On the origins of Tibetan

Marius Zemp

Abstract

In order to account for the diverging functions verb stems acquired in Written Tibetan on the one hand and the phonologically archaic modern dialect of Purik on the other, we need to reconstruct a Proto-Tibetan (PT) in which labial prefixed voiceless onsets (*φ-K-*) focused on the instigation of an event, nasal prefixed voiced onsets (*N-G-*) on its result, and voiceless aspirated onsets (*Kh-*) on the core of the event (§1). The present paper argues that the only way to explain how this threefold distinction developed from the binary distinction (voiceless onset (*K-*) → transitive : voiced onset (*G-*) → intransitive) found in most Trans-Himalayan (TH) languages (§2) is to assume that Tibetan derives from a pidgin which was lexified by a TH language and expanded by vast generalization of recognizable patterns when it became a first language and thus had to facilitate communication in all domains of life (§3). We will discuss evidence suggesting that the lexifier of the PT pidgin was the West Himalayish language of Zhangzhung, that its substrate was a Rgyalrongic language, and that Tamangic derives from the same pidgin with a different substrate (§4).

1. Internal reconstruction of the Proto-Tibetan verbal system

The verbal morphology of Written Tibetan (WT) is characterized by a great variety of consonantal and vocalic alternations which scholars have been unable to explain for over 100 years (Jacques 2012: 212). For instance, around 50 transitive verbs consist of four stems with each a different onset and with up to three different vowels, such as the verb meaning 'block', with its two present stems *'gegs* and *'gog*, the past stem *bkag*, future *dgag*, and imperative *khog*; but other transitive verbs have the same onset in all four stems, or a present stem with the same onset as the imperative stem, or different vocalic alternations than the ones shown here – The important point is that none of this alternation is predictable, and hence, has to be learned for every single verb of WT. The comprehensive documentation of Purik (Zemp 2018), one of the few modern dialects in which the consonant clusters of WT have all remained distinct, provides the basis for the solution of this puzzle. Scholars traditionally believed that the phonologically conservative dialects spoken at the western periphery of the Tibetan language area, such as Purik, preserve only the past stem from among the four stems featured by the maximally complex transitive WT verbal paradigms of the type presented above (Shafer 1951; Bielmeier 2004; Zeisler 2009; Hill 2012; inter alia). A closer look at Purik, however, reveals that it preserves all four stems, but in functions and meanings that differ from those of the transitive WT paradigms. For instance, while the verb *kaq*, corresponding to the WT past stem *bkag*, means 'block' also in Purik, the verb *gaqs*, corresponding to the WT present stem *'gegs* (with a vowel that was palatalized by the *-s* there) of the transitive verb, has the intransitive meaning

'become blocked' in Purik. The verb *zgaq*, on the other hand, corresponding to the WT future stem *dgag*, means 'hold back one's pee' in Purik, hence, describes an indirect kind of causation. And Purik *kʰoq*, the counterpart of the WT imperative stem, is contained in *kʰoqpa ɲirim* 'pregnant', and means the 'thing that blocks or is stuck inside a surrounding entity'. In this vein, Zemp (2016) discusses Purik cognates of dozens of transitive WT present, past, future, and imperative stems. By abductively devising hypotheses as to how the diverging functions of WT and Purik may have evolved, we are then able to reconstruct the PT verbal system in a very detailed manner. The reconstructed PT that allows for the most plausible and economic account of all the functional divergences found has the features listed below. In this paper, we will mainly deal with the two onset distinctions (1) and (2), since they are the ones which are highly unlikely to have evolved from a Trans-Himalayan (TH) language through normal transmission. In fact, after looking at the evidence for similar onset distinctions in TH languages in §2, I will present evidence in §3 suggesting that the onset distinctions of PT can only be explained as having evolved from a pidgin with a TH lexifier.

(1) threefold onset distinction between
- actives (A-phasives, describing the initial, active phase of an event) with a labial prefix and voiceless initials (**φ-K-*)
- dynamic passives (M-phasives, describing the core of the event) with voiceless aspirated initials (**Kh-*)
- resultative passives (Z-Phasives, describing the final phase or the state resulting from an event) with a nasal prefix and voiced initials (**N-G-*)

	**φ-K-*	*(*K- >) Kh-*	**N-G-*
phase of event	initial (A)	middle (M)	final (Z)
meaning	active, instigation	core of event, dynamic passive	resultative passive

Table 1: The three phasives of PT

(2) an *s-* prefix with a causative meaning ('cause so. to do sth.') before active verb stems, and with a voiced form *z-* (~ *ð-* ~ *ɣ-* ~ *r-*) before passive verb stems with voiced initials, semantically adjusted to the passive hosts, describing a situation that 'leads to an event'

prefix	*s-*	*z-*
onset	*-K-* (voiceless → **active**)	*-G-* (voiced → **passive**)
meaning	external agent causes event	external situation leads to result of event

Table 2: PT action-causative *s-* and result-causative *z-*

Figure 1 schematically illustrates the fivefold PT onset distinction combining (1) and (2):

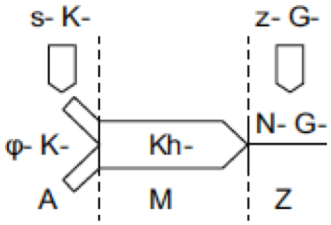

Figure 1: PT *φ-K-* focused on the initial (A) phase of an event, *N-G-* on its result (Z), and *Kh-* referred to the event as such (M); *s-K-* described an external agent's causation of the action (A), and *z-G-* described an external situation leading to the result (Z)

Further features reconstructed for PT:

(3) *-o-* replaced an *-a-* of the root when the stem focused on a figure rather than a ground, which likely reflects 'lip pointing' (cf. Enfield 2001)
(4) simple verb stems described
  - without a suffix: past events
  - with the stative *-s* suffix: present states resulting from past events
(5) verb stems (V) were concatenated without a subordinator when they referred to different facets of one and the same event (V_1-V_2) or state (V_1-*s*-V_2)
(6) nominalizing *-t* (~ *-d*) suffix

focus marker *-pa* (cf. Bickel 1999)

But:
not a single trace can be found in any variety of Tibetan of the elaborate person-agreement morphology which must be an old characteristic of TH (e.g. DeLancey 2017)

The appendix
- lists stems with different onsets for more than 60 roots for which I have been able to clearly identify regular semantic correspondences with at least three of these stems in Purik (more than 300 stems, not exhaustive)
- for some roots, we find several derivations with both an *-a-* and an *-o-* vowel
- the list also includes roots whose stems have not been assembled in WT verbal paradigms, such as 26a and 47
- for roots with a labial initial, I have in some cases adduced evidence from Ladakhi, because unlike in WT and Purik, A-phasive **φ-p-* did not generally become aspirated there and thus did not merge with M-phasive *ph-*
- the list only contains roots with initial stops but not those with initial *l-*, *r-*, *s-*, *m-*, *n-*, and *ng-*, to which the threefold onset distinction (1) did not apply
- quantifying the evidence: for 34 roots with non-labial initials, we find all three phasives as well as the result-causative (i.e., the *z-* prefixed Z-phasive); for 24 further roots, I found three stems with different onsets; for roots with labial initials, I listed some further

derivations with voiceless prefixes; for six roots with labial initials, I found five different stems; for 14, I found four different stems; in total, the appendix thus lists 82 roots (counting also those with *-o-* vocalism which are evidently related to roots with *-a-*) for which PT must have contained at least three stems distinguished by their onsets in accord with the semantics attributed to the different formations above.

2. Comparative evidence from Trans-Himalayan

The basic threefold onset distinction reconstructed in §1.1 is not documented for any Trans-Himalayan (TH) language. However, many TH languages have a binary distinction between transitive verbs with a voiceless onset and intransitive verbs with a voiced onset. Among others, Benedict (1972: 124) reconstructs the following pairs for Tibeto-Burman (which corresponds to what is called Trans-Himalayan here):

meaning	transitive	intransitive
'burn'	*par*	*bar*
'broken, break'	*pe*	*be*
'affix, plait, sew'	*pyar*	*byar*
'put on clothes'	*kwa-n*	*gwa-n*
'joint, tie, knot'	*tu-t*	*du-t*

Table 3: pairs of TB transitive and intransitive verbs reconstructed by Benedict (1972)

Benedict (1972: 112) discusses evidence of a causative *p-* prefix in Bodo-Garo and Mikir, and Maspero (1930; 1952: 593) reconstructs a causative *p-* prefix for Old Chinese, but the functions of which "still await clarification" according to Sagart (1999: 89). An *s-* prefix with "directive, causative, or intensive meaning" is found in several TH languages (Benedict 1972: 105). Benedict (1972: 98ff.) also discusses evidence for *-s*, *-t*, and *-n* suffixes, however, refrains from identifying their original functions. According to Benedict (1972: 126), finally, the a/o-alternation found in Tibetan "appears to have played no role in proto-TB morphology".

3. PT reflects an expanded pidgin lexified by a TH language

- the absence of person agreement morphology from a number of TH languages including Tibetan is explained as due to "episodes of heavy contact" in DeLancey 2014;
- the PT verbal system is extremely simple; apart from the onset distinctions, all reconstructed features are typical of creoles and are thus found in the literature on creoles;

- but it is the elaborate PT onset distinctions which, if compared to the binary distinctions found in most TH languages, most strongly suggest that Tibetan originates from a pidgin with a TH lexifier.

→ In the remainder of this section, I will demonstrate that the hundreds of PT verb stems which are derived in regular ways from all verb roots with initial obstruents can only have developed from the binary distinction found in TH if we assume that:

i. PT ultimately derives from a pidgin lexified by a TH language, that is, a simplified form of a TH language which facilitated communication between peoples of different tongues in only a few domains of life, such as trade, see Fig. 2:

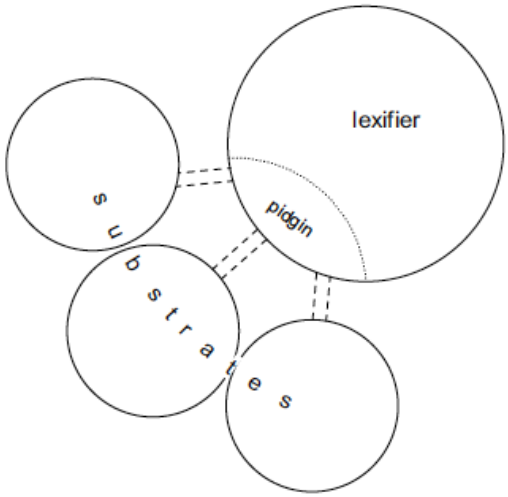

Figure 2: The type of pidgin from which Tibetan originates

Notes:
- pidgin contains less linguistic material than the lexifier, that is, less vocabulary and less grammatical constructions used in a smaller variety of contexts (Thomason 2015: 243–4)
- some structures of the pidgin may also be deliberately simplified (Thomason 2015: 251)
- different substrates may each shape the pidgin somewhat differently; for instance, phonetic/phonological and phonotactic interferences are highly likely

ii. at some point, this pidgin became a first language, that is, a creole, for Proto-Tibetans; as a consequence, it was extended from one or a few domains into all domains of life; at the same time, it had to be expanded, that is, its speakers had to find ways to refer to a great number of entities and describe a great number of situations in the new domains, see Fig. 3

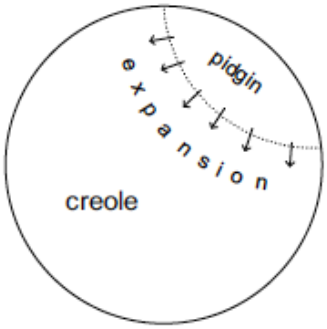

Figure 3: How the pidgin was expanded into the PT creole

iii. the PT pidgin must have contained enough verb stems with voiceless and voiced initials for its speakers to recognize a pattern where the former had an active and the latter a passive meaning, because much of the new vocabulary was created by generalizing this pattern and applying it to new verb roots, see Fig. 4

K-Σ$_1$				*K*-Σ$_1$	***G*-Σ$_1$**
K-Σ$_2$	*G*-Σ$_2$			*K*-Σ$_2$	*G*-Σ$_2$
	G-Σ$_3$		> >	***K*-Σ$_3$**	*G*-Σ$_3$
K-Σ$_4$				*K*-Σ$_4$	***G*-Σ$_4$**
	G-Σ$_5$			***K*-Σ$_5$**	*G*-Σ$_5$
etc.				etc.	

Figure 4: Generalization of active *K*- and passive *G*-

iv. in order to derive new active and passive stems from roots for which these derivations had not existed in the pidgin, the speakers of the PT creole used a devoicing labial prefix (→active stems) and a voicing nasal prefix (→passive stems); once active and passive were clearly marked by prefixes, unprefixed roots were generalized in referring to the event as such (or to entities which could be conceived of as by definition undergoing that event, such as *chu* 'water', see root 18 in the Appendix); at some point (if not from the beginning?), the unprefixed roots became phonemically aspirated; thus, the binary onset distinction had become ternary, see Fig. 5

K-Σ$_1$				*K*-Σ$_1$	***N-G*-Σ$_1$**		***φ*-*K*-Σ$_1$**	***Kh*-Σ$_1$**	*N-G*-Σ$_1$
K-Σ$_2$	*G*-Σ$_2$			*K*-Σ$_2$	*G*-Σ$_2$		***φ*-*K*-Σ$_2$**	***Kh*-Σ$_2$**	***N*-*G*-Σ$_2$**
	G-Σ$_3$	> >		***φ*-*K*-Σ$_3$**	*G*-Σ$_3$	> >	*φ*-*K*-Σ$_3$	***Kh*-Σ$_3$**	***N*-*G*-Σ$_3$**
K-Σ$_4$				*K*-Σ$_4$	***N-G*-Σ$_4$**		***φ*-*K*-Σ$_4$**	***Kh*-Σ$_4$**	*N-G*-Σ$_4$
	G-Σ$_5$			***φ*-*K*-Σ$_5$**	*G*-Σ$_5$		*φ*-*K*-Σ$_5$	***Kh*-Σ$_5$**	***N*-*G*-Σ$_5$**

Figure 5: Evolution and generalization of ternary distinction between *φ*-*K*- : *Kh*- : *N*-*G*-

v. the generalization of voiceless initials indicating activity and voiced initials indicating passivity allowed the causative *s-* prefix to be used in a voiced form before voiced initials and adapt its meaning to these passive hosts, as illustrated by 63 result-causative stems with an oral prefix in front of a voiced initial in the Appendix;

Fig. 6 summarizes the five different stems which could be formed from verb roots (in accord with Figure 1) during the stage in which PT was expanded in order to facilitate communication in all domains of life:

action-causative	A-phasive	M-phasive	Z-phasive	result-causative
s-K-Σ_1	φ-K-Σ_1	Kh-Σ_1	N-G-Σ_1	z-G-Σ_1
s-K-Σ_2	φ-K-Σ_2	Kh-Σ_2	N-G-Σ_2	z-G-Σ_2
s-K-Σ_3	φ-K-Σ_3	Kh-Σ_3	N-G-Σ_3	z-G-Σ_3
s-K-Σ_4	φ-K-Σ_4	Kh-Σ_4	N-G-Σ_4	z-G-Σ_4
s-K-Σ_5	φ-K-Σ_5	Kh-Σ_5	N-G-Σ_5	z-G-Σ_5

Figure 6: Expanded onset distinction generalized in PT creole

vi. in addition, speakers of the PT creole could in any verb stem with an *-a-* replace this vowel by an *-o-* in order to focus on a figure profiled against a ground

vii. the accentual pattern consisting of a low and a high tone (i.e. LH) was generalized for all disyllabic non-verbs, LHL for trisyllabic, and LHLH for quadrisyllabic non-verbs

These are just the most evident patterns which were generalized during the expansion stage of the PT creole; a number of further patterns must have been generalized during that stage.

The expansion of the PT creole was thus in front of all characterized by a process of generalization which may be described as follows:

If a pidgin, i.e., a simplified form of a language facilitating communication between peoples of different tongues in particular domains of life, becomes a first language and thus has to be expanded in order to facilitate communication in all domains of life, the most efficient strategy is for its speakers to generalize whatever pattern they recognize in this pidgin in terms of both its meaning and the contexts in which it occurrs.

The meaning of the present paper for linguistic scholarship on pidgins and creoles:

i. The traditional view that creoles differ from all other languages because they derive from highly simplified codes of communication (pidgins) which evolved in situations of intense contact has repeatedly been called into question (Chaudenson 2001; Mufwene 2001; DeGraff 2005; Ansaldo, Matthews and Lim 2007; Blasi, Michaelis and Haspelmath 2017; inter alia). The present paper demonstrates that at least the Tibetan evidence can only be explained by assuming that PT originates from a pidgin that was expanded to facilitate communication in all domains of life when it became a first language.
ii. The process of generalization is not discussed in cross-linguistic studies which identify specific configurations of linguistic features that distinguish creoles from non-creoles (McWhorter 1998, 2005; Parkvall 2008; Bakker et al. 2011; Daval-Markussen 2013; Good 2015; inter alia). This is not surprising, since all of these studies primarily target synchronic properties of creoles and other languages, while generalization is a diachronic process. However, simplicity (especially when defined in terms of the number of rules needed to describe the grammar of a language), one of the characteristics more or less unanimously attributed to creoles, clearly follows from the generalization of rules which were recognized in (or analyzed into) a pidgin.
iii. Thomason (2015: 258) points to a "need for more systematic historical comparison of pidgins and creoles". The author of the present paper is convinced that such diachronic studies will inevitably identify generalization as a driving process whenever pidgins are expanded into first languages.

4. Identifying the lexifier, substrates, and related creoles

Hypothesis (1): The West Himalayish language of Zhangzhung was the lexifier

- archeological traces of the polity of Zhangzhung on the Tibetan plateau and in the Himalayas between 500 BCE and 500 CE (Aldenderfer 2007; DeLancey 2014: 60)
- the few documents which appear to be written in the Zhangzhung language show the greatest degree of correspondence with modern West Himalayish (WH) languages (van Driem 2001: 953–7; Widmer 2017: 44–53)
- historical evidence: Tibetans conquered Zhangzhung in mid 7th century CE
- geographical plausibility
- linguistic evidence:
    - well-documented contrast between transitive and intransitive verbs with voiceless and voiced initials, respectively
    - stative *-s* suffix (Widmer 2017: 361–4), among other functions

Hypothesis (2): The substrate was Rgyalrongic

- broad evidence for causative sV- and $\gamma V/zV$- prefixes (Sun 2014:638–640; Jacques 2015a, 2015b), which are not reconstructable for WH (nor for Tamangic)

- plausible also that Tibetan inherited its phonotactic peculiarities (esp. the complex syllable onsets) from Rgyalrongic
- geographically plausible

Hypothesis (3): Tamangic derives from the same pidgin with a different substrate

- some evidence for a threefold onset distinction in Mazaudon's (1994) reconstruction of Proto-Tamangic, but semantically too unspecific, and unclear nature of A and B tones (e.g. etyma 457./458. ^{A}*tut* 'rassembler, to wrap around' : 493. ^{B}*thut* 'to assemble' (and ^{A}*thu* 'pick (from bush, tree)') : 518. ^{B}*dut* 'to pick up'; 474. ^{A}*tot* 'to load' : 498. ^{A}*thot* 'to wrap around head' : 535. ^{B}*dot* 'to load')
- great number of similarities with Tibetan → originate from same pidgin?
- no evidence for Proto-Tamangic *s-* or *z-* prefixes → no Rgyalrongic-substrate, unlike Tibetan?
- geographically plausible

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Appendix: Reflexes of the different PT verb stems in Purik Tibetan

	Root	Meaning (specific, root) and typical participants	A-phasive	M-phasive	Z-phasive	Result-causative	Written Tibetan transitive paradigm
	Meaning (general, stem)		Active, instigation	Core, main part/middle phase of event	Passive, result	(external) state or event leading to the result	
	Form (onset)		*φ-K-	*Kh-	*N-G-	*Z-G-	
	K-						
1a	Kak	‘block (a pipe or canal)’ (-a- → blocked entity / -o- → blocking entity)	kaq ‘block’	k^haq ‘responsibility’; k^haq ‘cut with a blunt knife’ (i.e. ‘be blocked again and again’); k^haʁa ‘n. scrape, graze (e.g. of donkeys, from carrying heavy loads’	gaχs ‘be blocked’	zgaq ‘hold back (pee)’	’geg(s), bkag, dgag, khog

1o	Kok		koq ‘snatch away’; kwaq ‘dram. laŋs get up, stand still’	k^hoqpa ɲirim ‘pregnant (lit. double blockage)’; k^hoqk^hol ‘worried’ (‘which blocks and weighs heavy’); k^hoχs ‘cough’	goq ‘come off’	zgoqpa ‘garlic, i.e. which needs to be scraped from the bottom of the pestle’; cf. WT dgog ting “pestle” (Jk. 86b), i.e. ‘where garlic and the like is spread on the bottom only that it has to be snatched off again afterwards’	’gog, bkog, dgog, khog
2a	Kaŋ	‘fill’ (-a- → form / -o- → content)	skaŋ ‘fill’	k^haŋma ‘home’	gaŋ ‘be filled’	ʁaŋ ‘dram. open (of eyes)’; ʁaŋp^{h}i ‘bladder’ < *z-gaŋ-phi ‘which is filled and emptied’; tʃ^{h}oʁaŋ ‘blister’; zgaŋ ‘hill, spur’	’gengs, bkang, dgang, khong

2o	Koŋ		skoŋ ‘squeeze to a roundish form’	k^hoŋʂtsoq ‘evil’; k^hoŋs ‘shrink’	goŋbu ‘lump (of butter)’	rgun ‘grape; winter’ < rgoŋ-d ’which shrinks with time; time during which plants shrink’	
2od	Kon < *Koŋ-d	‘wear’	skon ‘dress so. else’	k^hon ‘grudge’ (i.e. ‘sth. carried’)	gon ‘wear’		
3a	Kat	‘crack’ (-a- → ground / -o- → figure)	katpa ‘quarry’	χaʈ ~ χat ‘become stuck’	gat ‘be enough for everybody entitled to obtain sth. shared’	ʒargat ‘joke’ < *ʁgat ‘likely to crack’	’gad, bkad, dgad, khod
3o	Kot			k^hot ‘grain to be ground in the watermill (to crack)’	got ‘loss’, got $tʃ^h$a ‘die (h)’	rgot ‘laughter’	
4	Kap	‘hide’	kap ‘cover’	k^hap ‘needle’ (which is covered)	gaps ‘crouch (< *be covered)’		’gebs, bkab, dgab, khob
5a	Kam	‘absorb’	skam ‘become dry’	k^hams ‘appetite’; WT ‘realm’	gam ‘put into mouth (powdered food)’	ʁam ‘laziness’	

5o	Kom		skoms ‘(with tʃʰu water) become thirsty’	kʰom ‘become free, have leisure’	gom ‘step over’	ʁom ‘hole’	
6a	Kar	‘turn around’	skar ‘lock in’	kʰar ‘castle (around which a realm turns)’; ‘latch, snap into place (e.g. axle of watermill)’			
6o	Kor		skor ‘make turn around’; kwar ‘dram. kʰor ‘take a walk’	kʰor ‘turn around’	gor ‘be late’ < *‘have so. else turn around waiting’	ʁorʁor taŋ ‘churn by means of a lathe’ < *z-gor-	
7a	Kal	kal ‘change location of an entity’	kal ‘load, send’	kʰal ‘weighing unit’	maŋgal ‘lower jaw’; cf. also WT ’gal „to transgress“ (Jk. 93a)	rgal ‘traverse, step over; zgal ‘load (on animals’ backs)’; zgalto ‘firewood, i.e. which is to be put into the fire’	’gel, bkal, dgal, khol; ’khal, bkal, bkal, ’khol
7d	Kel (< Kal-d)			kʰel ‘be long enough to cross’	gel ‘fall down (on the ground)’	zgel ‘fell’	

7o	Kol		skol ‘cook, make boil’ < ‘put on stove’	mikk^{h}ol ‘pain above eyes’; k^{h}oqk^{h}ol ‘worried’; χol ‘boil’	haŋgol ‘deaf’ (ha ‘roof’, ŋgol ‘needs to be covered’)		
8	Kuk	‘bend, control’	kuk ‘bend, gather (cattle)’	k^{h}uks ‘come under control’	Balti guk ‘be bent’	zguk ‘collect (cattle, after it has been brought to the mountains together with the other sheep of the village), i.e. summon’ (cf. CT dgug-sdad ‘wait’)	’gug(s), bkug, dgug, khug
9	Ke	‘unfold’	skje ‘give birth’	k^{h}jemet ‘useless’; p^{h}ank^{h}etʃan ‘useful’	gjes ‘be fed up’, SMu and Kyir ‘with k^{h}a separate, divorce’ < *‘become too much for so.’	ɬtʃaʁzgjet ‘three-legged iron stove’ < °dgyed ‘which can be folded up’	’gyed, bkye, bkye/dgye(d), khyes

10	Ko	‘receive’	sko ‘appoint, charge, disclose’	Balti k^hos ‘be useful, helpful’	go ‘hear’; ha go ‘understand’	rgos ‘need’; zgo ‘(v) divide; (n) door’	
11	*Kraq	‘mix in’	skraq ‘mix, knead, stir’	k^hʂaχs ‘be well knead’	graq ‘greet, talk briefly’		
12a	Kram	‘spread, display’	kram ‘spread out, display; cabbage’		gramba ‘cheek’		’grem(s), bkram, dgram, khroms
12o	Krom					zgrom ‘box, i.e. whose content can be displayed’	
13a	Kral		kral ‘distribute’	WT khral ‘tax’	gral ‘sitting row’		’grel, bkral
13o	Krol	‘untie’	krol ‘untie’		grol ‘be untied’	zgrulbil ‘cross-legged sitting position, i.e. where the legs need to be untied’	’grol, bkrol, dgrol, khrol
14	*Krim	‘blend’	skrim ‘mix’	k^hʂims ‘custom’ < ‘which applies to all members of a community’	grims ‘blend’	zgrim ‘mix, allow to blend’	
	C-		*φ-tS- (> b-S-)				

15a	Cak	‘break, cleave’	tʃaq ‘break’, ʃaq ‘slit up’	tʃʰaq ‘break’	ʒaq ‘put’		
15o	Cok		tʃoq ‘(at that) moment’	tʃʰoq ‘be obeyed’	ʒoq ‘carve’	ldʒoχs ‘style, fashion’ (WT bzhogs)	
16a	Cat		tʃat ‘cut’; kʰaptʃat ‘measure up to the brim’ (from kʰa ‘opening’ and *ptʃat ‘cut’); ʃat ‘comb’	tʃʰat ‘be cut’		ldʒaldʒat ‘water repellent’, rdʒet ‘forget’ (< allow to be cut off)	
16o	Cot		tʃot ‘cut!’	tʃʰot ‘be finished’			
17a	Cal	‘meet, align’	ɬtʃar < bcal ‘measure, weigh’ < ‘make align’; ʃal (Balti pʰʃal) ‘suffer from diarrhoea’; ʃalu ‘bath’	tʃʰal taŋ ‘rinse’	ʒala ‘(n) plaster’; Sham dʒal ‘visit (h)’		’jal, bcal, gzhal, ’jol
17o	Col		ɬtʃor < bcol ‘entrust, worship’	tʃʰol ‘be short’; tʃʰoltʃʰol ‘vapid, bland (of a fruit)’	ʒol ‘hang down to the ground (clothes)’		’chol, bcol, bcol, chol ‘worship’

18	Cu		tʃu ‘pour’	tʃʰu ‘water’	ʒu ‘melt; digest’		’chu, bcus, bcu, chus
19	Cuk	‘put in’	tʃuk ‘close, lock in’		ʒuks ‘enter, begin’		’jug, bcug, gzhug, chug
20	Cut	‘twist, integrate’	ʃut ‘be able to digest’	tʃʰut ‘understand’		ldʒut taŋ ‘twist, wring out’	
21	Ce	‘be(come) big’	ʃes ‘know’	tʃʰimi ‘old person’, cf. WT che ‘big’	ʒe ‘penis (which becomes big)’	WT snying rje ‘pity’ < ‘makes the heart become big’	
22	Co	‘make, do’	tʃo ‘make, do, act’	tʃʰos ‘religion < ‘which/how it is/needs to be done’	ʒo ‘curd (which comes into being by itself)’		’chos, bcos, bco, chos
23	Com	‘subdue’	WT bcom ‘conquer’	tʃʰoms ‘finished’	ʒom ‘skim’	rdʒom (with taŋ or tʃʰa) ‘crash’	’joms, bcom, gzhom, chom
	T-						
24	Ta	‘pass, leave out’	ʂta ‘horse’	tʰa ‘fallow land’	da ‘arrow’	rda ‘chase’	

25a	Tak	‘lift’	stjaq ‘lift’; stjaχs ba ‘help climbing’	t^{h}jaq ‘be liftable’; ʈ^{h}aq ‘dram. k^{h}ru wash’	daq ‘become clean’	zdjaχs ‘match, comparison, avarice’ < ‘put sth. in a state in which it can be lifted, weighed up against sth. else’	’degs, bteg, gdeg, theg
25a'	Tak	‘connect’	taq ‘attach’	t^{h}aqpa ‘rope’; t^{h}aq ‘weave (repeatedly connect)’			’dogs, btags, gdags, thog(s)
25o'	Tok			t^{h}oq ‘roof’; Balti ‘crops’	doχs ‘be annoyed’	zdoq ‘hide (make as if attached)’	

26a	Taŋ	horizontal movement	taŋ ‘give, hit, etc.’	t^{h}aŋ ‘desert, plain’ (*‘where something may be moved across’); t^{h}aŋ ‘with nam (sky) become clear of clouds’; t^{h}en ‘pull’ (< *t^{h}aŋ-d ‘can be moved across’); $ʈ^{h}$aŋ$ʈ^{h}$aŋ ‘taught’ (i.e. *‘which constantly pulls across’)	daŋs ‘(with zermo) be(come) free of pain’; daŋ ba ‘wait (< *let pass)’; WT dang “be pure” (Jk. 249b)	rdaŋ ‘gape (allow to pass)’	
26j	ʈjaŋ	fast horizontal movement	munʈjaŋʈjaŋ ‘numb’	$ʈ^{h}$jaŋ ‘dram. pull’	ʃandʒaŋs ‘shameless person’; tamdʒaŋs ‘useless talk’	rdjaŋ ‘trust’ (< ‘let go by itself’)	cf. WT ’deng ba ‘to go’; gdeng ‘confidence’; thengs ‘time(s)’

26o	Toŋ		ɬtjoŋ ‘notch of arrow (which allows it to be shot)’	t^{h}oŋ ‘be visible < come across’; cf. also OT mthongs ‘chain consisting of subsequently shot arrows’; t^{h}oŋma ‘plowshare’	doŋ ‘let's go’ < ‘is gone’; ɖwaŋ ‘dram. faint, lay down flat’	rdoŋ ‘face’ (which is always headed to where one is going)	
26od	Ton (< Toŋ-d?)	‘emerge’	ston ‘show’, Sham ton ‘cause to come out (oil from almonds)’	t^{h}on ‘emerge (of crop displayed in entirety)’	don ‘goal’; dontam ‘serious conversation’; don ‘eat (h)!’ < ‘(the food) has come across, been served’	rdon (Balti ɣdon) ‘enviously look at so. to make him pass over the desired thing’; Sham rdon ‘evil spirit’	’don, bton, gdon, thon
27a	Tat	‘go on top of sth. else’	ʂtat ‘put on top, hand to so.’; ɬʈjat ‘fuck it!’	t^{h}at ‘be happy’ < *‘on top’		lɖet/ɬʈet ‘dram. sit/put on top of sth.’	

27o	Tot		stot ‘praise’ (cause to go/feel on top)	tʰot ‘turban’ < *‘which is put on top of so.’	dot ‘become well’	zdot-tʃi duk ‘(I’m) ok’ < *‘will be ok’; lɖwat ‘dram. fall down on ground’	
28a	Tap	‘strike, apply’	tap ‘sow, strike’; ɬʈap ‘(n) slope’	tʰaptʰap ‘fight’; tʰap ‘fireplace’; tʰaps ‘opportunity’ ʈʰap ‘dram. (e.g. lemon)’; tʰeps ‘be long enough’	Sham etc. tap (low tone in CT) ‘measure’	rdap ‘beat wool (with two sticks), i.e. beat in order for the dust inside the wool to be cast out’; ldep/ɬtep ‘dram. shake (cause to squat, straddle)’	’debs, btab, gdab, thob(s)
28o	Top		ʈop ‘dram. stick inside’	tʰop ‘obtain’; ʈʰop ‘dram. stick inside (e.g. a needle)’			
29a	Tam	‘collect’		tʰams ‘hold’; tʰamtʰam ‘bloated’; ʈʰam ‘dram. shake apricot tree’	dams ‘be together’	zdam ‘press together’	

29o	Tom			tʰumbu ‘large ladle’	dom ‘coincide unfortunately’; dombar ‘pudenda’	Ciktan zdoms ‘spider’	
30a	Tar	‘spread’	star (Balti xtar) ‘draw blood’	tʰar ‘surmount’; tʰar ‘dram. spread’; ʈʰar ‘dram. stretch out’	Sham dar ‘get spread’	zdar ‘sharpen (knife)’	
30o	Tor		stor ‘be lost’	ʃontʰor ‘ulcer, abscess’	dorde ‘skills’		
31a	Tal	‘pass’	ɬtarmik < *btal mig ‘esophagus’	tʰal ‘pass (time)’; tʰaltsʰup ‘dust’	dal (jot) ‘(have) time’ < *‘(work) has passed’	ldar (< *r-dal < *z-dal) ‘spread, make even’ < ‘allow to pass’	
31o	Tol		ɬtor ‘pierce’		ɲadol ‘fishing net’	ldor ‘be pierced’	
32	Tu		tu ‘collect’	tʰwa (< thu ba) ‘lap, front part of skirt’; Balti ‘full lap (e.g. of grain)’	dus ‘gather’	zdu ‘sweep up’; lamrdut ‘intersection’	’thu, btus, btu, thus
33	Tuk	‘meet’	ʂtuk < btug ‘sue (< *confront, make meet)’	tʰuk ‘meet’	duk ‘stay’	zduk ‘make sad’ < *‘attract pity (burning)’	

33'	Tuk	‘align regarding a property (typically fire)’	tuk ‘light’	cf. WT thugs ‘soul’	(me) duks ‘catch fire’	rduk ‘burn incense’ < *‘be constantly about to catch fire’	
34	Tum	‘wrap around’	tum ‘wrap up, cover’	t^hums ‘be wrapped up, around’; ʈ^{h}um ‘dram. tʃuk close’	dums ‘be together, covered (e.g. one’s legs by a blanket)’	lɖum ‘dram. with nam get clouded’; zdum ‘collect’	gtum, btums, gtum(s), thums
35	Tul	‘make soft’	tul ‘soften, knead’	t^hulu ‘sheep-skin blanket’	dul ‘become soft (of leather)’	lɖuru ‘clay pot (in which meat/vegetables are cooked for a long time’	’dul, btul, gdul, thul
35'		‘tame, subdue’	ɬtur ‘pull up (snot), calm down’	t^hul ‘(be able to) climb, get on top’	Balti, Sham dul ‘be tamed’	Khal ldur ‘dust, i.e. which will be tamed, will settle by itself’	’dul, btul, gdul, thul
36	Tiŋ	‘spread’	Sham tiŋ ‘spread’	t^hiŋtʃa(s) ‘carpet,		ldiŋ ‘float, hover’,	’ding, bting, gding,
37	Traŋ	‘become straight’	straŋ ‘straighten’		ɖaŋ ‘become straight’		

38	Tre	‘mix’	stre ‘mix’	t^hre ‘dram. shake apricot tree’; t^hrestor $tʃ^h$a ‘explode’	dres ‘be mixed’		’dre(s) ‘be mixed’, sre ‘mix’
39	Troq	‘startle’	stroq ‘scare away’		ɖoχs ‘be startled’		
	TS-						
40a	TSak	‘perforate’	tsaq ‘strain, filter’; tsaʁa ‘spark, bullseye’	ts^haχs ‘sieve’	zaq ‘leak’	rdzaq ‘dram. add wood to fire’	’tshag, btsags, btsag, tshogs
40o	TSok		tsoq ‘engrave’; semṣtsoq ‘evil’	ts^hoq ‘shrubbery’			’tshog, btsogs, btsog, ’tshogs
41	TSir	‘wring, squeeze’	tsir ‘wring’	ts^hir ‘queue, order, succession’	zir ‘aim’		’tshir, btsir(d), btsir, tshir(d)
42	TSuk		tsuk ‘sting’	ts^huks ‘strike root, settle down’; skjets^{h}uks-na ‘from birth on	zuk ‘be stung, pricked’	Tshangra zukspo (WT gzugs po) ‘body’ (in which soul settles)	’dzugs, btsugs, gzugs, tshugs
43	TSum	‘close’	tsum ‘close (eyes), shut (mouth)’	ts^hums ‘make sense’	zum ‘smile’		’dzum, btsums, btsum, tshums

	Root	Meaning (specific, root) and typical participants	Causative and other derivations	A-phasive	M-phasive	Z-phasive	Result-causative	Written Tibetan transitive paradigm
	Meaning (general, stem)			Active, instigation	Core, main part/middle phase of event	Passive, result	(external) state or event leading to the result	
	Form (onset)		s-p-	*φ-p- > p(h)-	*p- > ph-	*m-b-	z-b- (> z-br-)	
44a	Pak	‘dip’	spaqtʃa ‘sauce’		p^haq ‘(n) pig’; p^haq ‘hidden’	baq ‘taste for the first time/after a period of fasting’, cf. Leh ‘be polluted’		

44o	Pok		spoq ‘move sth. with intermediate stops’	poqpoq ‘protuberant’	p^hoq ‘strike, land’	boq ‘dram. boil’	$tʃ^h$uzboq ‘waves washing over stones’; zboqskum ‘wrinkle(s)’	’bog, phog, dbog, phog
44o'	Pok	‘uproot’		poq ‘dram. uproot’		Nur, Leh bok ‘be fractured’; Tabo pok̲ ‘be uprooted, be out of joint, be fractured’		
45	Paŋ	*‘pull down to the ground’	spaŋ ‘bog’	p^haŋ ‘throw (down, away)’	p^hen ‘fart’ < p^haŋ-d ‘which is thrown out’	baŋs ‘become soaked’; rilbaŋ ‘sheep droppings’	zbaŋ ‘soak’; waŋ ‘power’	’phen, ’phangs …

46	Pap	‘go down’		p^hap ‘put down’	Sham p^haps ‘yeast (to ferment chang)’	baps ‘go down’	zbraps-la taŋ ‘push a rock in order for it to tumble down a slope’	’bebs, phab, dbab, phob
	Par	‘move up and down’	spar ‘ignite, move sth.	par ‘dram. bounce’	p^har ‘bounce, move up and	me bar ‘burn’		
						ber ‘hurt’		
47	Pal	‘widen’	sp(r)alba ‘forehead’		p^haltʃan ‘wide’, p^hal ‘dram. unfold’	bal ‘wool (which is expanded)’	zbalpa ‘frog (which/whose vocal sac expands)’	
48	Pi	‘put out’	ospis ‘cream (expelled by milk)’; ʂpit ‘spring’, ʂpi ‘female genitals’	p^hi (Leh pi) ‘pull/take out’	p^hja (~ p^hia) ‘marmot’ (which comes out of holes)	bi(t) ‘fall out’	zbitʃ^{h}u ‘name of plant which secretes water’	’byid, phyis, dbyi, phyis

49	Piŋ	‘expel’	baqsprin brak-spiŋ-d ‘glue (secrete of bark)’	p^{h}iŋ ‘take/put out’	p^{h}iŋma ‘felt (rug)’	biŋ ‘come/go out/up’		’byin, phyung, dbyung, phyung
50	Puk	‘poke (→burst)’	ṣpugma ‘shoulder’	puksmo ‘knee’; Ngari puk ‘drill, bore’	p^{h}ugma ‘straw, chaff’	buk ‘slander’	zbuks ‘air in a tire, pressure, i.e. which bursts out if pierced’; rbuk ba ‘throb’	’bug(s), phug, dbug, phug
51	Pu(t)	‘blow’ ~ ‘set free, throw out’		p^{h}ut (Leh put) ‘throw out’; p^{h}ut taŋ ‘set free, let go/pass’; me p^{h}u ‘make fire’	p^{h}u ba ‘blow (illness away, as Syeds do)’; p^{h}u biŋ ‘lose pressure’; p^{h}utums ‘sleeve’	but ‘fall down’	zbutpa ‘bellows’; zbut ‘dram. close door’; zbuntse ‘wood chip(s)’; WT sbud pa “to light, kindle” (Jk. 404b)	’bud, bus/phus, ’bud/dbu, bus

52	Pup	‘roof over’	Sham spup ‘mount a horse; with t^hok roof over’	pup ‘dram. stumble’	Kyirong p^hūp ‘roof over’	bups ‘brood, stumble’		’bubs, phub, dbub, phub
53	Pur	‘lift off, take off, raise’			p^hur ‘fly (also of inanimate things)’	’bur „to rise, to be prominent“ (Jk. 394a)	zbur ‘dram. rise’; zbur taŋ ‘bump head against head (of rams)’	
54	Pe	‘move asunder, open’	ṣpe ‘model, example’	p^he (Leh pe) ‘open, separate’	p^het ‘half’, p^he ‘flour’	be ‘be opened’; bar be ‘become separated’	WT dbye ‘disperse’	’byed, phye, dbye, phyes

55	Po	‘spill’	spo ‘move, shift, change residence’	p^ho (Leh po) ‘spill’; po ‘part’, as in po na po $tʃ^h$a ‘fall to pieces’	p^hoso ‘pride’; Leh p^hoa taba ‘first funeral ceremony after death to be performed by a rinpoche or lama’ (Jk 357b “Thgr. seems to mean: to help the soul to a happy departure”)	bo ‘be spilled’	zbos (Balti ɣbos) ‘get inflated, swell’; χazbos ‘easily upset, i.e. from whom anger (χa) bursts out (if provoked)’	’bo, phos, dbo, phos
56	Pra	‘expand’	spra ‘(v) empty’	p^hra ‘gem’		bras ‘rice’	zbra ‘tent’	

57	Praq	‘take up space’		pʰraqpa ‘upper arms, shoulder’		braq ‘boulder’	zbraq-se kus tap ‘call jointly’; zbraχs ‘stack of brushwood stored on roof’	
58	Praŋ	‘follow, connect’			pʰraŋ ‘narrow mountain path’; ʂtsupʰraŋs ‘wreath of kernels’	braŋs ‘follow’	zbraŋʂtsi ‘honey’	
59	Pral	‘lose’	spral ‘spend’			bral ‘lose’		
60	Pri	‘diminish’	sprin ‘cloud’	pʰri (Trangtse ʈi) ‘make less’		bri (also Trang) ‘become less’	zbri ‘write (< inscribe)’	’brid, phris, dbri, phris
61	Prul	‘crumble, shed’	sprul ‘shake off’		cf. WT ’phrul ‘deception, reincarnation’	brul ‘crumble, come off’	zbrul ‘snake’	