this is word-final and the affricate is enclitic-initial. So, the tšig of g-tšig 'one' has the enclitic alternants (meaning 'a; a few') tšig after stops, šig after s, and žig after vowels and liquids (tš was voiced to dž after these voiced sounds; dž underwent the general deaffrication of voiced affricates [X.32, change 8]). Under the same conditions the enclitics tšes 'so, thus' and tšiṅ (a gerundial particle) have the alternants šes, žes and šiṅ, žiṅ. (For an attempt to derive these enclitics from basic forms with voiced-spirant initials see Miller 1970.80 ff.; note that if g-tšig 'one' derived from *g-žig, 'four' should be *b-tši, not b-ži.)

If s- is separated from a spirant or affricate by an intervening a-chung it is susceptible to the change appropriate to this environment, i.e. it may optionally

be changed to r. If this option is not exercised, when noninitial a-chung is lost, s- goes with it, leaving behind either a spirant or an affricate initial, depending on whether the loss of a-chung preceded or followed the production of an epenthetic stop. For example:

(a)	5.	s changes to r before voiced nasals and liquids.	*s-a̓-s-	⟶ *r-a̓-s-
	10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*r-a̓-s-	⟶ *r-a̓-t-s-
	12.	Noninitial a-chung is lost.	*r-a̓-t-s-	⟶ rts-
(b)	9.	The loss of noninitial a-chung begins.	*s-a̓-s-	⟶ *s-s-
	13.	s is lost before spirants and affricates.	*s-s-	⟶ s-
(c)	10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*s-a̓-s-	⟶ *s-a̓-t-s-
	12.	Noninitial a-chung is lost.	*s-a̓-t-s-	⟶ *s-t-s-
	13.	s is lost before spirants and affricates.	*s-ts-	⟶ *ts-
	22.	Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.	*ts-	⟶ tsh-

Any instance of tsh may, then, derive from *s-a̓-s (or *ts or *s-ts). It may also derive from *a̓-s. In written Tibetan, many words with aspirated voiceless stop and affricate initials have a doublet with a preceding a-chung. We assume here the loss of a-chung in one form (one dialect?). We also assume that in some

instances initial a-chung has been entirely lost in written Tibetan; this assumption has some support in spoken Tibetan, where the reflex of medial nasality allows us to reconstruct an a-chung initial of which there is no trace in written Tibetan: (1) WT tshon 'color, paint' : ST tshöö < *a-tshon < *a-son (cf. to 'stone', tomtsöö 'paint made from stone'; maa 'butter', määtsöö 'colored butter'); (2) WT tsho, plural termination : ST tsho < *a-tsho < *a-so (cf. ŋa 'I', ŋätsō 'we'; qhō 'he', qhōtsō 'they'), which may be related to WT so-so 'distinct, singly'.

There are, then, two possible explanations for s- : tsh- or š- : tšh- doublets. (The derivation nyi-šu '20' < *nyis-tšu is, of course, unambiguous.) We could, following Li, derive the doublets for 'measles', sib-bu and tshib-s, from *s-tsib-bu, *tsib-s; or we could derive them from either *a-sib or *s-a-sib, with the loss of a-chung in one form leading to *a-sib, *sib or *s-a-sib, *s-sib. Either *a-sog or *tsog could be the source of sog, tshog in the following group of cognates: sog-pa, b-sag-s, b-sag, sog-s 'to gather, heap up'; tshog-s 'an assemblage, accumulation'; a-tshog-s-pa, tshog-s 'to assemble'. The š- : tšh- of tšhom-pa, a-tšhom-s-pa 'to be finished, accomplished', šom-pa 'to prepare, make ready' may derive from *s-dž- (→ *s-tš- → *tš- [→ tšh] or š-); cf. a-džom-s-pa 'to finish'.

A. Bases with dental initials.

There are verbs with s- initials which clearly have the s-, bs-, bs-, s- series of prefixes. The only change we need assume is the loss of s before spirants (though deaffrication is also a possibility). For example:

1. WT sel-ba, b-sal, b-sal, sol 'to remove, especially impurities, to cleanse'
2. WT sem(s)-pa, b-sam-s, b-sam, som 'to think'

   ST sām, e.g. khörā chipʌ reè sām chu 'I thought you were gone'

3. WT saṅ-ba, (b-)saṅ-s, (b-)saṅ 'to do away with, cleanse'

ST sāŋ̀ (or sāà) 'to unblock, unclog (e.g. pipes, gutters, holes in needles)', e.g. ŋ ɛɛ̀ ṯqŭŭ sāŋ̀pʌ yĭĭ (or sāàpʌ yĭĭ) 'I unclogged the hole'

The s-, bs-, bs-, s- prefixes appear before the voiceless dental affricate as r-, br-, br-, r-. rts- we derive from *s-ạ-s-, brts- from *bs-a-s-. For example:

4. WT r-tsom-pa, (b)r-tsam-s (or r-tsom-s), br-tsam, r-tsom(-s) 'to begin, to make, to compose'

ST tsōm̀ 'to author (a book), to conceive (an idea), to invent (something)', e.g. qhöö̀ loŋɛɛ chʌʌšĭ tsōpʌ reè 'He conceived the five-year plan'

5. WT r-tseg-pa, (b)r-tseg-s, br-tseg, r-tsog 'to pile up'

ST tsāà, e.g. ŋ ɛɛ̀ thep tsāàpʌ yĭĭ 'I piled up the books'

In one case there is a causative to a base with initial s- where we reconstruct the prefixes ạ-, bs-, b- (b- optionally changes to g- before s-; cf. Appendix 2):

6. Causative: WT ạ-tsho-ba, (b)so-s, g-so 'to nourish, to pasture, to feed'

ST söö̀ 'to raise, take care of (e.g. a child, a dog)', e.g. ŋɛɛ̀ pūqū ṯi söö̀pʌ yĭĭ 'I raised the child'

Noncausative: WT ạ-tsho-ba, so-s, ____, so-s 'to feed, to graze'

With only *b- prefixes we find active forms of this base:

WT: g-so-ba, g-so-s, (b)so-s 'to feed, to nourish'

ST: sōōˋ would be the appropriate reflex for either b-so-s or g-so-s.

We find one base with a voiceless dental-affricate initial where we may posit the prefixes a-, bs-, b-, s-:

7. Causative: WT a-tsho-d-pa (or a-tshe-d-pa), b-tso-s, b-tso, tsho-s (or tsho-d) 'to cook, bake, dye'

ST tsōōˋ, tsō 'to cause (solids) to get boiled', e.g. ŋɛɛ́ qoŋā tsōōˋpʌ yĭĭ 'I boiled the eggs'

Noncausative: ST: tshōōˋ (< *[a-]tsho-d, *tsho-s?) 'to get boiled (of solids)', e.g. šā tshōōˋ šaa 'The meat is boiled'

If we judge btsos to be a causative, we will posit the prefixes a-, bs-, b-, s- here; we will later reconstruct these prefixes for causatives to bases with voiced-stop initials. While it is not certain that btsos is a causative--we may have here the prefixes a-, b-, b-, Ø- which we find in, for example, a-thag-pa, b-tag-s, b-tag, thog 'to grind' (ST tāà, e.g. ŋɛɛ́ tsăpā tāàpʌ yĭĭ 'I ground the tsăpā')--the apparent parallel in the causatives used for other cooking processes suggests that it is. For example: WT s-kol-ba, bs-kol, bs-kol 'to boil', ST qōō 'to cause (liquids) to boil' (V.1); r-ṅo-d-pa, br-ṅo-s, br-ṅo, r-ṅo-d (or r-ṅo-s) (< *s-ṅo-d-pa, *bs-ṅo-s, etc.) 'to parch, roast, fry', ST ŋōōˋ 'to cause to get fried' (II.5); WT s-reg-pa (b)s-reg-s, bs-reg, (b)s-reg(-s) (< *s-a-reg, *bs-a-reg-s, etc.), ST ṭāà 'to roast, bake, deep-fry in oil' (IV.6).

In other cases, however, when one member of a causative : noncausative pair has a voiceless dental affricate, the other has the voiced counterpart. We have derived these from voiced bases (cf. VIII.15-21).

B. Bases with palatal initials.

The s-, bs-, bs-, s- prefixes also appear before bases with š- initials (*tš-? *dž-?), again with the loss of s. Here, however, we frequently find bs- beside s- in the imperative. For example:

1. WT šoṅ-ba, b-šaṅ-s, b-šaṅ, šoṅ(-s) 'to empty, remove, carry or take away'
   ST šāŋ̀ 'to clean out something (e.g. a pipe, a gutter, a road) that is blocked at more than one point', e.g. ŋɛ̀ yòòpū šāŋ̀pʌ yǐǐ 'I cleaned out the gutter'
2. WT šu-ba, (b)šu-s, b-šu, (b)šu-s 'to take off, to strip, strip off'
   ST šüǜ, šū 'to cause something to come (i.e. to take) from the surface (e.g. to copy a letter, peel an orange, remove paint)', e.g. ŋɛ̀ tshöö šüǜpʌ yǐǐ 'I removed the paint'

Note that šüǜ, šū functions as a causative in relation to šüǜ, šu (≺ *[C[zu-s, *[C]zu) 'to come from the surface', e.g. tshöö šüǜ šaa 'The paint has come off', šīŋ qhi pāqpā šüǜ šaa 'The bark of the tree has come off'). Among the s- bases with the a-, bs-, b(s-), b- prefixes, one (ex. 3) also functions as causative to a base with a voiced ž-. The initials of these two bases--*ž or *dz--appear to have been devoiced by the s- prefix.

3. Causative: WT a-tšheg-pa (or a-ršhag[s]-pa, b-šag-s, b-šag, šog
   'to cleave, to split'

ST šāà 'to cause to split', e.g. ŋɛ̀ šɪ̄ŋ šāàpʌ yĭĭ 'I split the wood'

Noncausative: WT b-žag-pa 'to burst, crack, split'

ST šaà 'to split; to crack wide open; to open up', e.g. khērāā qhi sōōcɔ̄ɔ̀ šaàpʌ reè 'Your table got cracked'

The a-, bs-, b-, s- (a-, b-, b-, Ø-?) prefixes also occur before bases with the voiceless palatal affricate initial. For example:

4. WT a-tšho-s-pa, b-tšo-s, b-tšo, tšho-s 'to make'

5. WT a-tšhu-ba, b-tšu-s, b-tšu, tšhu-s 'to lade or scoop (water), to irrigate, to water' (denominative to tšhu 'water')

The two clear-cut causative pairs to tš- bases have g- (< *b-) in the present, but the usual bs-, b-, s- for the remaining prefixes (*b- optionally changes to g- before palatals: Appendix 2):

6. Causative: WT g-tšog-pa, b-tšag, ____, tšhog-s 'to break'

ST cāà 'to cause to be broken, i.e. to break', e.g. ŋɛ̀ qhɔ̄ɔ̄mā cāàpʌ yĭĭ 'I broke the clay pot'

Noncausative: WT a-tšhag-pa, tšhag(-s) 'to break; to be broken off'

ST chāà 'to be/get broken', e.g. qhɔ̄ɔ̄mā chāàpʌ reè 'The clay pot got broken'

7. Causative: WT g-tšod-pa, b-tšad, g-tšad, tšhod 'to cut'

ST cɛ̄ɛ̀ 'to cause to get cut', e.g. ŋɛ̀ šɪ̄ŋ cɛ̄ɛ̀pʌ yĭĭ 'I chopped the wood'

Noncausative: WT a-tšhad-pa, tšhad 'to be cut'

ST chɛ̄ɛ̀ 'to get cut', e.g. thāqpā chɛ̄ɛ̀ šaa 'The rope (has been and) is severed'.

(These same prefixes, *b-, *bs-, *b-, *s-, are seen in the verb g-sod-pa, b-sad, g-sad or b-sad, sod 'to kill' [ST sɛ̄ɛ̀]. Though this verb has no noncausative counterpart, another verb for 'to kill', ạ-groṅ-ba, b-kroṅ-s, is a member of a causative pair: VII.18-9.)

If *s-ạ-s- yields written Tibetan rts- (VI.1,4), we may expect to find written Tibetan rtš- deriving from *s-ạ-š-. But though written Tibetan has rts-, it does not have *rtš-; note, however, that written Tibetan has ltš- but not *lts-. The ltš- of the following causative may, then, ultimately derive from *s-ạ-š- and certainly derives, more immediately, from *s-ạ-tš-:

8. Causative: WT l-tšu-d-pa, l-tšu-s, l-tšu

ST cüǜ 'to cause to get twisted, i.e. to twist', e.g. qhöö̀ ŋɛɛ̲ la̲qpā cüǜpʌ rɛè 'He twisted my arm'

Noncausative: ST chüü 'to get twisted, bent', e.g. khērāā qhi chʌʌküü chüü šaa 'Your ring has got twisted (it is not in its proper position)'

ltš- could derive from one of a number of origins: *s-ạ-š-, *s-ạ-tš-, *s-ạ-ty-, or *s-ạ-py-. The sequence of changes from *s-ạ-š- to ltš- would be:

5. s changes to r before voiced nasals and liquids. *s-ạ-š- ⟶ *r-ạ-š-

10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung. *r-ạ-š- ⟶ *r-ạ-t-š-

12. Noninitial a-chung is lost. *r-a-tš- ⟶ *rtš-

21. r is fronted to l before dental stops. *rtš- ⟶ ltš-.

The nonoccurrence of *bltš- in perfect and future (as a matter of fact, in written Tibetan in general) is attributable to another sound change:

18. A consonant followed immediately by a sequence of a stop and a lateral [in either order] is lost. *bltš- ⟶ ltš-

The l- prefix derived from *s- may be seen in another pair of verbs:

9. WT ltšog(s)-pa 'to be able'

ST cɔ̄ɔ̀ 'to be able (free) to do something', e.g. ŋa̲ ri̲ lʌ ṭoyāà cɔ̄ɔ̀pʌ mī̲tūù '(Because of other activities) I don't think I'll be able to go to the mountains'

WT tšhog-pa 'to be allowed'

ST chɔ̄ɔ̀ 'to be allowed' to be able', e.g. lī̲qòò chīlòò lʌ mā̲tɔ̄ɔ̄, nāā̲lɔ̄ɔ̀ lʌ ṭhʌ̄p chòòqī re̲è 'One isn't allowed to perform inside, just outside the lī̲qòò', pūūrīī la̲msāā sö̲ò chòòqī rè̀è: maacēē qhu, phōpāà ka̲qāā ŋɔ̄ɔ̄ lʌ lʌ̄p cɛɛ 'We can make pūūrīī right away: the cook learned how over there in India'

VII. Bases with voiced stop initials.

A. Bases with voiced labial stop initials.

Of the s-, bs-, bs-, s- series of prefixes which marks the causative to bases with initial voiceless stops we are able to reconstruct *bs- for all perfect causative forms to bases with labial voiced stop initials. We find some occurrences of the present causative s-, and we either find attested or reconstruct s- for all causative imperatives. Forms with sp- (< *s-b-, *bs-b-) are conservative; in other forms, the *s- of *sp- has been lost and the *p- changed to ph-.

Where we find sb- or rb- we reconstruct *s-ạ-b-. That the retention of s before voiced stops in written Tibetan was due to an intervening a-chung is suggested by the contrasting causatives to (1) bases with ạ-by- and ạ-br- in the noncausative (1-2 below) and (2) bases with by- and br- in the prefixless noncausative perfect (3-6):

1. Causative: WT s-byor-bạ, s-byar, s-byar 'to affix, fasten, stick'
   ST caa 'to cause to stick', e.g. ŋɛɛ̀ tiñTì lʌ caapʌ yĩĩ 'I made the two stick together'
   WT ạ-byor-ba or ạ-byar-ba 'to stick to, adhere to'

   Noncausative: ST caa 'to stick', e.g. cāà cāà qhāplẽẽ lʌ caapʌ reè 'The metal stuck to the magnet'

2. Causative: WT s-brel-ba 'to connect, to join'
   ST ṭee 'to cause to be connected, joined', e.g. ŋɛɛ̀ phʌcūù tiñTì thāqpɛ̄ɛ̀ ṭeepʌ yĩĩ 'I joined the two cows with a rope'

   Noncausative: WT ạ-brel-ba 'to hang together; to be connected'

ST ṭee 'to be connected, joined', e.g. phʌcũù tinīì thäqpɛ̄ɛ̀ ṭee šaa 'The two cows (have been and) are joined by a rope'

3. Causative: WT ạ-byin-pa, phyuṅ, d-byuṅ, phyuṅ 'to cause to come forth; to take out, remove'

Noncausative: WT ạ-byuṅ-ba, byuṅ 'to come out, emerge'

ST chũũ 'to come to one, so that one gets possession of something', e.g. mɔ̣ɔ pūqū chũũpʌ reè 'She had a child', ŋaa ŋũũ tɛ̄ɛ̀tsʌ chũũ 'I got a little money'

4. Causative: WT ạ-bye-d-pa, phye (phye-d, phye-s), d-bye, phye (phye-d, phye-s)

ST chē 'to cause to open', e.g. ŋɛɛ̀ qo chēpʌ yīī 'I opened the door'

Noncausative: WT ạ-bye-ba, bye, ____, bye

ST che 'to open by itself', e.g. qo che su 'The door opened (by itself)'

5. Causative: WT ạ-phral-ba, phral, d-bral, phrol

ST ṭhɛ̄ɛ̄ 'to cause to separate', e.g. āmɛ̄ɛ̀ qhūnīì qhā ṭhɛ̄ɛ̄pʌ reè 'The mother caused those two to separate (i.e. destroyed their marriage)'

Noncausative: WT ạ-bral-ba, bral, ____, brol

ST ṭhɛɛ 'to separate, get separated', e.g. pūqū āmā nɛɛ (qhā) ṭhɛɛpʌ reè 'The child got separated from its mother'

6. Causative: WT a-phri-ba, phri(s), d-bri, phri(s) 'to lessen, diminish; to take away from'

Noncausative: WT a-bri-ba, bri, ____, bri 'to lessen, decrease, diminish' (Jäschke: 'intrs.')

For the written Tibetan causative perfects s-byar and s-brel we reconstruct *bs-a-byar and *bs-a-brel. (We have noted before the loss of *b- when the initial of the base is a labial [II.8].) For the causative perfects phyuṅ, phye, phral, and phri we reconstruct *bs-byuṅ, *bs-bye, *bs-bral, and *bs-bri: s devoices immediately following sequences of by and br and, with rare exceptions (see VII.9), is lost.

In one example, the s- appears before the voiced labial stop in written Tibetan, and the spoken Tibetan reflex also indicates a voiced stop preceded by a consonant:

7. Causative: WT s-boṅ-ba, s-baṅ-s, s-baṅ

ST pãã̀ 'to cause to get soaked, i.e. to soak', e.g. ŋɛɛ̀ chɛɛ nãã lʌ chūqūm pãã̀pʌ yǐǐ 'I soaked the dried cheese in the tea'

The spoken Tibetan noncausative indicates a simple voiced-stop initial origin, but the only form shown in the dictionaries has a-b-:

Noncausative: WT a-baṅ-ba

ST phãã̀ 'to get soaked', e.g. ŋa chāāpɛ̄ɛ̀ phãã̀ chu 'I got soaked by the rain'

We assume that the causative perfect s-baṅ-s derives from *bs-a-baṅ-s, and

that the a-chung here operated to prevent the devoicing otherwise caused by s-; the a-chung initial of the base was later lost: spoken Tibetan phãã̀ derives from *baṅ-s.

While the written Tibetan pair for 'to burn, flame' has the same initials and prefixes as do the forms for 'to soak', the spoken Tibetan reflexes for 'to burn' are the reverse of those for 'to soak'; that is, the causative shows devoicing, implying the loss of a-chung. The devoicing caused by s- in pre-written-Tibetan must have gradually weakened, dying out completely only in the post-written-Tibetan stage.

8. Causative: WT s-bor-ba, s-bar, s-bar

ST pāā 'to cause to burn, flame, be in flames', e.g. ŋɛɛ̀ šumāā pāāpʌ yīī 'I lit a fire; I turned on a light'

Noncausative: WT ạ-bar-ba

ST paa 'to burn, flame, be in flames', e.g. šīŋnàà lʌ me paapʌ reè 'A fire was burning in the forest', me chĕpō paa šaa 'There has been a big fire'

If we assume a lost a-chung in one instance in the causative, in the other in the noncausative we imply a gradual attrition without respect to function; and there appears to be no reason to doubt that this was the case. In both, however, the loss of a-chung worked to prevent the homonymy which would otherwise have resulted, as it did in examples 1 and 2 above (s-byor, ạ-byar; s-brel, a-brel).

If s- is not lost before à-chung, and if s- does not devoice voiced

stops across an intervening a-chung, we assume on principle the possibility that every instance of sb-, whether in a causative pair or not, derives from *s-a̱-b-. For example: WT s-be-d-pa, s-ba-s, s-ba-s, s-bo-s 'to hide, conceal' < *s-a̱-be-d-pa, *bs-a̱-ba-s, *bs-a̱-ba-s, *s-a̱-bo-s; WT s-bud-pa 'to light, kindle, set on fire' < *s-a̱-bud-pa.

We find one verb (causative?) with a voiced labial-stop initial and with r- prefixes instead of s-. The inference that rb- here derives from *s-a̱-b- is borne out by the a̱-b- sequences which are found with this base in another grammatical function:

9. WT r-bad-pa, ____, ____, r-bod 'to set on, incite; to excite, instigate, animate'

   WT a̱-bad-pa, ____, ____, a̱-bod 'to endeavor, exert one's self'

In one written Tibetan causative pair the initial of the noncausative base is a voiced labial stop; this is devoiced by the s- of the causative:

10. Causative: WT s-pub-pa, s-pub-s

    ST pūù (or pūp) 'to cause to be turned upside down, i.e. to put upside down'

    Noncausative: WT a̱-bub-pa, bub, ____, bub(s)

    ST phuù (or phup) 'to be turned upside down'

Spoken Tibetan affords other examples of causative pairs where the noncausative member has a labial voiceless aspirated-stop initial and low tone, corresponding to which we would expect to find, and indeed do find, a written Tibetan voiced stop initial. For example: ST phʌp 'to come

down, descend' (e.g. lomā phʌpqɪ̀ 'The leaves are falling'), WT bab(s) [to a present a-bab-pa]. The spoken Tibetan causative member has a voiceless unaspirated stop initial with high tone, here ST pʌ̄p 'to cause to come down, descend; to bring down' (e.g. ŋɛ̀ thep ti pɪ̄ʈɪ̄ɪ̄ qhāà nɛɛ pʌ̄pʌ yɪ̄ɪ̄ 'I took the books down from the bookshelf'). This is, of course, the usual reflex of a written Tibetan voiceless unaspirated stop preceded by a consonant. The derivation we would naturally assume here is pʌ̄p < *s-pab(s) < *bs-bab(s). That is, we would expect to find WT *s-pab(s); what we find instead is written Tibetan phab, in the paradigmatic series a-beb-s-pa, phab, d-bab, phob. In all cases where the causative perfect has phV- in written Tibetan, spoken Tibetan has pV̄-. Other examples:

11. Causative: WT a-bud-pa, phud, ____, phud 'to pull off'
ST pɪ̄ɪ̀ [Chin P'eng 1958.109 has pi?[2] for Lhasa and Shigatse] (1) 'to cause to come (or go) out (or off ...)', e.g. ŋɛ̀ šamō pɪ̄ɪ̀pʌ yɪ̄ɪ̄ 'I took off my hat', sōō ʌ̄mcɪ̄ɪ̀ sō pɪ̄ɪ̀ su 'The dentist pulled my tooth'; (2) 'to cause to be discharged (from a post)', e.g. ŋɛ̀ qhō mʌ̄ʌ̄mɪ̄ɪ̄ ʈhɛɛ nɛɛ pɪ̄ɪ̀pʌ yɪ̄ɪ̄ 'I discharged him from the army'

Noncausative: (1) ST phiɪ̀ 'to come (or go) out (or off)', e.g. ŋɛɛ sō phiɪ̀ šaa 'My tooth came out'; (2) ST phüǜ 'to be discharged (from a post)', e.g. ŋa mʌ̄ʌ̄mɪ̄ɪ̄ ʈhɛɛ nɛɛ phüǜ chu 'I was discharged from the army/exempted from military service'

Both phii and phüǜ derive from *bud (cf. X.36, changes 42 and 43).

12. Causative: WT a-bug(s)-pa [or s-bug-pa], phug, d-bug, phug [also a-big(s)-pa, phig-s, d-big, phig(s)] 'to sting, pierce, bore'

ST pTì 'to cause to pierce', e.g. qhōō ŋɛɛ ʌmcōō lʌ TqūU pTì chu 'He pierced (holes in) my ears'

Noncausative: ST phìì (≺ *bug-s or *big-s) 'to pierce', e.g. ŋɛɛ chūpāā TqūU phììpʌ rèè 'My dress got a hole in it.

Confronted with written Tibetan verbs of this type Li (1933.142) assumed two original stem forms (one with *b-, used in the present and future, one with *ph-, used in the perfect and imperative) and a prefix *b- for the perfect. An alternative explanation is that there was one base, with a voiced-stop initial, for present, future, perfect, and imperative, that the causative perfect and imperative prefixes were, respectively, *bs- and *s-, and that the devoicing caused by this *s was the first of the changes wrought on the sequences *bs-b, *s-b- which led ultimately to simple voiceless aspirated stop initials in these forms. The aspiration of the initials results from a general devoicing shift. Evidence points to several such shifts in the course of Tibetan linguistic history. (We follow here Ladefoged's analysis of degrees of delay in the onset of voicing which includes at one extreme aspiration [1967.6 ff.].) After the loss of *s from sequences such as *sp- ≺ *sb-, *st- ≺ *sd-, *sk- ≺ *sg- (Diagram 1, Stage 3 below), the newly produced voiceless stops in absolute-initial position were exposed to the first of these shifts, from voiceless unaspirated

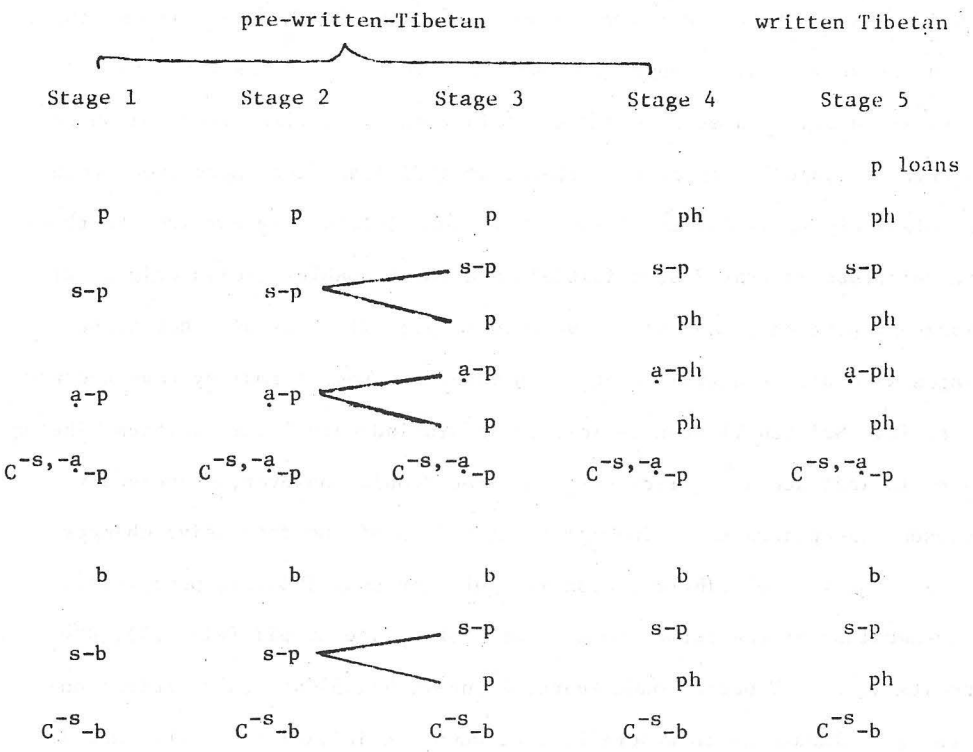

Diagram 1

Pre-Written-Tibetan Devoicing Shifts

[b represents the general class of voiced stops, p the general class of voiceless stops. C stands for any consonant, C^{-s} for any consonant other than s.]

to voiceless aspirated, which we assume took place in the pre-written-Tibetan period (Stage 4; Stage 5 represents written Tibetan). Loans with initial voiceless unaspirated stops entered the language some time after the shift depicted in Stage 4. (A cursory glance at a Tibetan dictionary shows both the relatively small number of words with such initials as compared to those with voiceless aspirated stop initials and the probable foreign origins of a large proportion of the unaspirated variety.) If we assume that these changes were diffused from morpheme to morpheme, some forms may have escaped the shift. Written Tibetan p- initials could indicate loans; written Tibetan sb- could indicate an earlier *s-ạ-b-. Both could, however, conceivably represent exceptions to or incomplete extension of the respective changes.

For the written Tibetan causative perfects phud (VII.6), phug (VII.7) we assume loss of the causative s-; for spoken Tibetan pīì (VII.6,7), pūb (and its written Tibetan counterpart, s-pub-s, VII.5) we assume retention of the s-. Though s- is generally lost when the initial b- of the base is followed by y or r, it has been retained in one instance: s-pyiṅ-ba, s-pyiṅ-s, ____, s-pyiṅ(s) 'to sink. to lower, let down' (cf. ạ-byiṅ-ba, byin 'to sink in, sink down, to be swallowed up'). This conservative development is favored in forms where the s- has a contrastive function. s- was not lost in causatives to bases with initial voiceless stops. If it had been lost, the causative perfect s-pel (V.2), for example, would have changed first to *pel and then to *phel; in both stages it would have been homonymous with the noncausative perfect phel (< *pel).

Where a form with s- did not pair off with a noncausative, both written Tibetan and spoken Tibetan could lose the s-, as in, for example, the written Tibetan imperative and perfect phul : spoken Tibetan phüǖ 'to give'. (The voiced initial of this base is attested in the written Tibetan present and future forms: ḥa-bul-ba and d-bul.)

There are various ways in which we could interpret, say, the doublets phug, sbug 'hollow, cavity' (Jäschke 342, 404): (1) The original form was *s-ḥa-bug. In one dialect ḥa was lost earlier than in another; *s-ḥa-bug became sbug, while *s-bug changed to *s-pug, *pug, and finally phug. (2) In one dialect, the changes of sb to sp and p did not extend to sbug; in another dialect they did. (3) sbug represents an archaic spelling, phug a more modern one. Note, however, that spoken Tibetan has puù 'inner room' (≺ *Cbug).

Similar examples are WT khal, sgal 'load' (ST qhɛ̄ɛ̄) and doublets with unaspirated and aspirated voiceless-stop initials such as WT pag, phag 'brick' (ST phaà [≺ *bag] in cha phaà cī̀q 'a brick of tea'; cf. also ST phaqāà 'four bricks of tea' [spelled bag-khag by our informant], phʌ̀qcüǖ 'a [small] brick of tea'; sāpāà 'a brick', phʌ̄qtsī̀ [≺ *phag- ≺ *pag- ≺ *s-bag-?] rɛɛ, tutsī̀ rɛɛ̀? 'Is it a brick wall or a stone wall?', phāqṭōm̀ 'a frame for making bricks').

The changes which affect the remaining voiced stops belong to the post-written-Tibetan period. First, the voiced stops in absolute-initial position were devoiced; at the same time, and perhaps as part of the same process, prefixes were lost (Diagram 2, Stage 6). In the next shift, towards a greater delay in the onset of voicing, the newly produced set

Written Tibetan			Spoken Tibetan
Stage 5	Stage 6		Stage 7
p	$p\bar{V}$ ⟶	$p\bar{V}$	$p\bar{V}$
(ạ-)ph	(ạ-)$ph\bar{V}$ ⟶	$ph\bar{V}$	$ph\bar{V}$
Cp	$Cp\bar{V}$ ⟶	$p\bar{V}$	$p\bar{V}$
b	$b\underline{V}$ ⟶	$p\underline{V}$	$ph\underline{V}$
Cb	$Cb\underline{V}$ ⟶	$b\underline{V}$	$p\underline{V}$

Diagram 2

Post-Written-Tibetan Devoicing Shifts

[$\bar{V}$ indicates high tone, $\underline{V}$ low tone]

of voiced stops in absolute-initial position was devoiced, and the old set shifted further (or was pushed to shift by the new unvoiced stops with low tone), to become voiceless and aspirated (Stage 7).

So, corresponding to WT dpaṅ-po 'witness', bu 'a boy; a son', and a-bu 'worm' we have ST paŋpō, phu, and pu. (For other examples, see Appendix 1.)

Diagram 2 accords in general with Chin P'eng's Lhasa data except that corresponding to written Tibetan initial voiced stops Chin has recorded free variants, one with an unaspirated voiceless stop (Stage 6), one with an aspirated voiceless stop (Stage 7):

WT bu 'child' : Lhasa pu^3 or phu^3 (p. 109)

WT goṅ 'price' : Lhasa $koŋ^3$ or $khoŋ^3$ (p. 109)

WT rdo 'stone' : Lhasa to^3 (p. 8)

For the Shigatse dialect, there is complete agreement with Diagram 2:

WT bu 'child' : Shigatse phu^3 (p. 109)

WT goṅ 'price' : Shigatse $khoŋ^3$ (p. 109)

WT rdo 'stone' : Shigatse to^3 (p. 30)

If from this it might appear that our Lhasa informants spoke the Shigatse dialect, note that Chin P'eng's Shigatse data has no fronting before l, while his Lhasa and Chamdo--and our Lhasa--data do: WT bal 'wool'; Lhasa $pɛ:^3$ (our phɛɛ), p. 14; Shigatse $pha:^3$, p. 30; Chamdo $pe^3\ ky^1$ (or $pi^3\ ky^1$) 'wool thread', p. 53.

Chin P'eng's Chamdo data, on the other hand, show a far more conservative pattern. Some words with written Tibetan initial voiced stops show devoicing

of the initial stop (Stage 6), e.g. WT gon̄, Chamdo koŋ^{3} 'price' (p. 109); others preserve the voiced stop of Stage 5, e.g. WT bu 'child', Chamdo bɤ^{3} (p. 109). Where the voiced stop is preceded by another consonant, the prefixed consonant is generally lost, but the stop is still voiced (Stage 6), e.g. WT rdo 'stone', Chamdo do^{5} (p. 48); in some cases a nasal prefix is retained (Stage 5), e.g. a-bu 'worm', Chamdo mbɤ^{3} (p. 47); mgo 'head', Chamdo ŋgo^{3} (p. 85); but mduṅ 'spear', Chamdo duŋ^{5} (p. 8).

To return to the causative paradigm to bases with voiced labial stop initials: we reconstruct *bs- for the perfect, *s- for the imperative. For example:

(a) *bs-bye 'to cause to open' (pft.) : WT phye (ST chē)

6.	s devoices an immediately following voiced stop.	*bs-bye	⟶	*bs-pye
14.	s is lost before stops.	*bs-pye	⟶	*b-pye
16.	The prefix *b- is lost when the initial of the base is a labial.	*b-pye	⟶	*pye
22.	Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.	*pye	⟶	phye

(b) *s-bye 'to cause to open' (imperative) : WT phye

6.	s devoices an immediately following voiced stop.	*s-bye	⟶	*s-pye
14.	s is lost before stops.	*s-pye	⟶	*pye
22.	Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.	*pye	⟶	phye

(c) *bs-bub-s 'to cause to be turned upside down' (pft.) : WT s-pub-s (ST pūp)

6.	s devoices an immediately following voiced stop.	*bs-bub-s	⟶	*bs-pub-s
16.	The prefix *b- is lost when the initial of the base is a labial.	*bs-pub-s	⟶	s-pub-s

(d) *bs-bab 'to cause to come down' (pft.) : WT phab (ST pʌ̄p)

6.	s devoices an immediately following voiced stop.	*bs-bab	⟶	*bs-pab
14.	s is lost before stops.	*bs-pab	⟶	*b-pab
16.	b is lost when the initial of the base is a labial.	*b-pab	⟶	*pab
22.	Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.	*pab	⟶	phab

Here the written Tibetan form has undergone the same changes as have both written Tibetan phye and spoken Tibetan chē in example a; spoken Tibetan pʌ̄p reflects a different pattern of changes, that of written Tibetan spubs, spoken Tibetan pūp in example c.

Though we find s- attested in the present forms s-pub-pa 'to turn upside down' and s-pyiṅ-ba 'to sink' (VII.9), we cannot, for the most part, go beyond a- for the present to bases with voiced labial stop initials and *b- for the future. (*b- changes to d- before labials; cf. Appendix 2.) There are, however, at least hints that the a-chung present may have been preceded by an s- prefix:

(1) Though the causative present forms of all verbs with initials in br- have the prefix a-, they also have devoiced initials, suggesting that

these forms once had the s- prefix: WT a̱-phral, phral, d-bral, phrol, ST thɛ̄ɛ̄ 'to cause to separate'; WT a̱-phri-ba, phri(s), d-bri, phri(s) 'to cause to lessen'; WT a̱-phrog-pa, phrog-s, d-brog, phrog 'to rob'.

(2) Even for bases in b- the present is sometimes listed with a voiceless initial: a̱-phob-pa beside a̱-beb-s-pa, a̱-phud-pa beside a̱-bud-pa, a̱-phul-ba beside a̱-bul-ba 'to give'.

(3) Jäschke lists s-bug-pa in addition to, and as equivalent to, a̱-bug-pa.

(4) phig-pa and phug-pa are also listed under a̱-big(s)-pa; either these derive from the perfect or they attest to an s- present for this verb beside the a̱- present.

There is in spoken Tibetan no trace of a *b- future prefix before voiced stops. (The spoken Tibetan reflex would be an unaspirated stop with low tone.) It is difficult to say whether this is the result of phonological change or the atrophy of certain grammatical forms.

We have, then, two major sets of prefixes for the causative paradigm: a̱-, *bs-, *b-, *s-, and s-, bs-, bs-, s-.

B. Bases with voiced velar stop initials.

Written Tibetan s-kon-pa, bs-kon, bs-kon 'to dress, to clothe another person' : gon-pa 'to put on (clothes, shoes)' appears to be an example of the devoicing caused by s similar to s-pub-pa : a̱-bub-pa, bub. Our spoken Tibetan data, however, does not confirm this meaning of s-kon-pa, suggesting rather two bases, *kon 'to get caught' and *gon 'to get dressed'.

1. Causative: ST qöö (≺ *bs-kon) 'to cause to get caught, hung up, i.e. to hang (on a peg)', e.g. ŋɛ̀ tüütüü tɔ̃qɔɔ qöpʌ yĭĭ 'I hung the shirt on the peg ("horse's head")'

Noncausative: ST qhöö (≺ *khon or *a̤-khon ≺ *kon) 'to get caught, hung up', e.g. ŋɛɛ chūpɅ̄ see lʌ qhöö chu 'My dress got caught on the nail'

2. WT g-yog-pa (≺ *b-yog-pa), g-yog-s, ____, g-yog-s 'to cover (e.g. a child with a garment)'

ST yɔ̀ɔ̀ 'to put something on someone (e.g. clothes, or a ceremonial scarf) or something (e.g. gold on a frame)', e.g. ŋɛ̀ pūqò̄ò̄ hɅ̄qò̄ò̄ yɔ̀ɔ̀pʌ yĭĭ 'I put the child's shoes on'

WT gon-pa 'to put on (clothes, shoes)'

ST qhöö (≺ *gon) 'to wear (shoes, clothing, not jewelry)', e.g. qhēēsɅ̄ ŋɛ̀ chūpɅ̄ ŋõpō chi qhõpʌ yĭĭ 'Yesterday I wore a blue dress'

In general, causative pairs where the noncausative member has a voiced velar stop initial (either alone or followed by r) show the a̤-, *bs-, *b-, *s- series of prefixes. For example:

Bases in g-:

1. Causative: WT a̤-geb-s-pa, b-kab, d-gab, khob 'to cover'

ST qɅ̄p 'to hide (someone, something) by covering; to conceal' e.g. ŋɛ̀ qhō qɅ̄pʌ yĭĭ 'I hid him'

Noncausative: WT gab-pa 'to hide, to conceal one's self'

ST qh∧p 'to hide (one's self)', e.g. ŋa qh∧p∧ yĭĭ 'I hid (myself)'

2. Causative: WT a-ges-pa, b-kas, d-gas, khos 'to split, cleave, divide'

Noncausative: WT a-gas-pa, gas 'to be cleft or split; to crack, break'

ST qhɛɛ̀ (with or without sēēqā 'a crack') 'to be/get cracked', e.g. šīŋ qhɛɛ̀ šaa (or šīŋ ∣∧ sēēqā qhɛɛ̀ šaa) 'The wood (got and) is cracked'

3. Causative: WT a-gog-pa, b-kog, d-gog, khog 'to take away, to take off, to pull out'

ST qɔ̄ɔ̀ 'to cause something to some out of its position; to pull, pluck out', e.g. ŋɛɛ̀ šī tōṑ qɔ̄ɔ̀p∧ yĭĭ 'I picked the fruit', ŋɛɛ̀ ŋarɛɛ̄ sō qɔ̄ɔ̀p∧ yĭĭ 'I pulled my own tooth'

Noncausative: WT gog-pa 'to crumble off, to scale off'

ST qhɔɔ̀ 'to come out of its position (of e.g. a frame)', e.g. ŋɛɛ̀ šeŋtōō qhi tsāà qɔ̄ɔ̀pɛɛ ni qhɔɔ̀ chu 'I pulled the tree root and it came out'

4. Causative: WT a-gum-pa, b-kum, d-kum (?), khum-s 'to kill; to slaughter'

Noncausative: WT a-gum-pa, gum (also a-gum-s) 'to die' (Jäschke: 'eleg.')

Bases in a-g-:

1. Causative: WT s-gul-ba, bs-gul, bs-gul 'to move, agitate, put in motion'

Noncausative: WT a-gul-ba 'to move, shake, be agitated'

2. Causative: WT bs-go-ba, bs-go-s 'to soil, stain, defile; to infect with disease'

Noncausative: WT ạ-go-ba, ạ-go-s (also go-s) 'to stain, to lose color; to infect with a disease'

ST qö̀ö̀ 'to get put on; to get spread (of e.g. a disease)', e.g. ŋaa tshȫȫ qö̀ö̀ šaa 'The paint got on me', ŋaa chā̄pā qö̀ö̀ chu 'I caught a cold' (cf. natsā qö̀ö̀yāà 'a contagious disease'

Here written Tibetan has two causatives, one, bs-go-ba, based on the written Tibetan ạ-ḍo. qö̀ö̀, which functions as causative to qö̀ö̀ in spoken Tibetan (cf. ŋɛ̀ɛ̀ qhɔ̄ɔ̄ tshȫȫ qȫö̀pʌ yĭĭ 'I put paint on him') reflects a causative based on the written Tibetan noncausative go: ạ-go-d-pa, b-ko-d (or b-go-d), d-go-d, kho-d 'to put'.

Bases in gr-:

1. Causative: WT ạ-grol-ba, b-krol, d-grol, khrol

ST ṭȫȫ 'to cause to become untied, unfastened', e.g. ŋɛ̀ɛ̀ ṭupʌ̄ ṭȫȫpʌ yĭĭ 'I untied the knot'

Noncausative: WT ạ-grol-ba, grol

ST ṭhö̀ö̀ 'to become untied', e.g. ŋɛɛ cutö̀ö̀ ṭhö̀ö̀ šaa 'My shoelace (came and) is untied'

2. Causative: WT ạ-groṅ-ba, b-kroṅ-s, d-groṅ-s 'to be killed (of lamas and kings)'

ST ṭö̀ö̆ 'to cause to die: to kill (a lama, an official),

e.g. ŋɛ̀ lāmā ṭõ̀õpʌ yĭĭ 'I killed a lama'

Noncausative: WT a-gron-ba, gron-s 'to die' (Jäschke: 'resp.')

ST ṭhõ̀õ (alternates with šĭ for future) 'to die (of human beings)', e.g. pūqū ṭhõ̀õ su (or šĭ su) 'The child died' (n.p.; p.: āwāā šāà su); pūqū šĭqĭ rɛè 'The child is going to die'

Bases in a-gr-:

1. Causative: WT s-grig-pa, bs-grig-s, bs-grig, s-grig(s) 'to put in order'

ST ṭiq or ṭiì 'to arrange in order', e.g. ŋɛ̀ ti qāṭā ṭiqpʌ yĭĭ 'I arranged this in alphabetical order', ŋɛ̀ ṭha ṭiqpʌ yĭĭ 'I prepared this'

Noncausative: WT a-grig-pa 'to suit, be right'

ST ṭiq or ṭiì 'to be prepared, be all right, go well', e.g. ti ṭha ṭiqpʌ rɛè 'This was prepared; this went well', chūpʌ ti riŋtūū ṭiì tuqɛ̀ɛ̀? 'Is the length of this dress all right?'

2. Causative: WT s-gre-ba, bs-gre-s, bs-gre 'to roll'

Noncausative: WT a-gre-ba 'to roll one's self'

3. Causative: WT s-gren-ba, bs-gren-s, bs-gren, s-gren-s 'to raise, erect'

Noncausative: WT a-gren-ba 'to stand'

Bases in gy-:

There is no complete or satisfactory a-, bs-, b-, s- series of prefixes with a base in gy-. One with irregularities is:

Causative: WT ạ-gye-d-pa, b-gye-s, b-kye 'to divide, distribute'

Noncausative: WT ạ-gye-ba (or ạ-gye-s-pa), gye-s, ____, gye-s 'to be divided'

Bases in ạ-gy-:

There are numerous examples of the s-, bs-, bs-, s- series of prefixes before gy-, often with the s- changing to r- before back vowels (a, u, o), e.g. r-gyab-pa, br-gyab, br-gyab, r-gyob 'to throw, fling, hit, beat' (ST kʌp, a verb which occurs in causative constructions, e.g. qo kʌp 'to cause a door to get closed' vs. qo thēè 'to get closed [of a door]'). We assume here ạ-gy- initials. This assumption is supported by spoken Tibetan evidence: in two clear-cut causative pairs written Tibetan has gy- in the noncausative perfect; spoken Tibetan has kV-, the reflex of Cgy-, not *khV-, the reflex of gy- (cf. WT gya-gtšig, ST khʌʌcīì '81'; WT gyen, ST khẽẽ 'uphill'):

1. Causative: WT s-gyel-ba, bs-gyel 'to throw down, to overthrow'

Noncausative: WT ạ-gyel-ba, gyel, ____, gyel 'to fall, tumble'

ST kee (< *ạ-gyel) 'to fall down', e.g. šīŋ kee su 'The tree fell down', pȍȍ tiì tɛɛmā kee qūpkāà lʌ chɛɛ̀ su 'The old man half sat, half fell down on the chair'

2. Causative: WT s-gyur-ba, bs-gyur, bs-gyur 'to transform'

ST kur, kuu 'to cause something to come from its original place: said e.g. (1) of things that support other things; (2) of the process of translation from one language to another; (3) of the process of multiplication; (4) of

the process of changing one's mind, e.g. ŋɛ̱ɛ̀ yi̱qī ku̱rpʌ yī̱ī̱ 'I translated the letter', ŋɛ̱ɛ̀ ši̱ sūm qhi ku̱rpʌ yī̱ī̱ 'I multiplied four by three', ŋɛ̱ɛ̀ phö̱ö̱lɔ̄ɔ̄ hīqȯȯ lʌ ku̱rpʌ yī̱ī̱ 'I changed my Tibetan paper money for Indian money'

Noncausative: WT a̤-gyur-ba, gyur, ____, gyur 'to change'

ST ku̱r, ku̱u (< *a̤-gyur) 'to come from its original place', e.g. kɛ̄tsā ku̱r su 'The ladder fell down', qāŋpɛ̄ɛ ña ku̱r su 'The calf of my leg turned', tsʌ̄p ku̱r su 'The support came off'

C. Bases with voiced dental stop initials.

Once again we find a̤-, *bs-, *b- (> g- before dentals), *s- to bases with simple stop initials and s-, bs-, bs-, s- where the stop is preceded by a-chung.

Bases in d-:

1. Causative: WT a̤-don-pa, b-ton, g-don, thon 'to cause to go out or come forth'

ST tȫȫ 'to cause to come out: to take a prisoner from a prison, gold from a mine, something from a bag; to open a market', e.g. ŋɛ̱ɛ̀ pe̱q nā̱ā̱ nɛɛ tshɛ̄ɛ tȫpʌ yī̱ī̱ 'I took the vegetables from the bag', t̤hōm tȫȫ šaa 'The market (was opened and) is open', tsȫpā tȫȫ šaa 'The prisoners (were taken out and) are out'

Noncausative: WT don-pa 'to come out'

ST thöö 'to come out, get out; to escape or be released', e.g. tsöpā thöö šaa 'The prisoners have escaped', chū nɛɛ lāŋpā thǔqTl 'Steam is coming from the water'

2. Causative: WT ạ-dul-ba, b-tul (or thul), g-dul, thul 'to tame, to conquer'

ST tüü (less favored: thüü) 'to cause to be vanquished, i.e. to vanquish', e.g. ŋātsöò ṭa tüüpʌ reè 'We vanquished the enemy', ŋɛè qhɔɔmā tüüpʌ yTT 'I "subdued" the clay pot (by heating the pot and sealing it with a paste of starch and water; one result is that the smell of clay is removed)'

(One may speculate that the optional loss of the b- prefix in the perfect b-tul, thul has something to do with the labial vowel -u-, since b- regularly drops before a labial-stop initial. That b- is never lost when the vowel is -o- would then attest to the greater degree of labiality of the high rounded vowel.)

Noncausative: WT cf. dul-ba (Jäschke: 'prop. pf. of ạ-dul-ba') 'soft, tame, gentle'

ST tüü or thüü (< *ạ-dul-ba, *dul) [but only tüü with the future suffix] 'to be vanquished', e.g. ṭa tüü su (or ṭa thüüpʌ reè) 'The enemy was vanquished'

Bases in ạ-d-:

1. Causative: WT s-du-d-pa, bs-du-s, bs-du, s-du-s 'to collect, gather'

Noncausative: WT a-du-ba, a-du-s 'to come together, to assemble'

Causative and Noncausative: ST tüü, tu 'to cause to get gathered, collected, i.e. to collect; to get collected', e.g. qhöö ŋüü tüüʌ reè 'He collected money; he gave money to a collection [i.e. money was collected because of him]', ŋɛè ŋüü tüüʌ yĩĩ, ŋɛè ŋüü tüüʌ reè 'I collected money; I gave money to a collection'

(Nasality, the reflex of a-chung may be seen in spoken Tibetan in the set phrase ʌpsū mʌ̃tüüpʌ reè 'He couldn't handle it'.)

2. Causative: WT s-dum-pa, bs-dum-s, bs-dum, s-dum(s) 'to make agree'

Noncausative: WT a-dum-pa 'to reconcile one's self to; to be reconciled'

Bases in *dy-:

Dental stops followed by y had become palatal affricates at the stage represented by written Tibetan. (Cf. V.4,5.)

Bases in *dr-:

Sequences of a dental stop followed by a liquid (l or r) and not preceded by a nasal underwent metathesis. Supporting this statement are (1) the interpretation of ld- as deriving from *a-dl- < *a-l- (IV.10) and (2) the absence of *thr- in written Tibetan, where khr- and phr- abound. Causative pairs in which the initial sequence of the noncausative is rd- and the initial sequence of the causative is rt- are further evidence that metathesis did take place. Only under this assumption can we explain the voiceless stop of the causatives. (For the derivation of written Tibetan dr- from *br-, see Appendix 2.)

Examples:

1. Causative: WT rtib-pa, brtib-s, brtib, rtib(s) 'to break or pull down' (≺ *s-drib-pa, *bs-drib-s, *bs-drib, *s-drib[s])
ST tɪ̄p 'to cause to get dented (e.g. a car, a pan), to "dent" in order to fold up or collapse, e.g. a tent or an umbrella', e.g. pūqūù hāyāā tɪ̄p šaa 'The child has dented the aluminum pan', ŋ ɛɛ̀ qhuu tɪ̄pʌ yɪ̄ɪ̄ 'I took down the tent'

Noncausative: WT rdib-pa, rdib-s 'to get dented' (≺ *[ạ-]drib-pa, *drib-s)
ST tip or thip 'to get dented', e.g. cʌ̄qtɪ̄ɪ̄ tipʌ reè 'The can got dented', qhuu tipʌ reè 'The tent was taken down'

2. Causative: WT rtol-ba, brtol 'to pierce, perforate, puncture' (≺ *s-drol-ba, *bs-drol)
ST tōō 'to cause to burst', e.g. ŋ ɛɛ̀ qʌ̄ʌ̄pūù qhʌ̄p qhi tōōpʌ yɪ̄ɪ̄ 'I burst the balloon with a needle'

Noncausative: WT rdol-ba, brdol, brdol 'to burst' (≺ [ạ-]drol-ba, *b-drol, *b-drol)
ST tōō 'to burst', e.g. qʌ̄ʌ̄pūù tōō šaa 'The balloon has burst'

Only three changes are required for *s-drib, *bs-drib or *s-drol, *bs-drol to become written Tibetan rtib, brtib or rtol, brtol, and only one change is

required for *drib, *drol to become written Tibetan rdib, rdol. For example:

(a)

6.	s devoices an immediately following voiced stop.	*s-drib	⟶	*s-trib
14.	s is lost before stops.	*s-trib	⟶	*trib
19.	Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.	*trib	⟶	rtib

(b)

6.	s devoices an immediately following voiced stop.	*bs-drib	⟶	*bs-trib
14.	s is lost before stops.	*bs-trib	⟶	*b-trib
19.	Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.	*b-trib	⟶	brtib

(c)

19.	Sequences of a dental stop followed by a liquid not preceded by a nasal undergo metathesis.	*drib	⟶	rdib

Spoken Tibetan tip 'to get dented' implies *Cd-, i.e. rd-. thip implies either *d-, deriving from a premetathesis *dr- (for other examples of Cr- ⟶ C-, see IV.6 and X.15) or a new devoicing shift in spoken Tibetan in which voiceless unaspirated stops with low tone change to voiceless aspirated.

VIII. Bases with voiced spirant, voiced affricate initials.

A. Deaffrication.

Causatives to bases with voiced spirant and voiced affricate initials exhibit the ạ-, *bs-, *b-, *s- series of prefixes reconstructed for voiced stops. The changes posited for voiced stops are repeated here, though devoicing caused by s is rare among spirants. One new change is deaffrication or the loss of the voiced dental stop before ž and z. Simon suggested that the -ž- in futures to bases where -dž- in the present alternates with -tš- in the perfect was 'probably due to the prefix g- which softens the dž- into ž-' (Li 1933.144). It appears, however, that the deaffrication of dž after g was only part of the general deaffrication of voiced affricates which took place at one point in the history of the language. We find, for instance, causatives with initial sequences ạ-dž-, b-tš-, g-ž-, tšh- to noncausatives with initial sequences (ạ-dž-), ž- (1-2 below); to some noncausatives with these same initial sequences, (ạ-dž-), ž-, we find causatives with initial sequences ạ-dž-, b-ž-, g-ž-, ž- (3-6). A parallel situation is found among bases with dental initials (7-11). Examples of the first type derive from bases with voiced affricate initials; those of the second type derive from bases with voiced spirant initials. Because the voiced affricates were devoiced by the s of the causative perfect and imperative prefixes before the deaffrication of voiced affricates, the affricate-spirant contrast is maintained in these forms. In the future forms (and in the noncausative prefixless perfect) deaffrication, and in

the present forms affrication, neutralized the contrast.

Examples:

Bases with voiced palatal affricate initials:

1. Causative: WT a-džug-pa, b-tšug, g-žug, tšhug 'to put into; to put [grammar], e.g. a prefixed letter, a prefix'
ST cūù 'to put in(to)', e.g. ŋɛ̀ thep ti thipšūp nãă lʌ cūùpʌ yĩĩ 'I put the book in the bookcase'

Noncausative: WT a-džug-pa, žug-s 'to go or walk in; to enter; to be combined, to be preceded, to be followed (of letters)'

2. Causative? WT a-džum-pa, b-tšum, g-žum, tšhum 'to shudder, shrink'

Noncausative: WT cf. žum-pa 'fear, dismay'
ST šum̀ (< *žum-s) with pā 'to lose one's courage (in fighting)', e.g. qhō pā šūpʌ rè̀ 'He lost his courage'

Derivations:

(a) *a-džug-pa (causative and noncausative present) : WT a-džug-pa

8. The stop element of voiced affricates is lost. *a-džug ⟶ *a-žug

10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung. *a-žug ⟶ a-džug

(b) *bs-džug (causative perfect) : WT b-tšug

6. s devoices an immediately following voiced stop or affricate. *bs-džug ⟶ *bs-tšug

13. s is lost before spirants and affricates. *bs-tšug ⟶ b-tšug

(c) *b-džug (causative future) : WT g-žug

3.	A labial stop changes to a dental before any consonant other than the prefix s-.	*b-džug	⟶	*d-džug
8.	The stop element of voiced affricates is lost.	*d-džug	⟶	*d-žug
15	A dental stop changes to a velar before dentals, palatals, and r.	*d-žug	⟶	g-žug

(d) *s-džug (causative imperative) : WT tšhug

.	s devoices an immediately following voiced stop or affricate.	*s-džug	⟶	*s-tšug
13.	is lost before spirants and affricates.	*s-tšug	⟶	*tšug
22.	Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.	*tšug		tšhug

(e) *džug-s (noncausative perfect) : WT žug-s

8	The stop element of voiced affricates is lost.	*džug-s	⟶	žug-s

Bases with voiced palatal spirant initials:

3. Causative? WT a-džog-pa, b-žag, g-žag, žog 'to put, to place'

ST šaà 'to put', e.g. ŋɛ̀ thep cɔ̄qtsɛ̄ɛ̄ qhã̄à ʌ šaàpʌ yĩ̄ĩ̄ 'I put the book on the table', ŋ ɛ̀ qhɔ̄ɔ̄ chā šaàpʌ yĩ̄ĩ̄ 'I put my trust in him'

Noncausative: related to WT žags-pa (ST šaqpā) 'a lassoo'?

4. Causative? WT a-džog-pa, (b-)žog-s, g-žog, žog 'to cut ... to carve, to chip'

ST šɔ̀ɔ 'to make smaller (e.g. by cutting or planing)', e.g. cɔ̄qtsē riŋ ṭhaà ni, šɔɔ̀pʌ reè 'The table was too large, so it was made smaller (by using a plane)', ŋɛɛ̀ cɔ̄qtsē ti šɔɔ̀pʌ yīī 'I made the table smaller'

Noncausative: WT Related to žogs in mar-žogs 'a part cut off, one half of a mar-ril, i.e. a globular lump of fresh butter'?

5. Causative: WT ạ-džig-pa, b-žig, g-žig, (b-)šig 'to destroy, to cut to pieces, to divide'

ST šīì (< *b-šig < *bs-žig) 'to cause to get unravelled, unwound (of a ball of yarn); to cause to get untied (of a knot, a belt, shoelaces); to cause to come apart; to cause to be eliminated', e.g. ŋɛɛ̀ pītōò šīìpʌ yīī 'I unravelled the yarn', chātāā ē thēsāā šīì nāāpʌ reè 'They've eliminated/dissolved number chā [army camp] these days, too'

Noncausative: WT ạ-džig-pa, žig 'to be ruined'

ST ciq 'to be destroyed, annihilated' is a reflex of the present; for example, pēcā chūù ciqpʌ reè 'The sacred books were destroyed by water', qɛɛpā ciqpʌ reè 'The world came to an end'

ST šiì 'to get unravelled, unwound; to get untied; to come apart' is a reflex of the perfect; for example, pītōò šiìpʌ reè 'The yarn got unwound (accidentally)', ṭhu šiìpʌ reè 'The boat fell apart'

Derivations:

(a) *ạ-žig-pa (causative and noncausative present) : WT ạ-džig-pa

10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung. *ạ-žig ⟶ *ạ-džig

(b) *bs-žig (causative perfect) : WT b-žig

13. s is lost before spirants and affricates. *bs-žig ⟶ b-žig

The devoicing indicated by Jäschke for the imperative to this verb, (b-)šig, is indicated by spoken Tibetan šīi for the perfect, too.

(c) *b-žig (causative future) : WT g-žig

3. A labial stop changes to a dental before any consonant other than the prefix s-. *b-žig ⟶ *d-žig

15. A dental stop changes to a velar before dentals, palatals, and r. *d-žig ⟶ g-žig

(d) *s-žig (causative imperative) : WT šig

7. s devoices an immediately following voiced spirant. *s-žig ⟶ *s-šig

13. s is lost before spirants and affricates. *s-šig ⟶ šig

(e) *s-žog (causative imperative) : WT žog

13. s is lost before spirants and affricates. *s-žog ⟶ žog

(f) *žig (noncausative perfect) : WT žig

Bases with voiced dental affricate initials:

7. Causative: WT ạ-dzug-s-pa, b-tsug-s, g-zug-s 'to prick or stick into'
ST tsūù 'to cause to pierce', e.g. ŋ ɛ̲ɛ̀ qʌ̄ʌ̄pūù lʌ qhʌ̄p tsūùpʌ yī̲ī̲ 'I stuck a needle in the balloon', ŋ ɛ̲ɛ̀ ŋɛɛ̲ laqpāā yū̲tū̲ū̲ tsūùpʌ yī̲ī̲ 'I tattooed a svastika on my hand', qhōṑ ŋaa̲ ṭhi̲ tsūù chu 'He stabbed me with a knife'

Noncausative: WT zug-pa, zug-s, ____, zug-s
ST su̲ù 'to pierce', e.g. šʌp lʌ tshēmāà su̲ù nāāpʌ re̲è 'Thorns pierced his feet'

(Though Jäschke 465 regarded both of these series of written Tibetan forms as in free variation, the functions of the spoken Tibetan correspondents suggest that the situation was otherwise, i.e. that the first was causative to the second.)

8. Causative: WT ạ-dzum-pa, b-tsum, g-zum, tshum 'to close, to shut (e.g. the eyes)'
ST tsūm̀ (< *b-tsum-s < *bs-dzum-s) 'to cause to get closed, i.e. to close (e.g. the eyes, the mouth)', e.g. ŋɛ̲è mī̲ṭ tṣū̲pʌ yī̲ī̲ 'I shut my eyes', tsʌ̄qūù qhā tsū̲pʌ yī̲ī̲ 'I closed the [mouth of] the bag for baked barley flour'

Noncausative: WT zum [given by Jäschke as a free variant of btsum]
ST su̲m̀ (< *zum-s < *dzum-s) 'to get closed, to close', e.g. mɛ̄ɛ̄ ṭ̲ḷ̀ ŋɛɛ̲ ma̲qā ku̲qū su̲m̀ chu 'Because of the medicine my sore quickly healed [was closed]', Ɪqūū su̲m̀ šaa 'The hole (has gotten and) is closed (blocked, filled)'

Derivations:

(a) *a̤-dzum-pa (causative present) : WT a̤-dzum-pa

8. The stop element of voiced affricates is lost. *a̤-dzum ⟶ *a̤-zum

10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung. *a̤-zum ⟶ a̤-dzum

(b) *bs-dzum (causative perfect) : WT b-tsum

6. s devoices an immediately following voiced stop or affricate. *bs-dzum ⟶ *bs-tsum

13. s is lost before spirants and affricates. *bs-tsum ⟶ b-tsum

(c) *b-dzum (causative future) : WT g-zum

3. A labial stop changes to a dental before any consonant other than the prefix s-. *b-dzum ⟶ *d-dzum

8. The stop element of voiced affricates is lost. *d-dzum ⟶ *d-zum

15. A dental stop changes to a velar before dentals, palatals, and r. *d-zum ⟶ g-zum

(d) *s-dzum (causative imperative) : WT tshum

6. s devoices an immediately following voiced stop or affricate. *s-dzum ⟶ *s-tsum

13. s is lost before spirants and affricates. *s-tsum ⟶ *tsum

22. Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated. *tsum ⟶ tshum

(e) *dzum (noncausative perfect) : WT zum

8. The stop element of voiced affricates is lost. *dzum ---→ zum

Bases with voiced dental spirant initials:

9. Causative: WT ạ-dzar-ba, b-zar, g-zar 'to hang up (clothes on a line); to hang or throw over (the toga over one's shoulder)' [i.e. 'to cause to hang down'?]

Noncausative: WT ạ-dzar-ba (Csoma de Körös: 'to hang down'), zar (Chang and Shefts 1964.277: 'to fall')

ST (from the present base) tsar 'to drip, hang (down), dangle', e.g. chūpʌ̄ nɛɛ chū tsʌrqTì 'Water is dripping from the dress', thūlʌ̄ naŋmā tsʌrqTì 'The inner fold is hanging (below the outer fold)', qhöö kērāà tsarpʌ reè 'His belt was dangling'

ST (from the perfect base) saa 'to fall (from a height)' e.g. ŋa saa chu 'I fell', ŋa sʌʌqTì 'I am falling'

10. Causative? WT ạ-dzin-pa, b-zuṅ, g-zuṅ, zuṅ(s) 'to take hold of, grasp'

Noncausative? WT zuṅ? (given by Jäschke as a variant of b-zuṅ)

11. Causative? WT ạ-dzur-ba, b-zur, g-zur, zur 'to give or make way' (with lam[-nas] 'to step aside')

Noncausative? WT cf. zur (ST suu) 'edge, side'

Derivations:

(a) *ạ-zar-ba (causative and noncausative present) : WT ạ-dzar-ba

10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung. *ạ-zar ---→ ạ-dzar

(b) *bs-zar (causative perfect) : WT b-zar

13. s is lost before spirants and affricates. *bs-zar ⟶ b-zar

(c) *b-zar (causative future) : WT g-zar

3. A labial stop changes to a dental before any consonant other than the prefix s-. *b-zar ⟶ *d-zar

15. A dental stop changes to a velar before dentals, palatals, and r. *d-zar ⟶ g-zar

(d) *s-zuṅ(s) (causative imperative) : WT zuṅ(s)

13. s is lost before spirants and affricates. *s-zuṅ(s) ⟶ zuṅ(s)

(e) *zar (noncausative perfect) : WT zar

We have now distinguished two kinds of causatives: those to bases with voiced affricate initials and those to bases with voiced spirant initials. It is, of course, possible that a causative of the second sort may simply be a later formation, i.e. following deaffrication. Where the ạ-, *bs-, *b-, *s- paradigm is lacking, the problem of reconstruction is even more difficult: see examples 1 to 5 below. Perhaps these ambiguities may be resolved in comparative studies, if affrication and deaffrication have not obscured origins in related languages as well. We might, for instance, look into evidence such as that cited in examples 4 and 5 below.

Examples:

(1) g-žig-pa 'to examine, search, try' (≺ *b-žig-pa or *b-džig-pa?)

(2) g-žen-pa 'to light, kindle, inflame' (≺ *b-žen-pa or *b-džen-pa?)

(3) g-zigs-pa 'to see' (honorific), ST sìì (≺ *b-zigs-pa or *b-dzigs-pa?)

(4) ạ-dẓ̌o-ba, b-ẓ̌o-s, b-ẓ̌o, ạ-dẓ̌o-s 'to milk', ST omā šöö̀, ṣ̌o (cf. ẓ̌o 'milk', ST ṣ̌o 'yoghurt') (≺ *ạ-ẓ̌o or *ạ-dẓ̌o?) For Proto Lolo-Burmese 'suck, milk', Matisoff 1970.24 reconstructs an affricate initial: *?tsy-.

(5) za-ba, zo-s, ____, zo(s) or b-za-ba, b-za-s, b-za 'to eat', ST sɛ̀, sa 'to eat' (cf. bza, (b)zan(pa) 'food; fodder', ST sapcɛ̄ɛ̀ 'food supplies' sãpā 'fodder') (≺ *za-ba or *dza-ba?) For Proto Lolo-Burmese 'to eat' Matisoff 1968.891 reconstructs an affricate initial: *ts-.

B. Affrication.

The voiced affricates of the written Tibetan stage which did not enter the language through loans resulted from the appearance of either (a) an epenthetic voiced spirant after a voiced dental stop (when y followed) or (b) an epenthetic voiced dental stop before a voiced spirant (when a-chung preceded).

The voiced palatal affricate.

dẓ̌ is preceded in written Tibetan only by (1) ạ-, (2) l-, (3) m-, and (4) (b)r-:

(1) ạdẓ̌-

ạdẓ̌- ≺ *ạ-ẓ̌-: The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.

(2) ldẓ̌-

(a) Origin of affrication: an epenthetic spirant.

For two words with ldẓ̌- initials, ldẓ̌i-ba 'heavy' (ST ci) and ldẓ̌ags

'tongue' (honorific; ST caà), comparative evidence suggests origins in clusters of a stop followed by l. (For documentation on this point, see Kun Chang, Sino-Tibetan 'iron': *qnleks.) To approach the derivation of these words from the Tibetan end, we therefore posit two Proto-Tibetan forms, *b-lyi 'heavy' and *b-lyags 'tongue', and the following sequence of changes:

3.	A labial stop changes to a dental before any consonant other than the prefix s-.	*b-lyi	⟶	*d-lyi	*b-lyags ⟶	*d-lyags
19.	Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.	*d-lyi	⟶	*l-dyi	*d-lyags ⟶	*l-dyags
23.	Sequences of a dental stop followed by y give rise to an epenthetic palatal spirant after the stop.	*l-dyi	⟶	*l-džyi	*l-dyags ⟶	*l-džyags
24.	y is lost after palatal spirants.	*l-džyi	⟶	l-dži	*l-džyags ⟶	l-džags

(b) Origin of affrication: an epenthetic stop.

In two instances, ldžaṅ-khu 'green' (ST cx̆qū) and ldoṅ-mo 'a [tea] churn' (ST toŋmō), written Tibetan has l instead of the more common m- or a-chung where on the basis of the medial nasal of spoken Tibetan (ñuŋcāă '"bamboo" green' and qāătōō a milk churn') we reconstruct morphemes with nasal initials (Chang and Shefts 1965). Here written Tibetan offers evidence of an earlier stage: l changes to spoken Tibetan n before dental stops (cf. IV.3). The steps by which ldoṅ-mo derives from *a-loṅ-mo are those by which *a-log

yields ldog 'to return' (cf. IV.10). We derive ldžaṅ-khu 'green' from *s-ạ-žaṅ-khu (note the s- prefix in s-ṅon-po 'blue'); similarly, we interpret the variant spellings of 'flea'--ldži-ba and ạ-dži-ba--as reflexes of *s-ạ-ži-ba and *ạ-ži-ba, respectively:

(a) *s-ạ-žaṅ-khu : WT ldžaṅ-khu 'green'

5.	s changes to r before voiced nasals and liquids.	*s-ạ-žan	⟶	*r-ạ-žan
10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*r-ạ-žaṅ	⟶	*r-ạ-d-žaṅ
12.	Noninitial a-chung is lost.	*r-ạ-d-žaṅ	⟶	*r-d-žaṅ
21.	r is fronted to l before dental stops.	*r-d-žaṅ	⟶	ldžaṅ

(b) *s-ạ-ži-ba : WT ldži-ba 'flea

5.	s changes to r before voiced nasals and liquids.	*s-ạ-ži	⟶	*r-ạ-ži
10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*r-ạ-ži	⟶	*r-ạ-d-ži
12.	Noninitial a-chung is lost.	*r-ạ-d-ži	⟶	*r-d-ži
21.	r is fronted to l before dental stops.	*r-d-ži	⟶	ldži

(3) mdž-

In Jäschke's dictionary, there are five instances of dž preceded by m-. For two of these there is evidence in spelling variants which points to affrication caused by a-chung and to the complex origin of the prefix m- (i.e. m- ≺ *b-ạ-): m-džiṅ-pa, ạ-džiṅ-pa 'neck', and m-džug, ạ-džug 'end'.

(On m as an analyzable prefix, see also Appendix 3.)

Jäschke's three spellings for 'end', m-džug, ạ-džug, and g-žug, we derive from *b-ạ-žug, *ạ-žug, and *b-žug:

(a) *b-ạ-žug : WT m-džug

1. Oral stops change to nasals before nasals. *b-ạ-žug ⟶ *m-ạ-žug

10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung. *m-ạ-žug ⟶ m-ạ-d-žug

12. Noninitial a-chung is lost. *m-ạ-d-žug ⟶ m-džug

(b) *ạ-žug : WT ạ-džug

10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung. *ạ-žug ⟶ ạ-džug

(c) *b-žug : WT g-žug

3. A labial stop changes to a dental before any consonant other than the prefix s-. *b-žug ⟶ *d-žug

15. A dental stop changes to a velar before dentals, palatals, and r. *d-žug ⟶ g-žug

Spoken Tibetan also has spirant : affricate allomorphs for both 'end' and 'tail in the following doublets: r^pšūù, r^mcūù 'goat's tail'; tshīpšūù, tshīmcūù 'end of life'; lupšūù, lumcūù 'end of a year', and t^pšūù, t^mcūù 'end of a month'. Though initially spoken Tibetan has no reflex of the labial prefix (šuù 'end', šuqū 'tail'), in medial position it has retained it unchanged.

If we assume here (1) a base with initial ž, (2) doublets, with and without a-chung, and (3) one prefix, *b-, the a-chung will account for the affrication in mdžug and we will need only one prefix. If we assumed a basic *dž-, we could account for the allomorphs in written and spoken Tibetan through deaffrication, but we would need two prefixes, *b- and *m-.

We then posit doublets, with and without a-chung, for m-džal-ba and m-džed-pa:

a. WT m-džal-ba, ____, ____, m-džol 'to meet, to pay one's respects; to go on a pilgrimage' [also žal m-džal-ba] (ST cɛɛ) from *b-ạ-žal-ba, ____, ____, *b-ạ-žol: cf. WT žal 'mouth, face' (honorific; ST šɛɛ). The nasal reflex of a-chung is preserved medially in spoken Tibetan after the negative prefix: qhẽẽsʌ̄ ŋɛɛ̀ qhõõ cɛɛpʌ yĩĩ 'Yesterday I went to meet him', ... mãcɛ̃ɛ̃pʌ raa chũũnʌ̄, ʌ̄nī, ceemāà cɛɛ yõ '... if I don't get to see you [tomorrow morning], then I'll see you later'.

b. WT m-džed-pa 'suffering, enduring' ≺ *b-ạ-žed-pa; cf. žed-pa 'to fear, be afraid'

For the final written Tibetan example of mdž-, mdže 'penis', spoken Tibetan has a medial nasal in the honorific sõõcē, which we assume derives from *gsol-ạ-že, while mdže derives from *b-ạ-že.

(4) rdž-

In one example, the prefixless noun has a voiced palatal spirant initial, and the corresponding verb has the s-, bs-, bs- series of prefixes, with s- changed to r-. We assume *ž-, *ạ-ž- doublets:

WT r-dže̍d-pa, br-dže̍d, br-dže̍d 'to honor, reverence' (≺ *s-a̍-že̍d-pa); cf. WT že-sa 'reverence' (Jäschke 654: rdže-sa or že-sa byed-pa 'to pay one's respects'), ST še̲sā 'honorific'

The voiced dental affricate.

The only prefixes which occur before dz are a̍-, m-, and (b)r-. If mdže̍- and (b)rdže̍- derive from *b-a̍-že̍- and *(b)s-a̍-že̍-, we may infer that mdz- and (b)rdz- derive from *b-a̍-z- and *(b)s-a̍-z-. mdzad-pa 'to do, act' we then derive from *b-a̍-zad-pa; the *s-, *bs-, *bs-, *s- prefixes are found in the following examples:

a. WT r-dzoṅ-ba, (b)r-dzaṅ(s), (b)r-dzaṅ 'to send, to dispatch' (≺ *s-a̍-zoṅ-ba; related to soṅ, pft. and imp., 'to go'?)
ST tsà̲ā̀ 'to chase away, exorcise (ghosts, evil spirits)', e.g. ŋɛ̲̀ ṭe̲ tsà̲ằpʌ yĭ̲ĭ̲ 'I exorcised the ghost'

b. WT r-dzi-ba, (b)r-dzi-s, br-dzi, (b)r-dzi(s) 'to press, knead (dough); to tread, crush, oppress, distress' (≺ *s-a̍-zi-ba)
ST tsì̲, tsi̲ 'to knead (dough)', e.g. ŋɛ̲̀ ṭhu̲šṬ̀ tsì̲pʌ yĭ̲ĭ̲ 'I kneaded the dough'

c. WT r-dzu-ba, (b)r-dzu-s, br-dzu, (b)r-dzu(s) 'to give a deceptive representation, to change, disguise' (≺ *s-a̍-zu-ba)

C. Asymmetries in voicing.

In two examples, the affricate is voiced in the noncausative, while the causative has voiceless affricates throughout (1-2 below. In two other examples this is reversed: the causative has the voiced affricate,

the noncausative its voiceless counterpart (3-4 below):

1. Causative: WT a-tshag-pa, b-tsag-s (or tshag-s), b-tsag, tshog 'to cause to trickle, to strain'

ST (from the present) tshāà 'to habitually strain', e.g. qhöö̀ cha tshāàpʌ reè 'He usually strains the tea'

ST (from the perfect) tsāà 'to cause to trickle, flow (thus "to take out [blood from a diseased animal, to use in innoculations]"), to cause to go through a strainer, i.e. to strain, sift', e.g. cī na tɛɛ̀pʌ cī nɛɛ tshūū ṭhāà tsāà; cī lʌ phāā lūù ... '... they take blood from one who is sick; they put it in another ...'; ŋɛɛ̀ cha tsāàpʌ yī̄ 'I strained the tea'

Noncausative: WT a-dzag-pa, (g)zag-s, g-zag 'to trickle'

ST tsaà (from the present, or from a perfect *a-dzag?) 'to go through a strainer or sieve, to trickle, flow', e.g. chūūrʌ̄ ti saŋtsāà nãã̃ nɛɛ tsaà ā yõõ̃ sām̀ chuŋɛ̈ɛ̈nī, tsaà chu 'I wondered whether the cheese would go through the copper sieve, but it did'

2. Causative: WT a-tshir-ba, b-tsir (or tshir), b-tsir (or g-tsir), tshir 'to press, crush out'

ST tsīr 'to squeeze; to squeeze and therefore to cause to come out (seep or ooze out)', e.g. ŋɛɛ̀ tüütüü̃ nɛɛ chū tsīrpʌ yī̄ 'I squeezed the water from the shirt'

Noncausative: WT a-dzir-ba 'to drop, to drip'

ST tsir 'to seep out, ooze out, come out', e.g. qhɔɔmā nɛɛ chū tsirpʌ yǐǐ 'Water is seeping from the (poorly made) clay pot', ŋɛè tshʌ̄lūmʌ tsǐrpʌ yǐǐ; tshʌ̄lūmèè qhòò tsir su 'I squeezed the orange; orange juice came out'

We assume that both members of each of these pairs derive from one base, with one initial, and that the difference in the voicing of the initial is the result of a sound change caused by a prefix. We have evidence for a prefix (s-) which causes devoicing, but not for a prefix which causes voicing. We infer from this that the voiced initials of the two noncausatives are original, and that the voiceless initials of their causative counterparts are secondary and due to the s- prefix.

Three changes bring *s-dzag and *s-dzir to written Tibetan tshag and tshir:

6.	s devoices an immediately following voiced stop or affricate	*s-dzag ⟶	*s-tsag
13.	s is lost before spirants and affricates.	*s-tsag ⟶	*tsag
22.	Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.	*tsag ⟶	tshag

Assume that the *s-, *bs-, *bs-, *s- prefixes preceded the base *dzag 'to trickle': *s-dzag, *bs-dzag-s, *bs-dzag, *s-dzog would evolve to

*tshag, *b-tsag-s, *b-tsag, *tshog. Only in the present does this differ from the forms we actually find in written Tibetan. Could the a-chung prefix have been a later addition, made in the absence of any visible prefix?

But why would the s-, bs-, bs-, s- prefixes have been used rather than the ạ-, bs-, b-, s- series of, for example, ạ-dzugs-pa, b-tsugs, g-zugs 'to prick or stick into'? When we find the s-, bs-, bs-, s- prefixes before voiced stops, we infer an intervening a-chung (see, for example, VII.4,5). The a-chung, however, prevents the devoicing of stops and the loss of s. And yet, the affricate initials of the spoken Tibetan noncausatives tsa̲à and ts̲ir (in contrast to the noncausative su̲ù [VIII.6]) may also point to the presence of a-chung in the base (that is, to *ạ-z- initials). The change in which s caused devoicing must then still have been active when the a-chung was lost.

The changes leading from *s-ạ-zog to tshog and from *bs-ạ-zag-s to btsags are as follows:

(a) *s-ạ-zog (causative imperative) : WT tshog

10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*s-ạ-zog	⟶	*s-ạ-dzog
12.	Noninitial a-chung is lost.	*s-ạ-dzog	⟶	*s-dzog
6.	s devoices an immediately following voiced stop or affricate.	*s-dzog	⟶	*s-tsog

13.	s is lost before spirants and affricates.	*s-tsog	⟶	*tsog
22.	Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.	*tsog	⟶	tshog

(b) *bs-ạ-zag-s (causative perfect) : WT btsags

10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung	*bs-ạ-zag-s	⟶	*bs-ạ-dzags
12.	Noninitial a-chung is lost.	*bs-ạ-dzag-s	⟶	*bs-dzag-s
6.	s devoices an immediately following voiced stop or affricate.	*bs-dzag-s	⟶	*bs-tsag-s
13.	s is lost before spirants and affricates.	*bs-tsag-s	⟶	btsags

3. Causative: WT ạ-dzugs-pa, b-tsugs, g-zugs 'to found, institute; to introduce, begin, commence'

ST tsūù 'to cause to become established, i.e. to establish, start, a school, club, representative', e.g. ŋā̱tsöò tshɔ̄qpā chi tsūùpʌ yī̱ī̱ 'We established a club', ... yīcīī qūtsʌ̄p ti̱i̱ tshʌ̄p tėe kaqāā qhi qūtsʌ̄p tsūù yɔ̱ɔ̀ re̱è ' ... India established a representative there, in place of this English representative'

ST tsūù with qo̱ 'to start, begin to do something', e.g. ŋɛ̱ɛ̀ the̱p ti̱ lɔ̄ɔ̄yāà qo̱ tsūùpʌ yī̱ī̱ 'I've started to read the book'

Noncausative: WT ạ-tshugs-pa, tshugs 'to go into, begin'

ST tshūù 'to become established', e.g. tshɔ̄qpā chi tshūù su

'A club was established'

ST tshūù with qo (p.: with ū) 'to begin', e.g. löösāā tshūùpʌ reè 'The New Year (celebration) began', chāāpā chōtsöö ñTTpʌ nɛɛ qo tshūù chu 'It started to rain at two o'clock', ... nāà ñTqāā nɛɛ sūūtsTì ū tshūūñèè yT tsāā ' ... since the feast starts day after tomorrow'

4. Causative: WT a-dzud-pa, b-tsud (according to Schmidt's Tibetisch-Deutsches Wörterbuch, also zud), ____, tshud 'to put, to lay (into a box, the grave); to lead, to guide'

Noncausative: WT a-tshud-pa, tshud 'to be put into (a hole, prison); to go into, to enter, to get into'

ST tshūù 'to be caught (in something); to be admitted, accepted (into a school, government service)', e.g. ŋɛɛ chūpʌ qöö pāārāā lʌ tshūù su 'My robe was caught in the door', ŋa lāpṭāā tshūù chu 'I was admitted to the school', tsTṭūū taa ṭhũqóó šuŋ qhi šʌpcT šuñèè tẽtsō, šuŋšʌp lʌ qhʌ̃ṭèès tshūūqT rɛè? sūù tʌmqT rɛè? 'How are the monk officials and lay officials who serve the government admitted to government service? Who selects them?'

Compare with this noncausative a cognate noncausative with a voiced initial:

WT a-dzul-ba (Jäschke; Nornang: s-dzul) 'to slip in'

ST tsüü 'to enter (a school, a monastery, the army; a tent [of the wind])', e.g. ʌnT, sōsöö thaŋlāà chɛè ni

yãã mʌʌmēē tsüüñēē yɔ̀ɔ̀ reè 'But then, there are also those who enter the army by volunteering', qhō ṭhũücīī līqēē lāpṭāā tsüüpʌ reè 'He entered ṭhũücīī Park's School'

It seems likely that all of the examples in 3-4 derive from one root, *dzu (the *dzu of ạ-dzugs-pa : zug-pa, VIII.6?), and that the differences in form and function we find in written and spoken Tibetan are due to various affixes. For the noncausatives ạ-tshugs-pa and ạ-tshud-pa we once again assume an *s- prefix which has devoiced a voiced initial. In doing this we posit the same prefix for a noncausative as we have posited for causatives. Is this justified? It is undeniable that s- forms causatives; it is equally certain that s- has other, though perhaps historically related, functions. As Wolfenden said (1929.46):

> It is probable that originally -s- was a directive indicating simply either (a) general direction into the condition or state named by the verb root itself, or (b) as its fullest extension in an objective direction) action to, toward, for, etc., an indirect object. As a later development (c) the so-called transitive or causative verbs in -s- probably arose.
>
> In verbs of class (a) the infix -s- may be regarded as a terminative element assisting the verb root to pass the subject into the state or condition which it itself names, the indirect object being, in fact, the verb concept itself. Thus sgaṅ-ba (*b-s-gaṅ) to become full, is really to come into (-s-) a stage of fullness (ind. obj.) In these, the objective connection may be said to be internal.

Under this interpretation, ạ-tshugs-pa and ạ-tshud-pa belong to type (a), with the secondary addition of an a-chung prefix in the present.

Conclusion

We have now set forth a system in which causative perfects and imperatives of the most disparate sorts derive from one prototype: *bs- (perfect), *s- (imperative) + base. Thus, the same bs-, s- we see in bs-tim-s, s-tim-s 'to cause to be submerged' (perfect, imperative: V.1-2) we reconstruct for phye (≺ *bs-bye), phye (≺ *s-bye) 'to cause to open' (perfect, imperative: VII.2,13) or brtib-s (≺ *bs-drib-s), rtib(s) (≺ *s-drib[s]) 'to break or pull down/cause to get dented' (perfect, imperative: VII.24-5).

There are, however, causatives for which we cannot readily, if at all, posit the s-, bs- we see in s-tim, bs-tim 'to cause to be submerged' (present, future). Instead we find a- as the present prefix and reconstruct *b- for the future prefix. This group of causatives may, in part, be defined phonetically; for a proposed original distribution this would, of course, be suspect. We find here, for example, bases with voiced-stop initials (e.g. d-bye ≺ *b-bye 'to cause to open' [future]), but never with nasal or liquid initials, though such combinations as m-n- (≺ *b-n-) occur outside the causative (e.g. m-no-ba 'to think'). Also, for some verb paradigms where the s- present cannot be reconstructed for the causative, the a-chung present given for the causative is the same as that of the noncausative: ạ-tsho-ba, VI.4; ạ-tsho-d-pa?, VI.5; ạ-gum-pa, VII.17; ạ-grol-ba, VII.18; ạ-groṅ-ba, VII.18-9; ạ-džug-pa, VIII.2; ạ-džig-pa, VIII.4; ạ-dzar-ba, VIII.8. Unless we consider this a convergence caused by sound

change--and we do not--we must identify the a-chung present as either causative or noncausative, not both. For two reasons we conclude that it is by origin a noncausative and that it is cited in the causative to fill out a defective paradigm: (1) it lacks the causative s-; and (2) where spoken Tibetan has a reflex of the a-chung causative-noncausative present, the example is that of a noncausative (a̱-džig-pa, VIII.4; a̱-dzar-ba, VIII.8). But why are such paradigms defective? Was it that the sound changes of devoicing caused by s and the loss of s destroyed what were considered the marks of the causative, so that in some cases a-chung was added to the now prefixless present (*s-bral → *phral → a̱-phral, VII.14-5; *s-a̱-zag → *tshag → a̱-tshag, VIII.15 ff.), while in others a prefixless causative present was abandoned, and the noncausative present used in its place (*s̄-gum → *khum, which was replaced by a̱-gum, VII.17)? (In several examples, however, the a-chung present of the causative differs from its noncausative counterpart either in the vowel of the base [a̱-ges-pa, a̱-gas-pa, VII.17] or in the possession of a -d- affix [a̱-bye-d-pa, a̱-bye-pa, VII.2; a̱-gye-d-pa̱, a̱-gye-pa, VII.20].)

And what of the *b- futures to causatives? These present difficulties beyond those of reconstruction from written Tibetan to Proto-Tibetan. There is no reflex in spoken Tibetan for causative futures with such initial sequences as *b- + voiced stop. Also, though we may again infer from the absence of *-s- a noncausative origin, we find no reason why such a form should replace a *bs- causative, since sound changes would no more obliterate this sign of the

causative than they did the *bs- of the causative perfect. And, of course, it did not replace it in the precursor of spoken Tibetan.

From this study of the causative we are, then, left with problems to solve. The investigation of sound changes made necessary by the variation in future prefixes has, however, led to an unexpected dividend: in tracing b-, d-, g- prefixes back to a common source, *b- (Appendix 2), we see that, in general, the spoken Tibetan -p- which occurs as the first member of medial consonant clusters in compounds is the reflex of this *b-. (The -p- may, then, be synchronically morph-initial, as we said earlier [Chang and Shefts 1967.518]. Historically, however, this is probably true only of rare examples such as phyed-ka 'half', where written Tibetan -phy- becomes spoken Tibetan -pc- [cf. X.13-4]. Most occurrences of this -p- are manifestations of a separate morpheme, the prefix *b-.) We infer that medially the *b- was syllable-final and for this reason did not undergo the changes to d- and g- which were characteristic of its syllable-initial appearances. Written Tibetan gla ~ -gla 'pay' would then be a morphophonemic representation for a spoken Tibetan *g-la [< *b-la] ~ *-b-la, which developed to lā ~ -plā in, for example, lā 'payment', ṭāplā 'payment for a haircut'. (The absence of the -p- in honorific compounds witnesses to the relatively late origin of such compounds.) qhoptsēè 'games played with ancient weapons', chōptsēè 'water games', ṭhiptsīì 'knife or sword games', tāptsēè 'games to show riding technique' enable us, then, to reconstruct a perfect *br-tsed to a present r-tsed-pa 'to play'. (For the loss of the -r-, compare WT br-gya

'hundred', ST ka, WT bži-br-gya 'four hundred', ST šipkʌ̄.) On the basis of kɔ̄qkɔ̄ɔ̀ 'crooked', qēpkɔ̄ɔ̀ 'crooked waist', qhāpkɔ̄ɔ̀ 'crooked mouth', nāpkɔ̄ɔ̀ 'crooked nose' we infer an earlier *b-kyog, in addition to written Tibetan a-khyog.

Appendix 1.

Correspondences in written and spoken Tibetan initials and tones.

1. Stops: X.1. 2. Affricates: X.3. Spirants: X.4. 4. Vowels and h: X.5.
5. Nasals, liquids, semivowels, db(y)-, Cw-: X.5.

1. Stops.

In the spoken Tibetan of Lhasa, there is no contrast of voiced : voiceless stops. Syllables with initial voiced stops in written Tibetan correspond to spoken Tibetan syllables with initial voiceless aspirated stops and low tone. For example: WT gur, ST qhuu 'tent'; WT dug, ST thuù 'poison'; WT bu, ST phu 'a boy; a son'. When a written Tibetan voiced stop is preceded by another consonant, spoken Tibetan still has the low tone, but the stop is unaspirated. For example: WT dgu, ST qu 'nine'; WT mgo, ST qo 'head'; WT a-ga-rab, ST qʌrôô 'quite a bit, quite a few'; WT rgod-ma, ST qöömā 'a mare'; WT sga, ST qa 'a saddle'; WT gdoṅ, ST tõõ 'a face'; WT bdun, ST tüü 'seven'; WT mduṅ, ST tuŋ 'a spear'; WT a-di, ST ti 'this'; WT rdo, ST to 'a stone'; WT lde-mig, ST timī̀ 'a key'; WT a-bu, ST pu 'a worm'; WT sbag, ST paà 'Mah jongg; cards'. [b(y) preceded by d is an exception to the rule that stops remain stops: cf. §5.]

Syllables which have in written Tibetan aspirated voiceless stops either in absolute initial position or when preceded by another consonant have in spoken Tibetan aspiration and high tone. For example: WT khab, ST qhʌ̄p 'a needle'; a-khor-lo, ST qhōlō 'a wheel'; WT mkhan-po, ST qhɛ̃pō 'an abbot'; WT thag-pa, ST thāqpā 'a rope'; WT a-thuṅs (pft.), ST thũ̀ũ̀ 'to drink';

WT m-thoṅ, ST thõõ 'to see'; WT phag-ša, ST phāqšā 'pork'.

Syllables which in written Tibetan begin with a voiceless unaspirated stop or a voiceless unaspirated stop preceded by another consonant correspond to syllables in spoken Tibetan with initial unaspirated stop and high tone. For example: WT ka-ba, ST qāā 'a pillar'; WT dkar-po, ST qāāpō 'white'; WT bka-ạ-dri, ST qʌ̄ṭī 'a question' (p.); WT rkaṅ-pa, ST qāŋpā 'a foot'; WT skad, ST qɛ̄è 'voice'; WT til, ST tīī 'sesame seed'; WT gter, ST tēr 'something hidden underground'; WT btab (pft. to ạ-debs-pa), ST tʌ̄p 'to sow, to plant'; WT rta, ST tā 'horse'; WT lto, ST tō 'food'; WT stoṅ, ST tõõ 'thousand'; WT pags-pa, ST pāqpā '(animal) skin or hide'; WT dpaṅ-po, ST pāŋpō 'a witness'; WT spun, ST pũũ 'woof' (of 'warp and woof').

In terms of correspondences in voice, tone, and aspiration, spoken Tibetan exhibits in general the same sorts of reflexes for stops followed by y or r (i.e. with subscript y or r) as for simple stops. (For an exception, see dr-, §5.) The effects of y and r are felt in other ways: velar stops + y yield front velar stops; labial stops + y yield palatal affricates; velar, dental, and labial stops + r yield retroflex--or, in some cases, labial--stops. For example:

WT gya-gtšig, ST khʌʌcīì '81'; WT rgyab, ST kʌp 'back'; WT mkhyen, ST khěě 'to know, to understand' (p.); WT khyi, ST khī 'dog'; WT dpyid-kha, ST cīīqʌ̄ 'spring', WT spyan, ST cɛ̃ɛ̃ 'eye' (p.); WT phyag, ST chāà 'hand; arm' (p.); WT byaṅ, ST chãã 'north', WT sbyaṅs (pft. to sbyoṅ-ba), ST cã̀ã̀ 'to practice'.

WT gri, ST ṭhi̲ 'a knife'; WT a̱-gro-ba, ST ṭo̲ 'to go'; WT dgra, ST ṭa̲ 'enemy'; WT skra, ST ṭā 'hair (of the head)'; WT khrag, ST ṭhāà 'blood'; WT a̱-khruṅs (pft.), ST ṭhūù̀ 'to be born' (p.); WT tre-hor, ST ṭīu̲, n.pr. of a place; WT drug, ST ṭhuù 'six'; WT a̱-dre, ST ṭe̲ 'a ghost'; WT spro-po, ST ṭōpō 'good-tasting', WT dpral-ba, ST pɛ̄ɛ̄qɔ̄ɔ̀ (p.: ūpɛ̀ɛ̀) 'forehead'; WT phra, ST ṭhā 'a gem'; WT brel-ba, ST ṭhewā chũũ̲ 'to be(come) busy'; WT a̱-bras, ST ṭɛ̀ 'rice'; WT sbrul, ST ṭüü̲ 'snake'.

2. Affricates.

The affricates behave, in general, like stops.

Voicing and initial position lead to low tone and aspiration in WT dža, ST cha̲ tea. Here the dental affricate differs from the palatal affricate in one example, where the initial voiced affricate of written Tibetan dza-ti yields in spoken Tibetan low tone but no aspiration: ts^tī 'nutmeg'. This discrepancy may be due to the time at which the words entered the language: the word for 'tea' may be a loan antedating, the word for 'nutmeg' a loan postdating the voicing and aspiration shifts to which voiced stops were subject (cf. VII.11).

When another consonant precedes the voiced affricate, the tone is low but there is no aspiration: WT mdže, ST ce̲ 'penis'; WT a̱-dža, ST ca̲ 'rainbow'; WT rdžes, ST ce̲è 'track'; WT ldžags, ST caà 'tongue' (p.); WT mdze, ST tse̲ 'leprosy'; WT a̱-dzoms, ST tsoṁ 'to get together'; WT rdzoṅ 'castle; fortress', ST tsõõ̲ 'a district'.

The voiceless unaspirated affricate, whether initial or preceded by

another consonant in written Tibetan, corresponds to a voiceless unaspirated affricate with high tone in spoken Tibetan: WT (l)tšog, ST cɔ̄ɔ̀ 'to be free to do something'; WT gtšig, ST cīq 'one'; WT btšu, ST cū 'ten'; WT ltše, ST cē 'tongue'; WT tsan-dan, ST tsɛ̃̄tɛ̃̄ɛ̃̄ 'sandalwood tree'; WT gtsaṅ, ST tsãã̄ 'Tsang'; WT btson-pa, ST tsʷ̄opā 'prisoner'; WT rtsad, ST tsɛ̄ɛ̀ 'an inquiry'.

The voiceless aspirated affricate, whether initial or preceded by another consonant in written Tibetan, corresponds to a voiceless aspirated affricate with high tone in spoken Tibetan: WT tšhu, ST chū 'water'; WT mtšhin-pa, ST chī̄pʌ̄ 'liver'; WT a-tšhar-gži, ST chʌ̄(ʌ̄)ši 'a plan'; WT tshe, ST tshē 'life'; WT mtshan, ST tshɛ̃̄ɛ̃̄ 'a name' (p.)

3. Spirants.

The voicing contrast of written Tibetan spirants is reflected in a tonal contrast in spoken Tibetan where, as among the stops and affricates, voicing leads to low tone and voicelessness to high tone, regardless of prefixes or postinitial consonants. (Written Tibetan sr- has, however, two spoken Tibetan reflexes, s- and ṭ-; for more examples, cf. IV.6,8.)

a. WT su, ST sū 'who?'

WT gsum, ST sūm̄ 'three'

WT bsus (pft. to bsu-ba), ST s̄üǜ 'to welcome'

WT sras, ST sɛ̄ɛ̀ 'son' (p.)

WT sras-mo, ST ṭɛ̄ɛ̄mō, sɛ̄ɛ̄mō 'daughter' (p.)

b. WT zaṅs, ST sãã̀ 'copper'

WT gzig, ST si̲ì 'to see' (p.)

WT bzos (pft. to bzo-ba), ST s̱òo 'to make'

c. WT ša, ST šā 'meat'

WT gšegs or bšegs, ST šāà 'to die' (p.)

d. WT žal, ST šɛ̱ɛ 'mouth, face'

WT gžon, ST šõõ̱ 'young'

WT bži, ST ši̱ 'four'

4. Vowels and h.

Spoken Tibetan vowel initials occur with two tones, high and low. The written Tibetan correspondents for those with high tone show the symbol usually transcribed 'V (which may have represented a glottal stop), e.g. WT 'a-khu, ST ʌ̄qū 'paternal uncle'. The written Tibetan correspondents for those with low tone have the symbol known as a-chung, transcribed ‹V, e.g. WT ‹o-ma, ST o̱mā 'milk'.

Written Tibetan forms with h- yield in spoken Tibetan h- with high tone, e.g. WT ha-lam, ST hālām 'almost'.

5. Nasals, liquids, semivowels, db(y)-, Cw-.

The nasals, liquids, and semivowels form a group of consonants which when voiced and in absolute initial position yield low tone, but which, though still voiced, in combination with any prefix yield high tone. Where we find voiceless counterparts of these consonants in written Tibetan, the spoken Tibetan correspondents show high tone. For example: Voiceless:

WT lho, ST lhō 'south'; WT hral, ST rhɛ̄ɛ̄ 'to grind'

Voiced:

a. WT ṅa, ST ŋa̱ 'I'; WT dṅul, ST ŋu̿u̿ 'silver; money', WT mṅar, ST ŋāā 'sweet'; WT rṅa, ST ŋā 'drum'; WT lṅa, ST ŋā 'five'; WT sṅa, ST ŋā 'early'

b. WT nya, ST ña̱ 'fish'; WT gnyis, ST ñīī, ñīì 'two'; WT mnyes (pft. to mnyed-pa), ST ñēè 'to tan (leather); WT rnyiṅ-pa, ST ñīŋpʌ̄ 'old (of things)'; WT snyiṅ, ST ñīŋ 'heart'

c. WT nag-po, ST na̱qō 'black'; WT gnam, ST nām 'sky; weather'; WT mna-ma, ST nāmā 'a bride who is asked for by the boy's family'; WT rnam-thar, ST nāmtāā 'a biography'; WT sna-khrag, ST nāṭāà 'blood from the nose'

d. WT mi, ST mi̱ 'person'; WT me, ST me̱ 'fire'; WT maṅ-po, ST mʌ̱qū 'many' (Exception: WT mig, ST mīì 'eye'; cf. X.31.) WT dmar-po, ST māāpō 'red'; WT rmon-pa rgyab, ST mōpā kʌ̱p 'to plough'; WT sman, ST mɛ̄ɛ̄ 'medicine'

e. WT myon, ST ñu̱u̱ 'to experience'; WT smyon-pa, ST ñōpā, ñōpā 'wild; crazy'

f. WT lag-pa, ST la̱qpā 'hand; arm'; WT blon-chen, ST lo̤o̤cēē 'a high officer of state, e.g. a president'; WT glo, ST lō 'a cough'; WT klog, ST lōɔ̀ 'to read'; WT rlon-tshogs, ST lōmtsɔ̄ɔ̀ 'a "wet" assembly, i.e. one with tea'; WT slob-deb, ST lōptēp 'a textbook' (For WT zl- : ST t-, as in WT zla-ba 'moon; month', ST ta̱wā, see IV.1-5.)

g. WT ri, ST ri̱ 'mountain'; WT dral, ST rɛɛ 'to tear' (For other reflexes of Cr-, see X.3-4. Written Tibetan has two ways of representing gy combinations: (1) as g with subscript y, and (2) as a sequence of g followed by y. Spoken Tibetan shows two reflexes for the gy combinations: written Tibetan g with subscript y yields the spoken Tibetan front velar; g-y yields y with high tone [see h. below]. For the combination of d and

r, though written Tibetan has only one mode of representation--d with subscript r--spoken Tibetan again has two sets of reflexes, one which treats the sequence as an initial stop followed by r (WT drug, ST ṭhuù 'six'), the other which implies an initial r with a prefix (WT dral, ST rɛ̄ɛ̄ 'to tear').

h. WT yar, ST yaa 'up'; WT g-yag, ST yāà 'yak'; WT g-yas, ST yɛ̄ɛ̀ 'right (direction)'; WT g-yar, ST yāā 'to loan'

i. WT wa, ST wa 'fox'

For written Tibetan forms with initial b(y) preceded by d, as for those with nasals, liquids, and the semivowel y preceded by prefixes, the spoken Tibetan correspondents have high tone. And the semivowel reflex of -b-, i.e. -w- is preserved in one example, WT dbaṅ, ST wāŋ̀ (wɑ̃̄ɑ̃̄) 'might, power'. Other examples of db- and dby-:

a. WT dbū, ST ū 'head' (p.)

b. WT dbyaṅs, ST yāŋ̀ 'a vowel'; WT dbyar-kha, ST yāāqā 'summer', WT dbyibs, ST yɪ̄p 'shape'

The characteristic behavioral features of b and by here are the same features which characterize the behavior of intervocalic b, i.e. (a) the change of -b- to -w-, and (b) the total loss of this segment. For example:

a. WT driba, ST ṭhiwʌ̄ 'a question'; WT reba, ST rewā 'hope'; WT zlaba, ST tawā 'month'; WT rnaba, ST nāwā 'noticing'; WT tshaba, ST tshāwā WT broba, ST ṭhoā [= ṭhowā?]

b. WT lteba, ST tɛ̄ɛ̄ 'navel'; WT kaba, ST qāā 'a pillar'; WT khuba, ST qhòò 'juice'; WT koba, ST qɔ̄ɔ̄ 'leather'; WT broba in ST caaṭɔ̄ɔ̄ 'taste' (p.)

We infer that the d- of db-, dby- represented a prefix with an unstressed vowel, and that the -b- following this vowel underwent the regular changes of intervocalic -b-. Without any vowel preceding the -b-, we would be hard put to it to explain the changes we find; a stressed vowel would doubtless have been represented in the writing, and would have been retained (perhaps in some sandhi form) in spoken Tibetan.

In spoken Tibetan, stressed noninitial syllables are characteristically high in tone; contrasts between low and high tones in monosyllables and first syllables are neutralized in this position. This may be the explanation for the high tone in such examples as spoken Tibetan ū 'head' (p.) < dbu *dəbū < *bəbu. It is tempting to seek the same explanation for the high tone of spoken Tibetan monosyllables with nasal, liquid, or semivowel y initials which are preceded in written Tibetan by prefixes, as for example, spoken Tibetan ŋūū 'silver' < dṅul < *dəṅul < *bəṅul. The problem, then, is not why these forms have the high tone, but why forms with stop, affricate, and spirant initials preceded by written Tibetan prefixes do not (cf. written Tibetan dgu, spoken Tibetan q<u>u</u> 'nine').

The development of -b- > -w- > -∅- may possibly also be seen in written Tibetan CwV sequences, such as rwa (also ru) 'horn', where we assume *ruba > ruwā > rəwā > rā- ~ -rā. The allomorph -rū in yʌ̄qrū 'yak's horn' would then be an early compound made from the base without suffix; the compounds rāqɔ̄ɔ̄, rāqtōō 'horn' and rʌ̄qtūù 'a mixture of small pieces of horn and food (given to dogs to kill them)' (cf. WT gdug-pa 'poison') would

be of later origin. šamō 'hat' (WT žwa) would also be an early compound, made like yʌqrū from the base without suffix (hence the low tone of ša-). A problem in the derivation of WT CwV from CVbV is, however, the posited loss of a vowel not in a prefix.

Appendix 2.

The prefix *b-.

All stop prefixes (b-, d-, g-) can be shown to derive from one source, *b-. (The labial is, in many cases, retained medially in spoken Tibetan.) The changes to d- and g- are part of a backing process. We may assume that the change from *b- to g- was made in two steps; there is evidence for this in some instances, e.g. where b first changes to d and then from d to g before p and r. As *b- was dissimilated to become d- before labials, so d (≺ *b-) was further dissimilated to become g- before dentals.

Some of the changes affecting *b- are mandatory: *b- never remains unchanged before labials, or before ṅ (where it becomes either g or m). Some are optional: *b- may remain before t-, or it may change to g-. Such free variants provide one clue to the derivation of the other stop prefixes from *b-.

The changes of *b- to d- and g- antedate the loss of s- before voiced stops. Thus, after the -s- of the causative perfect bs- was lost, b- remained b-. Some places where we find the alternants of *b- in verbs are in those causatives which have a simple stop prefix marking the future, and in the present forms of certain other verbs; the function of the *b- prefix in both cases may be that of 'acting subject', to use Wolfenden's term (1929.33). *b- is also used as an adjectival and nominal prefix.

These changes, in summary, are:

(1) b becomes d before labials (p, b, m), velars (k, g, ṅ), and r.

(b) b becomes g before dentals (t, d, n, ts, dz, z, l, s) and palatals (tš, dž, ny, ž, y, š)

Before the nasals ṅ, n, ny, these changes come into conflict with another change, that in which the oral stop b assimilates to the nasal m before a nasal: *b- may become either d- or m- before ṅ (cf. d-ṅar, m-ṅar 'sweet') and either g- or m- before n and ny.

Examples:

1. *b- changes to d- before labials.

a. *b- as present verbal prefix.

d-pog-pa 'to measure'; d-bur-ba 'to smooth'; d-byug-pa 'to swing, to throw'; d-migs-pa 'to fancy, think'

b. *b- as future verbal prefix to causatives with *bs- perfects.

ạ-byin-pa, phyuṅ, d-byuṅ (< *b-byuṅ), phyuṅ 'to cause to come forth; to take out, remove'; ạ-bye-d-pa, phye, d-bye (< *b-bye), phye 'to cause to open'; ạ-phral, phral, d-bral (< *b-bral), phrol 'to cause to separate'

c. *b- as adjectival prefix.

d-bul-ba 'poor'; d-ma-ba, d-ma-bo 'low'

d. *b- as nominal prefix.

d-pun-pa 'shoulder'; d-bu 'head' (p.); d-mag 'army'; d-mig-pa 'hole'

In one example, *b- appears to have gone on to become a velar stop before a labial. Spoken Tibetan sometimes has no trace of the prefix d- of written Tibetan d-pon-po (< *b-pon-po) 'master, lord'; cf. WT ru-dpon,

ST ro$\overline{\text{pöö}}$ 'army officer in charge of a line or wing of soldiers'. Where there is a reflex, however, it takes the form of a velar stop: WT btšu-dpon, ST cō$\overline{\text{qpöö}}$ 'army officer in charge of a unit of ten men'; WT brgya-dpon, ST ka$\overline{\text{qpöö}}$ 'army officer in charge of a unit of a hundred men'. WT chibs-dpon, ST chē$\overline{\text{qpöö}}$ 'person in charge of the care of horses' may require a different explanation in the light of the correspondence of WT chibs : ST chī$\overline{\text{q-pʌ}}$ 'horse' (p.): b- changes to g before a dental (s)?

2. *b- changes to d- before velars/*b- changes to m- before ṅ.

a. *b- as present verbal prefix.

b-kur-ba 'to honor'; b-kri-ba or d-kri-ba 'to wind, wrap'; d-goṅs-pa 'to think, meditate'; b-graṅ-ba 'to number, count'; d-ṅan-ba 'to fear'; m-ṅag-pa 'to commission, charge'

b. *b- as future verbal prefix to causatives with *bs- perfects.

ạ-geb-s-pa, b-kab, d-gab (≺ *b-gab), khob 'to cover'; ạ-ges-pa, b-kas, d-gas (≺ *b-gas), khos 'to split, cleave, divide'; ạ-gog-pa, b-kog, d-gog (≺ *b-gog), khog 'to take away, to take off, to pull out'

c. *b- as adjectival prefix.

b-kra-ba 'variegated' (cf. ST ŋō 'blue', ŋōpṭā 'multicolored, with blue predominant', where the labial is retained medially); d-kar-ba, d-kar-bo 'white'; d-ga-ba 'pleased'; d-ṅar, m-ṅar 'sweet'

d. *b- as nominal prefix.

b-ka 'word, speech'; d-kan 'palate' (r-kan 'palate' ≺ *s-ạ-kan); b-go 'clothes'; d-gun 'the middle'; d-ga-ba 'joy'; d-ṅul (Jäschke: 'col often

mul [< *m-n̥ul?] 'silver'; m-n̥al 'womb'

3. *b- changes to d- before r.

a. *b- as present verbal prefix.

brel-ba 'to be employed, busy' (? b- prefix or br- initial?); dran-pa (b- prefix or br- initial?)

b. *b- as future verbal prefix to causatives with *bs- perfects.

No example.

c. *b- as adjectival prefix.

No example; the dr- of dran-po 'straight', for example, appears to derive from *a̱-r- (IV.9).

d. *b- as nominal prefix.

bran 'chest' (b- prefix or br- initial?); dri-ma 'smell' (b- prefix or br- initial?); d-rug 'six'

The problem with br, dr sequences is whether the stop is in any given instance a prefix, not whether dr- ever derives from *br-. (*dr- metathesized to rd; cf. VII.23-5.) Thus, where we have written Tibetan br beside dr, as in a̱-brid-pa, a̱-drid-pa 'to deceive' we hold that br is the earlier of the two, and that dr derives from br.

In at least one example where according to the dictionaries written Tibetan has only dr, spoken Tibetan reflects the original br. A written Tibetan sequence labial plus y yields in initial position a spoken Tibetan palatal affricate: WT bya, ST cha̱ 'bird'; WT phyed-ka, ST chēqā 'half'. Medially, this same sequence yields a labial stop followed by a palatal

affricate: -bya > -pcā, e.g. chūpcʌ̄ 'water bird', -phyed > -pcēè, e.g. lǫpcēè 'half a year'. Spoken Tibetan forms such as khīptīī 'dog's smell' (cf. khī 'dog') suggest that WT drima 'smell' derives from *brima, i.e. that the same correspondences prevail among labials followed by r as among labials followed by y. So, a sequence labial plus r would yield in initial position a simple retroflex stop: bris 'to write' (pft. to a-bri) > ṭhiì; *brima (> drima) > ṭhimʌ̄ 'smell'; medially, this sequence would yield a labial followed by a retroflex stop: *-bri > -pṭi, e.g. khīptīī 'dog's smell'.

br, dr, and gr have all merged into one retroflex stop in spoken Tibetan (e.g. WT bris 'to write' [pft.] : ST ṭhiì; WT drug 'six' : ST ṭhuù; WT gru 'a boat' : ST ṭhu; for another reflex of dr-, see X.7). Variant spellings among these three sequences may, therefore, mean only that at the writer's time the distinctions had already been lost in the spoken language. The two spellings for 'to fall', a-gril-ba and a-dril-ba, would, then, not necessarily imply any sound change. What seems more convincing evidence that labials did, in some cases, go on to become velars before r is offered in a combination of written and spoken Tibetan data.

In a number of words where written Tibetan has a labial followed by r there are in spoken Tibetan two forms, one with a retroflex initial stop, the other with a labial initial stop, e.g. WT phra, ST ṭhā.'a gem', ālōō phʌ̄sūmʌ (rarely ṭhʌ̄sūmʌ) 'an earring with three gems'; WT a-bras, ST ṭɛè

pɛ̲ɛ̀ 'rice'; WT sbra-gur, ST ṭ^q̲ūū, p^q̲ūū 'a nomad's yak-hair tent'. Clearly, one original initial sequence--br--and different sound changes are involved here: (1) postconsonantal r was lost and (2) a labial stop changed to d before r and was then retroflexed. These changes appear to be characteristic of different dialects, whether of class or region: some of the labial alternants our informants considered substandard--shopkeepers' usage; where in a particular compound only the p- alternant to a retroflex stop is used, the term refers to objects worn by officials or to a style of hair peculiar to another area (cf. ṭā 'hair': pācɔ̄ɔ̀, pālō, below).

In two cases where written Tibetan has only a velar followed by r there are again the two forms in spoken Tibetan, one with a retroflex stop, the other with a labial. Corresponding to written Tibetan šog-bu gre-ga 'an uncut sheet of paper' spoken Tibetan has šūqū theq̲ā or phe̲q̲ā. For 'hair' written Tibetan has skra. Commonly, the spoken Tibetan of our informants has the retroflex: ṭā 'hair', ṭāq̲ā̄ 'barbershop', ṭ^ṭū 'the washing of the hair after the death of a relative'. But in four examples we encounter the labial initial: pācɔ̄ɔ̀ qh^ūū 'a charmbox worn by lay officials on the hair', pʌ̄ṭūù 'a triangular hair ornament', pātɛ̄ɛ̄ 'the frame of the pʌ̄ṭūù', and pālō 'twirled hair/thin braids (worn in Tsang and the north)'. These examples indicate an original sequence of a labial stop followed by r for gre-ga (< *bre-ga) and skra (< *spra). In one development (dialect?), the r following the labial was lost; in another development, the labial changed to a velar (after passing through a dental stage). (And note a̲-groṅs-po 'straight' < *a̲-droṅs-po [IV.9]. Here, though

we are not dealing with an original labial, we have the same change, from the dr stage, to gr.)

We could assume, rather, that written Tibetan represents the earlier stage, that drima 'smell' became *brima, that skra 'hair' became *spra, and so forth. These assumptions could be neither proved nor disproved. What supports the opposite view is the convergence of written and spoken evidence toward the reconstruction of unitary prefixes by way of such sound changes as b ⟶ d and d ⟶ g.

4. *b- changes to g- before dentals/*b- changes to m- before ṅ.

a. *b- as present verbal prefix.

t b-tod-pa 'to fasten, tether' (r-tod-pa < *s-ạ-tod-pa); b-tug-pa or g-tug-pa 'to meet' (ST tūù 'to go to meet'); b-tub-pa or g-tub-pa [or thub-pa] 'to be able'; b-tog-pa or g-tog-pa [or thog-pa] 'to pluck off'

d b-dar-ba 'to rub, file, polish' (r-dar-ba < *s-ạ-dar-ba); g-duṅ-ba 'to desire, to long for'

n g-nas-pa 'to be, live, lodge'; (g)nab-pa, m-nab-pa 'to put on a garment'; m-no-ba 'to think' (< *b-no-ba; cf. d-mig-s-pa 'to fancy, think' < *b-migs-pa and b-sam-pa < *b-sam-pa, secondary form of sem(s)-pa 'to think', e.g. ma b-sam-par 'forgetful')

ts b-tsa-ba 'to bear, bring forth'; g-tsigs-pa 'to show one's teeth, to grin'

dz *b-dz would give bz-, gz- (cf. VIII.1-10)

z b-zod-pa 'to suffer, bear, endure'; g-zigs-pa 'to see' (p.) (< *b-zigs-pa; cf. m-thoṅ-ba 'to see' < *b-ạ-thoṅ-ba)

l b-lu-ba 'to buy off, to ransom, to redeem'; b-lo-ba 'to be able'

s b-su-ba, b-su-s 'to go to meet' (cf. ST tā 'horse', tʌ̄psū 'a horse taken along when going to meet a guest', where the labial is retained medially)

b. *b- as future verbal prefix to causatives with *bs- perfects.

t No examples.

d ạ-don-ba, b-ton, g-don (< *b-don), thon 'to cause to go out'

n No examples.

ts ạ-tshod-pa, b-tso-s, b-tso, tsho-s 'to cook, bake'

dz ạ-dzugs-pa, b-tsugs, g-zugs (< *b-dzugs) 'to prick or stick into'

z ạ-dzar-ba, b-zar, g-zar (< *b-zar) 'to hang up, hang or throw over'

l No examples.

s ạ-tsho-ba, (b)so-s, g-so (< *b-so) 'to nourish, to pasture, to feed'

c. *b- as adjectival prefix.

t b-tub 'fit, convenient'; g-tam(s)-pa 'full'

d b-da-ba 'savory'; g-duṅ-ba 'longed for'

n g-nag-pa (also nag-pa) (< *b-nag-pa; cf. d-kar-ba < *b-kar-ba 'white')

ts b-tsan-po 'strong'; g-tsaṅ(-ba) 'clean, pure'

dz *b-dz > bz-, gz-.

z b-zaṅ-ba 'good'; g-zar-po 'steep'

l b-lun-pa 'dull, stupid'; g-len-pa, g-len-po 'stupid, foolish'

s b-sil-ba 'cool'; g-sar-ba, g-sar-pa, g-sar-po 'new, fresh'

d. *b- as nominal prefix.

t b-tod-thag 'a tether'

g-tor-ma 'a strewing, oblation' ≺ *b-tor-ma (cf. ST tɔ̄ɔ̄mā; lū 'naga', lūptɔ̄ɔ̄ 'tɔ̄ɔ̄mā offerings for a naga', with medial retention of the labial. We might, then, explain examples where there is no -p- in spoken Tibetan as late compounds, formed after the loss of the prefix, e.g. lotɔ̄ɔ̄ 'tɔ̄ɔ̄mā offerings to be kept for a year', or chatɔ̄ chɛ̀ɛ̀ 'to give [a corpse as] tɔ̄ɔ̄mā offerings to the birds'.)

d b-dud 'the devil'; g-dan 'bolster, cushion' (≺ *b-dan. cf. ST tɛ̄ɛ̄; qa 'saddle', qaptɛ̄ɛ̄ 'cushion placed under a yak's saddle', where the labial is retained medially)

n g-nam 'heaven, sky'; m-na 'oath'; m-nal 'sleep' (p.) (≺ *b-nal; cf. g-nyid 'sleep' ≺ *b-nyid)

ts b-tsoṅ 'onion'; b-tsod, g-tsod, g-tso 'Tibetan antelope'

z zan, b-zan 'fodder'; g-zar-bu 'ladle'

l b-lo 'mind'; b-lo, g-lo 'side; cough'; g-la 'pay'. Here again, spoken Tibetan retains the labial in medial position; cf. ST lā 'payment', ṭā 'hair', ṭāplā 'payment for a haircut'. (For further examples of -plā, see Chang and Shefts 1967.514.)

s ser, b-ser, g-ser-bu 'a fresh, cold breeze; the feeling of being cold'

5. *b- changes to g- before palatals/*b- changes to m- before ny.

a. *b- as present verbal prefix.

tš b-tšar-ba 'to squeeze, to press'; g-tšags-pa 'to apprehend, to grasp'

dž *b-dž ---> bž, gž, which would be indistinguishable from the examples cited under ž.

ny g-nyer-ba 'to take pains with, to take care of'; m-nyed-pa 'to rub, to tan'; m-nyes-pa 'to be glad' (p.) (< *b-nyes-pa; cf. d-ga-ba 'to be glad' < *b-ga-ba)

ž b-žar-ba 'to shave' (cf. ST ša̲a̲ 'to shave'; ṭā 'hair', ṭāpšārʌ 'barber'); b-žad-pa or g-žad-pa 'to laugh, smile'

y b-yab-ba 'to clean', b-yil-ba 'to stroke' (b- prefix or by- initials?); g-yar-ba 'to borrow; to lend' (ST yāā)

š b-šo-ba or g-šo-ba, b-šo-s 'to pour out' (cf. ST šōō 'to throw [liquids]'; chū 'water', chōpšōō 'throwing water'); b-šad-pa 'to explain, say' (cf. ST šɛ̄ɛ̀ 'to say, tell'; qā 'first letter in the alphabet', qāpšɛ̄ɛ̀ 'poems in which the initials of the lines are in alphabetical order')

b. *b- as future verbal prefix to causatives with *bs- perfects.

tš g-tšod-pa, b-tšad, g-tšad (< *b-tšad), tšhod 'to cut'

dž ạ-džug-pa, b-tšug, g-žug (< *b-džug), tšhug 'to put [grammar], e.g. a prefixed letter, a prefix'

ny No examples.

ž ạ-džig-pa, b-žig, g-žig (< *b-žig), (b)šig 'to destroy'

y No examples.

š ạ-tšheg-pa, b-šag-s, b-šag, šog 'to cleave, to split'

c. *b- as adjectival prefix.

tš g-tšer-bu 'naked'; g-tšes-bu 'dear, beloved'

ny g-nyan-pa 'cruel, fierce, severe'; m-nyam-pa 'like, equal; even'

ž g-žon-pa 'young'

y g-yuṅ-pa 'tame' (*b- prefix or gy- initial?)

š b-ša-ma, g-ša-ma 'worthy, becoming; righteous'

d. *b- as nominal prefix.

tš b-tšom or g-tšom 'pride'; b-tsud 'moisture, essence'; g-tšiṅ 'urine'

ny g-nya(-ba) 'neck, nape'; g-nyid 'sleep' (cf. m-nal 'sleep' [p.] < *b-nal); m-nyan-pa 'boatman'

ž b-žin 'face' (cf. g-doṅ 'face' < *b-doṅ); g-žogs 'the side of the body'; g-žug 'end' (< *b-žug; cf. ST lo 'year', lupšūù 'end of a year', where the labial is retained medially.)

y b-ya 'bird'? (b- prefix or by- initial? In the case of byaṅ 'north', we infer that b- is not a prefix, since the names of the other directions have no prefixes: lho 'south', šar 'east', nub 'west'.) g-yag 'yak'; g-yaṅ 'happiness, blessing' (= d-pal < *b-pal)

š g-šis or b-šis 'nature, temper'; g-šin-po 'a dead man'

6. Does *b- change to br- before gya?

The numerals from '1' to '10' have allomorphs without any prefix, and, with the exception of '5' and '8', allomorphs with a prefix which clearly derives from *b-:

With prefix:			Without prefix:		
WT		ST	WT		ST
g-tšig	'1'	cīq	šig, žig		
g-nyis	'2'	ñīī, ñīì	nyi-šu	'20'	ñišū
g-sum	'3'	sūm	sum-tšu	'30'	sūmcū

With prefix:			Without prefix:		
WT		ST	WT		ST
b-ži	'4'	ši	že-gtšig	'41'	šiicTì
l-ṅa	'5'	ŋā	ṅa-gtšig	'51'	ŋʌʌcTì
d-rug	'6'	ṭhuù	re-gtšig	'61'	riicTì
b-dun	'7'	tüü	don-gtšig	'71'	thüücTì
br-gyad	'8'	kɛè	gya-gtšig	'81'	khʌʌcTì
d-gu	'9'	qu	go-gtšig	'91'	qhòòcTì
b-tšu	'10'	cū	-šu in nyišu	'20'	-šu

In written Tibetan we find the sequence lṅ- only in lṅa '5'. From a sequence *b-ṅ- we would expect either dṅ- (as in d-ṅan-ba 'to fear') or mn- (as in m-ṅag-pa 'to commission'). We might speculate on a further change, fron dental d to dental l. This change, though not implausible, would be unique, but then, so is the result, lṅ-.

A clue to the origin of br- in brgyad '8' (and brgya 'hundred') may be found in the distribution of b-, d-, and br- before sequences of gy followed by different vowels. *b- changes to d- only before gy followed by e: d-gyer-ba 'to sing, chant' < *b-gyer. Before gy followed by i, *b- remains b-: b-gyid-pa 'to make; to do' < *b-gyid. Before gy followed by a, neither of the front consonants d or s occurs. Jäschke has only one entry for bgya-: 'bgyaṅ-ba, acc. to Zam[atog, a treatise on Tibetan grammar and orthography] = brgyaṅ-ba'. Some instances of br- derive from bs- (cf. VII.20). The alternation in the *b- prefix before numerals suggests a

second source for br-, namely *b-. The appearance of an epenthetic r between b- and -gya would then be a form of backing. So:

b changes to d before gye

b changes to br before gya

And brgyad 'eight' would derive from *b-gyad, brgya 'hundred' from *b-gya.

Appendix 3.

The analyzable prefix m- (< *b-ạ-).

1. There have been attempts to define the function of the prefix m-. For example:

'Prefix m indicates primarily parts of the human body, certain attributes of man, and common objects in his immediate environment. It indicates further verbs relative to the ability and peculiarities of man.' (von Koerber 1935.71)

This is so broad as to exclude almost nothing; but the scope of m- is probably even broader. (Surely the reference of m-tho-ba 'to be high', or m-tha 'end', is not restricted to man's immediate environment.)

Wolfenden defined m- verbs (which are also the source of m- nouns) as

'those of intransitive nature, or which at most describe an act on the part of the subject which does not entail any change in position on the part of such subject, or an indirect object when present' (p. 26) ... 'A reflexive force is naturally inherent in many m- verbs, as no direct external object is present.' (p. 30)

Durr (1950.104) followed Wolfenden in assigning this second function to the m- prefix.

2. Two types of examples contradict the notion of an unanalyzable prefix m-: (1) honorific-nonhonorific pairs, one with m- (deriving from *b-ạ-), one with either no prefix or with an oral stop deriving from *b-; and (2) doublets, one member with md- (deriving from *b-ạ-l-) and one with ld- (deriving from *ạ-l-).

3.	Honorific	Nonhonorific
'head'	d-bu	m-go
'forehead'	m-daṅs	d-pral-ba
'to know'	m-khyen	ǰes
'to see'	g-zigs-pa	m-thoṅ-ba
'to listen'	g-san	(m-)nyan

Of the above honorific-nonhonorific pairs, two are nouns which name parts of the body; m- occurs in one in the honorific, in the other in the nonhonorific. The remaining three are verbs; one member of each pair has the prefix m-: in one case, this is in the honorific, in the other two cases in the nonhonorific. (The verbs for 'to know' and 'to see', honorific and nonhonorific, enter into the reflexive construction in spoken Tibetan, where the causative agent of the action, marked by the instrumental case, and the recipient of that action, marked by the auxiliary verbs chũũ [first person] and sõõ [non-first-person], are the same. For example: ŋɛ̀ qhō thõõ chu 'I saw him', qhõ̀õ qhō thõõ su 'He saw him'.)

If the presence of absence of m- fails to correlate with the honorific-nonhonorific contrast, neither does it have anything to do with the semantic categories of 'parts of the body' or 'reflexive verb'. Since we derive m- from *b(-ạ)- and d-, g- from *b-, we conclude that where in these examples we reconstruct a-chung, this is part of the base and not a prefix; that is, the bases for 'head' (n.p.), 'forehead' (p.) and 'to know' (p.) have prenasalized initials.

Derivations:

a. *b-bu ⟶ d-bu 'head' (p.)

*b-pral-ba ⟶ d-pral-ba 'forehead' (n.p.)

For example:

3. A labial stop changes to a dental before any consonant other than the prefix s-. *b-bu ⟶ d-bu

b. *b-zigs-pa ⟶ g-zigs-pa 'to see' (p.)

*b-san ⟶ g-san 'to hear, listen' (p.)

For example:

3. A labial stop changes to a dental before any consonant other than the prefix s-. *b-san ⟶ *d-san

15. A dental stop changes to a velar before dentals, palatals, and r. *d-san ⟶ g-san

c. *b-nyan ⟶ m-nyan 'to hear, listen' (n.p.)

1. Oral stops change to nasals before nasals. *b-nyan ⟶ m-nyan

d. *b-a̤-go ⟶ m-go 'head' (n.p.)

*b-a̤-dans ⟶ m-dans 'forehead' (p.)

*b-a̤-kyen ⟶ m-khyen 'to know' (p.)

*b-a̤-ton ⟶ m-thon 'to see' (n.p.)

For example:

1. Oral stops change to nasals before nasals. *b-a̤-go ⟶ *m-a̤-go

12. Noninitial a-chung is lost. *m-a̤-go ⟶ m-go

Note that ạ-go is attested in some compounds, e.g. ạ-go-pa 'officer; head-man'. Another example:

1.	Oral stops change to nasals before nasals.	*b-ạ-toṅ	⟶ *m-ạ-toṅ
12.	Noninitial a-chung is lost.	*m-ạ-toṅ	⟶ *m-toṅ
22.	Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.	*m-ạ-toṅ	⟶ m-thoṅ

4. There is in written Tibetan a pair of doublets, one member with ld-, the other with md-: ldan-pa, mdan-pa 'cheek' (ST tɛ̲̃pā, tɛ̲̃qɔ̄ɔ̀). There is also a group of triplets, which adds to the above kind of variants one with an l- initial: ldoṅs-pa, mdoṅs-pa, loṅ-ba 'blind' (ST lo̲ŋā). We posit for all of these forms some sort of lateral initial (which is attested for 'blind' in both the adjective loṅ-ba and the verbal perfect loṅs [ST lò̲ò̲] to the present ldoṅ-ba 'to become blind'). This initial may have been a prenasalized lateral, i.e. *ạ-l- (beside the verbal perfect loṅs, written Tibetan has ldoṅs, deriving from *ạ-loṅs), which occurred in doublets, one without prefix (*ạ-l- ⟶ ld-) and one with the *b- prefix (*b-ạ-l- ⟶ md-), or it may have been a simple l- initial, which occurred both with the a-chung prefix and with b- prefixed to this. In favor of the first alternative are the doublets in the perfect for 'to become blind' (ldoṅs, loṅs) and the absence of an l- alternant for 'cheek' in either written or spoken Tibetan. We would then interpret loṅs 'to become blind' (perfect) and loṅ-ba 'blind' as forms where an initial a-chung had been lost.

Derivations:

a. *ạ-lan-pa ⟶ ldan-pa 'cheek'

*ạ-loṅs-pa ⟶ ldoṅs-pa 'blind'

For example:

10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*ạ-lan-pa ⟶	*ạ-dlan-pa
18.	A consonant followed immediately by a sequence of a stop and a lateral is lost.	*ạ-dlan-pa ⟶	*dlan-pa
19.	Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.	*dlan-pa ⟶	ldan-pa

b. *b-ạ-lan-pa ⟶ mdan-pa 'cheek'

*b-ạ-loṅs-pa ⟶ mdoṅs-pa 'blind'

For example:

1.	Oral stops change to nasals before nasals.	*b-ạ-lan-pa ⟶	*m-ạ-lan-pa
10.	The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.	*m-ạ-lan-pa ⟶	*m-ạ-dlan-pa
12.	Noninitial a-chung is lost.	*m-ạ-dlan-pa ⟶	*m-dlan-pa
17.	Liquids are lost after md-.	*m-dlan-pa ⟶	mdan-pa

In support of these derivations and of the dual derivation of md- from *b-ạ-l- and from *b-ạ-d- we find a number of instances of m- (< *b-ạ-) beside ạ-, but not of l- beside m-: (1) ạ-da-ba, ạ-da-s 'to pass over, travel

over', m-da (< *b-a̓-da) 'arrow'; (2) a̓-dag-pa 'a mixture of clay and water', m-dag-pa (< *b-a̓-dag-pa) 'a sort of large unburnt brick of mud or clay'; (3) a̓-gron-po 'guest', a̓-gron-khaṅ 'inn, public house', m-gron (< *b-a̓-gron) 'feast, treat, banquet, entertainment'; (4) a̓-dad, a̓-daṅ 'funeral repast', m-daṅ-bai (< *b-a̓-daṅ-bai) gnas 'place of cremation'; (5) a̓-dun-ma, m-dun-ma (< *b-a̓-dun-ma) 'wife'? (Jäschke 278); (6) a̓-tshan, m-tshan (< *b-a̓-tshan or *b-a̓-san) 'fault'; (7) a̓-tsher-sa, m-tsher-sa (< *b-a̓-tsher-sa or *b-a̓-ser-sa̓) 'cause of uneasiness'; (8) a̓-tshog-ma, m-tshogs-ma (< *b-a̓-tshogs-ma or *b-a̓-sogs-ma) 'fontanel'; (9) a̓-thun-pa, m-thun-pa (< *b-a̓-thun-pa) 'to agree, harmonize'; (10) a̓-thol-ba, m-thol-ba (< *b-a̓-thol-ba) 'to confess'; (11) a̓-dzer-pa, m-dzer-pa (< *b-a̓-dzer-pa < *b-a̓-zer-pa) 'knot'.

5. We know that a-chung is sometimes a prefix (for example, in verbal presents), and that there are both primary prefixes, i.e. those added directly to a base, and secondary prefixes, i.e. those added to a base with prefix (for example, b-s- in verbal perfects). We assert that the prefix m- always derives from *b- followed by a nasal: a-chung, ṅ, n, or ny. Where, or if, a-chung is a prefix, the meaning of m- will then be the sum of the meanings of the prefixes b- and a̓-. We have, further, inferred that the 'prefix' a-chung is, in fact, sometimes part of the initial of the base. In this case we conclude that the meaning of m- is identical with b- (as it is when m- derives from *b- by oral : nasal assimilation). Where there are doublets with m-, a̓-, which appear to be synonyms (e.g. m-thun-pa, a̓-thun-pa 'to agree' or m-thol-ba, a̓-thol-ba 'to confess') we suspect that the member with a̓- lacked the function of the b- prefix.

Appendix 4.

Index of changes from Proto-Tibetan through written Tibetan to spoken Tibetan.

The relations of one change to another, where these can be identified, determine the position of a change in the following sequence. For example:

(1) In general, the change of the prefix *b- to (*)d- precedes and is concluded before changes undergone or caused by s- (4-7). Thus, after -s- is lost from *bs- before voiced stops (14), b- no longer undergoes these changes; instead, it either remains or, when the initial of the base is a labial, is lost (16). Before the liquid r, however, the change of *b- to d- is a constantly recurring one (cf. II.9); after dr- metathesizes (19), this change is a new source of examples of dr (< *br; cf. X.13); we also assume such a change in the transition from written Tibetan br to spoken Tibetan ṭ (e.g. WT brel-ba, ST ṭhewā chūū 'to be busy').

(2) The devoicing caused by s (6) must precede the loss of a-chung (9, 12), since the presence of a-chung accounts for the retention of voicing. Devoicing recurs, however, after the production by a-chung of epenthetic stops (10), and devoices these stops when r or z follows (IV.7; VIII.18,19). The devoicing caused by s (6) must also precede the deaffrication of voiced affricates (8): through the retention of their voiceless alternates we are able to reconstruct original voiced affricates.

(3) The loss of a consonant before a sequence of a stop and a lateral (18) must precede the metathesis of a dental stop followed by a liquid (19): it is the loss of the nasal a-chung before dl which accounts for the divergent

developments of *ạ-l (→ *ạ-dl [10] → *dl [18] → ld [19] and *ạ-r (→ ạ-dr [10]).

We assume that changes begin, reach their full strength, and die out. That they die out before reaching every possible form to which they could apply accounts for a good deal of the variation we find. The effects of some changes are, however, almost universal, as for example, the loss of s before spirants and affricates (13). The primary evidence for the early loss of s- before stops (14) is found among the data to bases with voiced stop initials. The alternative to extending this change to include stops in general is to make the loss a part of the devoicing process; no phonetic motivation for such a change is evident.

Any voiceless stop initial initial could, of course, at one time have been preceded by an s- prefix. There are also in written Tibetan some instances of doublets where one member has s- and the other does not, e.g. spun, phun-po 'heap'; spur, pur 'dead body, corpse'; spogs 'gain, profit', phogs 'wages, pay, salary'?; stạbs, thạbs 'way, manner, mode, opportunity'; skog-pa, kog-pa 'shell, peel, rind'.

There is no question but that the loss of s- before spirants and affricates began very early, and was almost complete by the time of written Tibetan. In one instance, we can also reconstruct a lost *s- before a nasal. The s- prefix is found with some names for parts of the body: s-kra, s-pu 'hair', r-na-ba (≺ *s-na-ba). s-nyan 'ear', s-na 'nose'.

The honorific for 'eye' also has the s-: s-pyan. The nonhonorific mig does not, but the high tone of spoken Tibetan mTì compels us to reconstruct a prefix. Because of the parallel in s-pyan, we posit *s-mig; the s-min of smin-ma 'eyebrow' may be an allomorph of this form.

Some changes conclude before others begin; others overlap, in part or altogether. Examples of overlap:

(1) The loss of a consonant before a sequence of a stop and a lateral (18) begins before the fronting of r to l (21) but continues after it (cf. IV.9, *bltš- → ltš-).

(2) The change of s to r before voiced nasals (which includes a-chung) and liquids (5) must precede the loss of a-chung (9, 12) but continues in force, and when new sequences are produced (as through metathesis [19]) to which it can apply, it does apply (cf. IV.7, V.8).

(3) The change given as 9 and 12 below (the loss of noninitial a-chung) is one; in this case, however, the divergent developments which hinge on the relative time when this change took place (i.e. whether or not it preceded change 10, the production of an epenthetic stop following the a-chung) make it desirable to emphasize the beginning and the full phases of this change. (Some changes either recur or persist for a longer time than others. Its notably gradual loss has given a-chung a reputation for instability; we might rather view this characteristic as a resistance to change.)

Another form of evidence for placing changes in a relative order is found in differences between written and spoken Tibetan. Some changes which

are characteristic of the post-written-Tibetan stage appear, however, to have begun in the written Tibetan stage; change 26 may, for example, precede 23 and 24 in rare instances.

Pre-written-Tibetan changes:

1. Oral stops change to nasals before nasals.

   VIII.13; X.10 ff., 25,26,27.

2. A voiced stop is devoiced before lh.

   IV.12.

3. A labial stop changes to a dental before any consonant other than the prefix s-. [This is a posited stage for some b —→ g changes; cf. change 15.]

   II.9; IV.12; VIII.3,5,7,9,11,13; X.10 ff., 25.

   [Does b change to br before gya? X.20-2]

4. s is voiced, becoming z, before the sequence a̱-l.

   IV.2.

5. s changes to r before voiced nasals [ṅ, m, n, ny, a-chung] and liquids [l, r].

   II.6,9; IV.7; V.8; VI.1,8; VII.5; VIII.12.

6. s devoices an immediately following voiced stop or affricate.

   IV.7; VII.3,5,13,14,25; VIII.2,3,7,17,18,19.

7. s devoices an immediately following voiced spirant.

   VI.6-7; VIII.5.

8. The stop element of voiced affricates is lost; i.e. dž —→ ž, dz —→ z. [This may be preceded by the voicing of enclitic-initial affricates after vowels and voiced liquids: VI.1.]

   VIII.2,3,7,8.

9. The loss of noninitial a-chung begins.

   IV.2,7; VI.1.

10. The sequences a-chung + spirant, a-chung + liquid give rise to an epenthetic dental stop following the a-chung.

    IV.2,7,11; VI.1,8; VIII.2,5,7,8,12,13,18,19; X.26,27.

11. Aspiration is lost in noninitial position, except when preceded only by a nasal [m or a-chung].

    IV.11,12.

12. Noninitial a-chung is lost.

    IV.2,7,11; VI.1,2,9; VIII.12,13,18,19; X.25,26,27.

13. s is lost before spirants and affricates. [A prior change may be the deaffrication of voiceless affricates when s precedes: VI.1.]

    VI.1,2; VIII.2,3,5,7,9,17,19.

14. s is lost before stops.

    VII.3,13,14,25.

15. A dental stop changes to a velar before dentals, palatals, and r.

    II.9; IV.7,11,12; VIII.3,5,7,9,13; X.10 ff., 25.

16. The prefix *b- is lost when the initial of the base is a labial.

    II.7, VII.3,13,14.

17. Liquids are lost after md-. [Note that written Tibetan has no *mdl-, *mdr-, though it has a-dr.]

    X.27.

18. A consonant followed immediately by a sequence of a stop and a lateral [in either order] is lost.

    IV.2 (*zdl), 11 (*ad̠l, *at̠l, *skl, *bskl); VI.9 (*blt̠š); X.26 (*ad̠l).

19. Sequences of a dental stop followed by a liquid which are not preceded by a nasal undergo metathesis.

    IV.2.7.11; V.7,8; VII.25; VIII.11; X.26.

20. Potential geminate clusters are simplified to single segments.

    II.9; IV.7; V.8.

21. r is fronted to l before dental stops.

    IV.7; V.8; VI.9; VIII.12.

22. Voiceless unaspirated stops or affricates in absolute-initial position or preceded by a nasal change to voiceless aspirated.

    VI.2; VII.7-9 (VII.8: Diagram 1, Stages 3-4), 13,14; VIII.3,7,17,19; X.26.

23. Sequences of a dental stop followed by y give rise to an epenthetic palatal spirant after the stop.

    VIII.11.

24. y is lost after palatal spirants.

    VIII.11.

Post-written-Tibetan changes:

25. A velar stop is fronted to a front velar before y.

    X.2.

26. A labial stop changes to a dental before y.

    V.4,5.

27. Sequences of a dental stop followed by y give rise to an epenthetic palatal spirant after the stop.

    V.5.

28. y is lost after palatal spirants and after front velar g.

    V.5.

29. Labial and velar stops change to d before r. [Posited for the spoken Tibetan retroflex stop.]

X.14,29.

30. d becomes retroflex before r. [Posited for e.g. br → dr → ḍr → ḍ.]

X.14.

31. Postconsonantal r is lost.

IV.6 (sr → s); VII.25 (dr → d?); X.15 (*spr → sp).

32. l changes to n before dental stops.

IV.3.

33. Voiced stops in absolute-initial position or preceded by a nasal are devoiced; the low tone which automatically accompanied voiced initials is now phonemic, contrasting with the high tones of morphemes which had voiceless initials before this change.

VII.10-11 (VII.11, Diagram 2, Stage 6).

34. Stressed noninitial syllables receive high tone.

X.8.

35. Of consonants in initial clusters, all but the final consonant are lost.

IV.4; VII.11, Diagram 2, Stage 6.

36. In syllables with low tones, voiceless unaspirated stops in absolute-initial position or preceded by a nasal change to voiceless aspirated.

VII.11, Diagram 2, Stage 7.

37. Voiced stops in absolute-initial position or preceded by a nasal are devoiced.

IV.4; VII.11, Diagram 2, Stage 7.

38. Intervocalic -b- → -w-.

II.4; X.7,8.

39. Intervocalic -w- ⟶ -Ø-.

    II.9, X.7,8.

40. Vowel-sandhi changes take place.

    (Examples on X.7.)

41. Back vowels are fronted after front consonants.

    II.6.

42. Back vowels are fronted before front consonants.

    VII.6.

43. ü is unrounded to i after a labial initial. [u is unrounded (and fronted) to i after a labial initial? cf. bug, big.]

    VII.6,7.

44. Front vowels are backed after back consonants.

    IV.10 (*eg ⟶ ag)

45. The sequences -Vd, -Vs in all cases, -Vb, -Vg in some, change to -VV̀ (where V̀ indicates falling tone, a tone usually accompanied by some degree of glottal stricture).

    VII.6.

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