THE DIRECTIONALITY OF THE VOICING ALTERNATION IN TIBETAN[1]

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Abstract

This paper provides arguments in favor of the hypothesis that in two voice alternations in Tibetan (marking transitivity and TAME, respectively), the unvoiced form is primary, and its voiced counterpart the derived form. This hypothesis has consequences for the history of the voicing alternation in Trans-Himalayan in general, and also for the reconstruction of voiced affricates vs. fricatives in pre-Tibetan.

Keywords: Tibetan; voicing alternation; affricates; fricatives; voicing
ISO 639-3 codes: bod

1 Introduction

Nearly all languages in the Trans-Himalayan family, including Old Chinese (Handel 2012), Tibetan (Uray 1953, Zhang 2009, Hill 2014a), Kiranti (Jacques 2015a), Lolo-Burmese (Gerner 2007), Jingpo (Dài & Xú 1992: 78), Bodo-Garo (Basumatary 2017) and other languages, have a voicing alternation correlated with transitivity, whereby a intransitive verb with a voiced onset has a transitive counterpart with a voiced onset (Conrady 1896). In addition, in Tibetan, the voicing alternation occurs in the conjugation of transitive verbs, the voiced forms occurring in the present and future, and the voiceless ones in the past and imperative (Li 1933, Coblin 1976).

In the case of Chinese, the interpretation of this alternation is not straightforward and has been the object of an intense debate (Mei 2012, Sagart & Baxter 2012). However, there is strong evidence from Rgyalrongic languages that this voicing alternation is in fact an intransitivising (more precisely, anti-causative) derivation, and that the voiced (in some languages, voiced prenasalized) intransitive verb derives from the transitive one (Jacques 2015b, Gong 2017, Gates et al. forthcoming).

In Tibetan, Shefts-Chang (1971) has argued that the causative prefix s- had a devoicing effect and that it was responsible for at least some of the voicing alternations in the verbal system. This idea, which has inspired some specialists of Chinese (Mei 2012), is however demonstrably wrong (Jacques 2020). Most of the scholars who have worked on Tibetan verbal morphology remain non-committal (at least in print) as to the directionality of the derivation (Li 1933, Uray 1953, Zhang 2009, Coblin 1976, Hill 2014a, 2019). Even Bialek (2020:267), who supports the idea that the voiced stems derive from the voiceless ones, however believes that "the question of which roots, transitive K or intransitive G, were primary and which derivational, cannot be answered on the grounds of Tibetan data only".

The aim of this paper is precisely to show direct evidence for the directionality of the voicing alternation (from voiceless to voiced) in the Tibetan verbal system. First, I provide some background information on the internal reconstruction of voiced affricates (what Hill 2014b, 2019 calls 'Schiefner's law'), which is necessary to support the rest of the discussion. Second, I show that the voicing alternation between present/future and past/imperative in the transitive paradigms cannot be explained if one supposes that the latter derive from the former, and that the hypothesis of a voiceless to voiced alternation is the only

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[1] Tibetan transliteration follows Jacques (2012a), and Middle Chinese is based on the system of Baxter (1992), with the onset consonants converted to IPA symbols.

one compatible with all the data. Third, I present evidence that the same is true of the voicing alternation between transitive and intransitive verbs and that Tibetan data is congruent with Rgyalrongic languages in this regard.

2 Schiefner's law

With a handful of exceptions, voiced fricatives and voiced affricates in Tibetan are in complementary distribution, as illustrated in Table 1.

Table 1: *Complementary distribution of voiced fricatives and affricates in Tibetan*

Absolute	b-	g-	r-	ⁿ-	m-
z-	bz-	gz-			
(dz-)			rdz-	ⁿdz-	mdz-
ʐ-	bʐ-	gʐ-			
(dʐ-)			rdʐ-	ⁿdʐ-	mdʐ-

In the verbal system, there is a systematic alternation between voiced fricatives and voiced affricates, the former occurring when the past b- and future g- prefixes are present or in the unprefixed imperative, and the latter in the present with the prenasalization n prefix, as illustrated in Table 2.

Table 2: *Alternation between voiced fricatives and affricates*

Meaning	Present	Past	Future	Imperative
put	འཇོག་	བཞག་	གཞག་	ཞོགས་
	ⁿdʑog	bʑag	gʑag	ʑogs
give way	འཛུར་	བཟུར་	གཟུར་	ཟུར་
	ⁿdzur	bzur	gzur	zur

In absolute initial position, there are nearly no examples of voiced affricates. Exceptions include mainly loanwords from Sanskrit (in the case of dz-) or Chinese, and ideophones. The only word with a voiced affricate in absolute initial position is the bound form *dʑi-*, which appears in compounds interrogatives such as ཇི་ལྟར་ *dʑi.ltar* 'how', and is related to the form ཅི་ *tɕi* found in ཅི་ལྟར་ *tɕi.ltar* 'how' with voiceless affricate.[2]

   If we put aside these limited exceptions, the complementary distribution implies that voiced fricatives and affricates have a common origin. Li (1933) and Coblin (1976) reconstruct voiced fricatives and hypothesize that a stop element was inserted when the fricative was preceded by a sonorant (1).

   (1) *(r,N)z/ʑ- → (r,N)dz/dʑ-

Schiefner (1852) proposed the opposite sound change (2), which removed all word-initial voiced affricates, before the gap was filled by ideophones and loanwords.[3]

   (2) *dz/dʑ- → z/ʑ- / #__, [b-/g-]__

Hill (2014b) further supported it with comparative data from Chinese and Rgyalrongic, but most importantly from the existence of alternations between voiced fricatives and voiceless affricates, that is between z and ts on the one hand, and between ʑ and tɕ in the other hand. He cites ཟོང་ *zoŋ* 'ware, goods', a noun related to the verb འཚོང་ *ntsʰoŋ* 'sell' (བཙོངས་ *btsoŋs*), whose root is *tsoŋ. If one supposes that z- in *zoŋ* 'ware, goods'

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2   Note the presence of a voiceless unaspirated affricate is also irregular, and that a form ཆི་ *tɕʰi* 'what' is also found in some dialects.

3   Exceptions such as ཇི་ལྟར་ *dʑi.ltar* 'how' remain unexplained in view of this sound change, but are extremely marginal.

comes from *dz-, the relationship between the noun and the verb becomes easier to account for (a voicing alternation).

Against Schiefner and Hill's solution, Bialek (2020: 280) proposes typological arguments: "This argument is supported by the systemic consideration that for a language to have voiced affricates ([dʑ] and [dz]) without having voiced fricatives ([z], [ʑ]) is not a plausible scenario." However, while it is true that fricatives are cross-linguistically more frequent than the corresponding affricates (Grossmann & Nikolaev 2018: 565-566), a search in the PHOIBLE database (Moran & McCloy 2019) reveals no fewer than 193 languages with at least one voiced affricate without the corresponding voiced fricative in their phonological system, of which 124 have only voiced affricates without voiced fricatives,[4] so that phonological typological is not an argument against Schiefner's law. Moreover, deaffrication is a widely attested type of sound change (Kümmel 2007:67–75).

In any case, whether one adopts the Li and Coblin's (1) views, or Schiefner and Hill's (2), there was no contrast between voiced affricates and voiced fricatives in pre-Tibetan; this is the crucial point that will be relevant in the following discussion.

3 The voicing alternation in the transitive conjugations

A subclass of transitive verbs exhibits alternation between voiced and voice-less stem (Li 1933, Coblin 1976), the former in the present and future (for instance འགེབས་ *ⁿ-geb-s*, དགབ་ *d-gab* 'cover') and the latter in the past an imperative (བཀབ་ *b-kab* and ཁོབ་ *kʰob*).[5] Table 3 illustrates a certain number of representative examples.

Table 3: Voicing alternation and the contrast between fricatives and aspirates.

Meaning	Present	Past	Future	Imperative
cover	འགེབས་	བཀབ་	དགབ་	ཁོབ་
	ⁿgebs	bkab	dgab	kʰob
put in	འཇུག་	བཅུག་	གཞུག་	ཚུགས་
	ⁿdʑug	btɕug	gʑug	tɕʰugs
insert, plant	འཇུགས་	བཙུགས་	གཟུགས་	ཚུགས་
	ⁿdzugs	btsugs	gzugs	tsʰugs
destroy	འཇིག་	བཤིག་	གཞིག་	ཤིགས་
	ⁿdʑig	bɕig	gʑig	ɕigs

When the present form has a voiced affricate dʑ- or dz-, in addition to the pattern found in Table 2 above (where the voiced affricate alternates with voiced fricatives due to Schiefner's law), in Table 3 we observe two distinct alternating patterns: the voiced affricates and fricatives alternate with voiceless affricates in the case of 'put in' and 'insert (henceforth 'pattern A'), but with voiceless fricatives in the case of 'destroy' (henceforth 'pattern B').

On the exclusive basis of verbs with stop onsets like 'cover', the directionality of the voicing alternation is unclear. In principle, on could propose two alternative hypotheses (3) and (4),[6] both involving prefixes (here noted X_1 and X_2) that devoice or voice the following segment, respectively.[7]

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[4] An example of such a language is Lushootseed, which has *dz* and *dʒbut* no corresponding z and ʒ (Bates et al. 1994). The data were extracted from the development version of PHOIBLE by Dmitry Nikolaev. The extraction script is available at https://github.com/macleginn/phoible-affricate-extraction.

[5] The contrast between aspirated and unaspirated stops and affricates is secondary, see Hill (2007).

[6] An anonymous reviewer pointed out that these two hypotheses are not necessarily mutually exclusive: Zemp (2016) in particular proposes a model combining both voicing and devoicing. However, such a hypothesis would be unnecessarily complex and does not need to be considered unless comparative evidence provides strong evidence for it.

[7] For the reconstruction of the prefixes and vowel alternation, see Coblin (1976) and Jacques (2012b).

(3) Hypothesis I: devoicing segment $*X_1$ (Present/Future stems are primary)
   Past: ***b-X_1-gab → bkab**
   Imperative: ***X_1-gab-o → k^hob**

Zemp (2016:93, fn. 13) proposes a variant of Hypothesis I without positing a $*X_1$ devoicing element, as this author believes that the past prefix 'had a devoicing effect on the following initial'. This view is however decisively demolished by Sangsrgyas Tshering's (2020) discovery that Past b- actually causes progressive voicing of the following initial consonant in Thebo:[8] the Thebo evidence indicates that the Past tense prefix b- originates from a voiced segment in proto-Tibetan, and therefore one cannot argue that it has devoiced the following obstruent on its own.

(4) Hypothesis II: voicing segment $*X_2$ (Past/Imperative stems are primary)
   Present: ***N-X_2-kab-ed → ^{n}gebs**
   Future: ***d/g-X_2-kab → dgab**

Both (3) and (4) could also equally account for Pattern A verbs, as shown in (5) and (6).

(5) Hypothesis I: devoicing segment $*X_1$
   Past: ***b-X_1-dʑug → btɕug**
   Imperative: ***X_1-dʑug-s-o → tɕʰugs**

(6) Hypothesis II: voicing segment $*X_2$
   Present: ***N-X_2-tɕug → ^{n}dʑug**
   Future: ***d/g-X_2-tɕug → gʑug**

However, in the case of pattern B verbs, only hypothesis II is possible: since there was no contrast between voiced affricates and voiced fricatives in pre-Tibetan, dʑ-/ʑ- can serve as the voiced counterpart of both the voiceless affricate tɕ- and the voiceless fricative ɕ-, and if one supposes that the voicing alternation is caused by a prefix $*X_2$ which voices the onset, one simply needs to specify that $*X_2$ɕ- and $*X_2$s- respectively merge with *dʑ- and *dz-,[9] a hypothesis all the more probable if X_2 is to be interpreted as homorganic prenasalization (Jacques 2012b).[10]

(7) Hypothesis II: voicing segment $*X_2$
   Present: ***N-X_2-ɕig → ^{n}dʑig**
   Future: ***d/g-X_2-ɕig → gʑig**

By contrast, the one way to salvage hypothesis I to explain the paradigm of such verbs would be to posit a contrast between voiced fricatives *ʑ /*z and affricates *dʑ / *dz in proto-Tibetan, merging in all contexts except when preceded by $*X_1$, whose only purpose would be to account for this conjugation pattern. For instance, in (5), this would imply positing a proto-form *ʑig distinct from *dʑig.

(8) Hypothesis I: devoicing segment $*X_1$
   Past: ***b-X_1-ʑig → bɕig**
   Imperative: ***X_1-ʑig-s-o → ɕigs**

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[8] Sangsrgyas Tshering's law also applies to verbs with labial initials, where the *b-prefix is internally reconstructed by Coblin 1976 but has been lost even in Old Tibetan. It incidentally proves that Thebo is more archaic than Old Tibetan at least in this respect.

[9] In this hypothesis, it is not necessary to suppose that there ever was a phonemic contrast between the outcomes of $*X_2$ts- and $*X_2$s- after the voicing sound law took place.

[10] The development in (7) shows that the conjugation of the verb 'destroy' is not a counter-argument to Schiefner's law, contra Bialek (2020:280).

Thus, regardless whether one favors Li and Coblin's views (1), or Schiefner and Hill's (2), hypothesis II is superior to hypothesis I from a strictly Tibetan-internal point of view: hypothesis I implies adding three elements to the phonemic inventory of pre-Tibetan (*X_1, *ʐ and *z), while hypothesis II only requires one (*X_2), with the same explanatory power.

3 The voicing alternation and transitivity

The same argument can be applied to the voicing alternation between in-transitive voiced verbs and transitive voiceless ones (Hill 2014a's type A and B respectively).

Alongside examples like (9) with an intransitive A verb in voiced fricative, alternating with a transitive B verb with a voiceless affricate (at least in the past and imperative stems), we also find cases like (10) and (11), where the voiced fricative in the A verb alternates instead with a voiceless fricative.

(9) A: ཟུག་ **zug** 'pierce, penetrate'
  B: འཛུགས་ **ⁿdzugs** (past བཙུགས་ **btsugs**) 'plant'

(10) A: ཟུབ་ **zub** 'be blocked, disappear (be wiped out)'
  B: སུབ་ **sub** (past བསུབས་ **bsubs**) 'wipe, stop up, block (a road)'

(11) A: ཞག་ **ʑag** 'be torn, be split'
  B: གཤོག་ **gɕog** (past བཤགས་ **bɕags**, root *ɕag) 'cleave, split'

Under hypothesis II, one can account for the above verbs in the following manner, without adding any proto-phonemes other than *X_2:

(12) *X_2-**tsug** → ཟུག་ **zug** 'pierce, penetrate'
  *X_2-**sub** → ཟུབ་ **zub** 'be blocked'
  *X_2-**ɕag** ཞག་ **ʑag** 'be torn, be split'

By contrast, adopting hypothesis I would require reconstructing different series of onsets *dz- and *dʑ- vs. *z- and *ʑ- in addition to *X_1 to be able to account for the corresponding transitive verbs, thus complexifying the inventory of pre-Tibetan by three elements.

(13) *b-X_1-**dzugs** → བཙུགས་ **btsugs** 'plant'
  *X_1-**zub** → སུབ་ **sub** 'wipe, stop up, block (a road)'
  *b-X_1-**ʑag-s** → བཤགས་ **bɕags** 'cleave, split'

4 Conclusion

As shown in the above sections, the hypothesis that the voicing alternation in Tibetan (whether within the transitive paradigm or between transitive and intransitive verbs) results from the voicing of voiceless obstruents rather than the opposite is considerably more economical that the opposite view.

Tibetan-external evidence, in particular Rgyalrongic (Gates et al. forthcoming), is also in favor of this idea, despite being based on an unrelated set of data.

Since moreover attempts to account for the voicing alternation as being due to the alleged devoicing effect of the causative s- prefix have been shown to be misleading (Jacques 2020), claims that the voicing alternation is due to devoicing in other subbranches of Trans-Himalayan, including Chinese (Mei 2012) and Lolo-Burmese (Gerner 2007), will have to be revised in the light of Rgyalrongic (Gong 2017, Zhang et al. 2019) and Tibetan data.

Acknowledgments

References

Basumatary, Prafulla. 2017. *The Bodo verb, Verbal semantics in a Tibeto-Burman language*. Oxford: Peter Lang.

Bates, Dawn, Thom Hess & Vi Hilbert. 1994. *Lushootseed Dictionary*. Seattle: University of Washington Press.

Baxter, William H. III. 1992. *A Handbook of Old Chinese Phonology Trends in Linguistics, Studies and Monographs 64*. Berlin: Mouton de Gruyter.

Bialek, Joanna. 2020. Old Tibetan verb morphology and semantics: An attempt at a reconstruction. *Himalayan Linguistics* 19.1:263–346.

Coblin, Weldon South. 1976. Notes on Tibetan Verbal Morphology. *T'oung Pao* 62:45–70.

Conrady, August. 1896. *Eine Indo-Chinesische causative-Denominativ-Bildung und ihr Zusammenhang mit den Tonaccenten*. Leipzig: Otto Harrassowitz.

Dài, Qìngxià & Xījiān Xú. 1992. *Jǐngpōyǔ yǔfǎ* 景頗語語法 *[A grammar of Jingpo]*. Beijing: Zhōngyāng mínzú xuéyuàn chūbǎnshè.

Gates, Jesse, Sami Honkasalo & Yunfan Lai. forthcoming. From transitive to intransitive and voiceless to voiced in Proto-Sino-Tibetan: New evidence from Stau, Geshiza, and Khroskyabs. Language and Linguistics.

Gerner, Matthias. 2007. The lexicalization of causative verbs in the Yi group. *Folia Linguistica Historica* 28.1–2:145–185.

Gong, Xun. 2017. jiāróng yǔzǔ yǔyán yǔ shànggǔ hànyǔ de xíngtàixué 嘉绒语组语言与上古汉语的形态学 [The Jiarong language group and the morphology of Ancient Chinese]. In Haeree Park & Shaoxuan Cheng (eds.), *gǔ wénzì yǔ hànyǔ lìshǐ yīnyùnxué* 古文字与汉语历史音韵学复旦中华文明研究专刊 *[Ancient Chinese Writing and Chinese Historical Phonology, Special issue of Research on Chinese Civilization Research]*, 134–156. Shanghai: Fudan daxue chubanshe.

Grossmann, Eitan & Dmitry Nikolaev. 2018. Areal sound change and the distributional typology of affricate richness in Eurasia. *Studies in Language* 42.3:562–599.

Handel, Zev. 2012. Valence-changing prefixes and voicing alternation in Old Chinese and Proto-Sino-Tibetan: Reconstructing *s- and *N- prefixes. *Language and Linguistics* 13.1:61–81.

Hill, Nathan W. 2007. Aspirate and non-aspirate voiceless consonants in Old Tibetan. *Language and Linguistics* 8.2:471–493.

Hill, Nathan W. 2014a. A note on voicing alternation in the Tibetan verbal system. *Transactions of the Philological Society* 112.1:1–4.

Hill, Nathan W. 2014b. Tibeto-Burman *dz- > Tibetan z- and Related Pro-posals. In Richard VanNess Simmons & Newell Ann Van Auken (eds.), *Studies in Chinese and Sino-Tibetan Linguistics*, 167–178. Taipei, Institute of Linguistics, Academia Sinica.

Hill, Nathan W. 2019. *The historical Phonology of Tibetan, Burmese, and Chinese*. Cambridge: Cambridge University Press.

Jacques, Guillaume. 2012a. A new transcription system for Old and Classical Tibetan. *Linguistics of the Tibeto-Burman Area* 35.2:89–96.

Jacques, Guillaume. 2012b. An internal reconstruction of Tibetan stem alternations. *Transactions of the Philological Society* 110.2:212–224.

Jacques, Guillaume. 2015a. Derivational morphology in Khaling. *Bulletin of Chinese Linguistics* 8.1:78–85.

Jacques, Guillaume. 2015b. The spontaneous-autobenefactive prefix in Ja-phug Rgyalrong. *Linguistics of the Tibet- Burman Area 38*.2:271–291.

Jacques, Guillaume. 2020. Voicing alternation and sigmatic causative pre-fixation in Tibetan. *Bulletin of the School of African and Oriental Studies* 83.2:283–292.

Kümmel, Martin J. 2007. *Konsonantenwandel: Bausteine zu einer Typologie des Lautwandels und ihre Konsequenzen fur die vergleichende Rekonstruktion*. Wiesbaden: Dr. Ludwig Reichert Verlag.

Li, Fang-Kuei. 1933. Certain Phonetic Influences of the Tibetan Prefixes upon the Root Initials. *Bulletin of the Institute of History and Philology* 6.2:135–157.

Mei, Tsulin. 2012. The causative *s- and nominalizing *-s in Old Chinese and related matters in Proto-Sino-Tibetan. *Language and Linguistics* 13.1:1–28.

Moran, Steven & Daniel McCloy (eds.). 2019. *PHOIBLE 2.0*. Jena: Max Planck Institute for the Science of Human History. http://phoible.org.

Sagart, Laurent & William H. Baxter. 2012. Reconstructing the s- prefix in Old Chinese. *Language and Linguistics* 13.1:29–59.

Sangsrgyas Tshering. 2020. Diébù Zàngyǔ de qīngyīn zhuóhuà 迭部藏語的清音濁化 [The voicing of unvoiced obstruents in Thebo Ti-betan]. *Cahiers de linguistique – Asie orientale* 49.1:1–20.

Schiefner, Anton. 1852. *Tibetischen Studien. Mélanges asiatiques tirés du Bulletin historico-philologique de l'Académie impériale des sciences de St.-Pétersbourg* 1:324–394.

Shefts-Chang, Betty. 1971. The Tibetan Causative: Phonology. *Bulletin of the Institute of History and Philology* 42.4:623–765.

Uray, Géza. 1953. Some problems of the ancient Tibetan verbal morphology: methodological observations on recent studies. *Acta Linguistica Academiae Scientiarum Hungaricae* 3:37–62.

Zemp, Marius. 2016. A functional reconstruction of the Proto-Tibetan verbal system. *Himalayan Linguistics* 15.2:88–135.

Zhang, Jichuan. 2009. *Zàngyǔ cízú yánjiū* 藏语词族研究 [*A Study of Word Families in Tibetan*]. Beijing: Shèhuì kēxué wénxiàn chūbǎnshè.

Zhang, Shuya, Guillaume Jacques & Yunfan Lai. 2019. A study of cognates between Gyalrong languages and Old Chinese. *Journal of Language Relationship* 7.1:73–92.