Relative Ordering of Tibetan Sound Changes Affecting Laterals[*]

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Several sound changes affect the development of inherited laterals in Tibetan: Conrady's law (*ḫl > *ld*-), Bodman's law (*ml- > *md*-), and Benedict's law (*lʲ- > *ź*-). Benedict's law occurred subsequently to both Conrady's and Bodman's laws. Because Conrady's law and Bodman's law do not interact, their relative chronology is not subject to direct exploration. Of several additional hypotheses for sound laws affecting inherited laterals which Jacques (2004) puts forward *rlʲ- > *rǰ*- appears promising. The three changes affecting laterals occur after Schiefner's (*dz- > *z*-) and Houghton's law (*ŋʲ- > *ñ*-) and before Dempsey's law (*-eŋ > *-iṅ* and *ek > *-ig*).

Key words: sound laws, laterals, Tibetan, Bodish

The Tibetan verb √lud 'pour' has a present stem ལྡུད *ldud* and a past stem བླུད *blud*.[1] The past stem poses no analytic hurdles. The *b*- prefix is seen in the past stem of all

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[1] This essay uses the Library of Congress system for transliterating Tibetan with the following changes: 'ḫ' rather than apostrophe, 'č' rather than of 'c', and 'ǰ' rather than 'j'. The Library of Congress system is used for Burmese also, with the exception that as ḥ and ʔ are used rather than ″ and ′. For Chinese I provide the character followed by Baxter's Middle Chinese (1992), an Old Chinese reconstruction taken from or compatible with the current version of Baxter & Sagart's system (2011), and the character number in Karlgren (1957[1964]). Like in Baxter's own recent work, for Middle Chinese I use 'ae' and 'ea' in place of his original 'æ' and 'ɛ'. I do not however following him is changing 'i' to '+'. All Tibetan verb forms cited herein can be confirmed in Hill (2010b). This paper employs the following abbreviations: PT (Pelliot tibétain), IOL (India Office Library), OBur. (Old Burmese), WBur. (Written Burmese), Chi. (Chinese), Mon. (Mtsho-sna Monpa, Wenlang dialect, *apud* Lu 1986), Tib. (Tibetan), Kur. (Kurtöp, *apud* Hyslop 2011), Rgy. (Rgyalrong). When Old Burmese would not differ from Written Burmese it suffices to employ Bur. (Burmese). For changes from Old Burmese to Written Burmese see Nishi (1999), Yanson (2006), and Hill (2012:66-69).

eight of Coblin's paradigms for Tibetan strong verbs (cf. Table 1); one may name √krub 'winnow' with the past བཀྲུབས་ *bkrubs* as a concrete example of this prefix. The -*s* suffix of the past stem seen in six out of eight of Coblin's paradigms and in བཀྲུབས་ *bkrubs* is not directly observable in བླུད་ *blud*, because it has assimilated to the root final -*d* (i.e. *-ds > *-dd > -*d*, cf. Coblin 1976:50-51).

Table 1: Tibetan verb paradigms according to Coblin (1976)[2]

	present	past	future	imperative
Paradigm 1:	ḥ—,	b—s,	b—,	—s
Paradigm 2:	ḥ—d,	b—s,	b—,	—s
Paradigm 3:	—d,	b—s,	b—,	—s
Paradigm 4:	g—,	b—s,	b—,	—s
Paradigm 5:	g—,	b—,	d—,	—s
Paradigm 6:	ḥ—d,	b—,	d—,	—s
Paradigm 7:	ḥ—,	b—s,	d—,	—s
Paradigm 8:	ḥ—d,	b—s,	d—,	—s

The present stem ལྡུད་ *ldud* is more opaque; one anticipates *ḥlud on analogy to √krub 'winnow', with present འཁྲུབ་ *ḥkhrub*.[3] Because the initial cluster *ḥl- does not occur in Tibetan, this sequence is available to posit as the source from which *ld-* descends. To propose a change *ḥl- > *ld-* might appear rash, but it can be broken down into three plausible steps. First, Conrady's law accounts for the dental in ལྡུད་ *ldud*; according to this law a dental stop is inserted between *ḥ* and a following fricative, rhotic, or lateral (Conrady 1896:59, Li 1933:149, Hill 2011:446-447).[4] For example, the fricative initial verbal root √so 'nourish' has the present འཚོ་ *ḥtsho* and the rhotic initial verbal root √riṅ 'be distant' has the present འདྲིང་ *ḥdriṅ* (Li 1959). Analogously, the prefix *ḥ-* induces an epenthetic dental before laterals (*ḥl > *ḥdl); following Conrady's law the speculative ancestor of ལྡུད་ *ldud* changes from *ḥlud to *ḥdlud. Second, Simon proposes the metathesis *dl- > *ld*; he bases this suggestion on groups of related words such as ལྡུམ་པོ་ *ldum-po* and ཟླུམ་པོ་ *zlum-po* 'round', ལྡོང་པ་ *ldoṅ-pa* and ལོང་བ་ *loṅ-ba* 'be blind' (1929:187).

[2] For more recent discussion of Tibetan verb paradigms confer Hill (2010b:xv-xxi) and Jacques (2012).

[3] One might also propose *glud, but in fact there do not appear to be verbs that have *gl-* in the present and *bl-* in the past.

[4] I have previously referred to Conrady's law as as 'Li's first law', but subsequently discovered that Conrady took this sound change for granted without arguing for it (cf. Conrady 1896:59). Rather than crediting two laws to Li (as in Hill 2011:446-447), it is more elegant to amend 'Li's first law' to 'Conrady's law' and 'Li's second law' to simply 'Li's law'.

The metathesis *dl > ld follows the results of Conrady's law, thus *ḫlud > *ḫdlud > *ḫldud. Third, Coblin's law, which dictates that prefixes yielding clusters that violate Tibetan phonotactics are dropped, accounts for the final change of *ḫldud to ལྡུད་ ldud (cf. Coblin 1976:48 et passim, Hill 2011:446). The present stem verbal prefix g- nicely illustrates the motivation for Coblin's law. Of those verbs that exhibit 'a' to 'o' ablaut in the present, wherever phonotactically possible the present stem is also marked with the prefix g- (e.g. √sad 'kill', with present གསོད་ gsod). The correlation of 'a' to 'o' ablaut with the g- prefix suggests that the prefix causes the ablaut. This suggestion in turn inspires the proposal that the prefix is responsible for the 'a' to 'o' ablaut even in words where the prefix itself is not phonotactically possible (e.g. √skaṅ 'fulfill', present *gskoṅ > སྐོང་ skoṅ).[5] Summarizing the effect of these three changes, the present of √lud 'pour' develops from *ḫlud to ལྡུད་ ldud through the steps, *ḫdlud (Conrady's law) > *ḫldud (metathesis) > ལྡུད་ ldud (Coblin's law). The development with voiceless laterals is entirely parallel: the present of √ḷuṅ 'fall' develops from *ḫḷuṅ to ལྟུང་ ltuṅ through the steps, *ḫtḷuṅ (Conrady's law) > *ḫḷtuṅ (metathesis) > ལྟུང་ ltuṅ (Coblin's law).

Although verb paradigms motivate the proposal *ḫl- > ld- (hereafter understood as a sub-case of Conrady's law) comparative evidence confirms this change before inherited palatized laterals in nominals also.

Tib. ལྕང་མ་ lčaṅ-ma < *ḫlʲaŋ 'willow' : Chi. 楊 yang < *laŋ 'poplar' (0720q)

Tib. ལྕི་ lči < *ḫlʲi 'dung' : OBur. ခ္လိယ် khliy

Tib. ལྕེ་ lče < *ḫlʲe 'tongue' : Bur. လျှာ lhyā, Chi. 舐 zyeX < *Cə.leʔ (0867f) 'lick'

Tib. ལྗིབ་ lǰi-ba < *ḫlʲi-ba 'flea' : Monpa liu⁵⁵, WBur. လှေး lheḥ

Tib. ལྗི་ lǰi < *ḫlʲi / ལྕི་ lči < *ḫlʲi 'heavy' : Monpa li⁵⁵po⁵³ : WBur. လေး leḥ

The individual steps in the phonetic development of Tibetan 'flea' ལྗིབ་ lǰi-ba are *ḫlʲi-ba > *ḫdlʲi-ba (Conrady's law) > *ḫldʲi-ba (metathesis) > /ldʲi-ba/ (Coblin's law); the Tibetan script represents /dʲ/ with the letter ཇ ǰ- (von Koerber's rule, cf. von Koerber 1935:120-121 and Hill 2011:442), so the word for 'flea' /ldʲi-ba/ is written ལྗིབ་ lǰi-ba. The lateral in the reconstruction *ḫlʲi-ba is necessary to account for the l- in ལྗིབ་ lǰi-ba and the palatalization (ʲ) is necessary to account for why the word for 'flea' in Tibetan is not *ldi-ba.

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[5] With slight disagreements in detail Shafer (1951:1024), Nishida (1958:39), and Jacques (2012: 219) reconstruct a prefix *go- suggesting that the vowel in the prefix induces a change in the stem vowel. However, pointing out that the -o- is redundant since all verbs that can take a g-prefix undergo the ablaut, Coblin quite reasonably wonders whether "we may not in fact suspect that pre-initial g- itself is responsible in some way for the -a- > -o- change in the present roots of verbs" (1976:55).

Following a proposal of Benedict's (1972:39, note 127) and citing these same words Jacques (2004:6) reconstructs *hlʲ- as the origin of *lč*-. The notation 'hl' is ambiguous as to whether 'h' represents a glottal fricative articulated before the onset of the lateral or whether 'hl' together indicates a voiceless lateral. Schuessler reconstructs *lč*- < *lhʲ- (2007:465, 467, 497) which is certainly to be understood as *l̥ʲ-. Benedict intends 'h' segmentally; he proposes that ལྕི་ *lči* 'dung' derives through the steps *s-kli > *sklʲi > *hlʲi > ལྕི་ *lči* (1972:39, note 127), where the change of 's' to 'h' unambiguously suggests that 'h' is a segment independent form the following *l*-. Jacques (2004:6) and Schuessler (2007:465) add the Chinese cognate 屎 *syijX* < *l̥ijʔ (0561d) for 'dung'.[6]

The proposal *hlʲ > *lč* is unmotivated; in no other instance has an 'h' prefix been suggested in Tibetan phonetic history. In contrast, if one follows Baxter & Sagart in reconstructing 屎 *syijX* < *qʰijʔ rather than *l̥ijʔ, the velar initial of the Burmese and uvular initial of the Chinese supports the suggestion of a velar initial *ɦ- in the Tibetan, and thereby weighs in favor of the proposal *ɦlʲ > *lč*-, which is also the superior choice on the grounds of symmetry with the changes *ɦlʲ > *lǰ*- and *ɦl̥ > *lt*-.

The palatalized laterals in these nominal forms have bypassed Benedict's law, which normally changes *lʲ- to *ź*- (cf. Benedict 1939:215, Hill 2011:445).

Tib. ཞིང་ *źiṅ* < *lʲiṅ 'field' : Kur. ᴸ*leŋ*[7], Bur. လယ် *lay*, Chi. 田 *den* < *l̥ˤiŋ (0362a)

Tib. ཞིམ་ *źim* < *lʲim 'tasty' : Kur. *lem*, Chi. 甜 *dem* < *l̥ˤem (0621-) 'sweet'

Tib. ཞོ་ *źo* < *lʲo 'yoghurt' : Japhug Rgy. *tʐ-lu* 'milk'

Tib. གཞི་ *gźi* < *glʲi 'ground' : OBur. မြိယ် *mliy*, Chi. 地 *dijH* < *l̥ˤej-s (0004b')[8]

Tib. གཞུ་ *gźu* < *glʲu 'bow'[9] : Kur. *limi*, OBur. လျိယ် *liy*, Chi. 矢 *syijX* < *l̥ijʔ (0560a) 'arrow'

Tib. བཞི་ *bźi* < *blʲi 'four' : Kur. *ble*, OBur. လျိယ် *liy*, Chi. 四 *sijH* < *s.li[j]-s (0518a)

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[6] Jacques also compares Tib. ལྕགས་ *lčags* 'iron' and Chi. 鐵 *thet* < *l̥ˤik (1256b) 'iron'. Because of its relatively late appearance as a technology 'iron' cannot be a genuine cognate between Tibetan and Chinese. In China iron only appears circa 500 BCE (Wagner 1993:52-96), a good seven hundred years after the introduction of writing. Schuessler repeats the comparison, but suggests that it is an 'area word' (2007:497).

[7] This word, apparently lacking in Hyslop (2011) is taken from Michailovsky & Mazaudon (1994:553).

[8] Bodman reports that 地 has an addition reading *l̥ˤis, which makes the correspondence regular (1980:99).

[9] The word 'bow' is spelled གཞི་ *gźi* in an Old Tibetan version of the Rāma story (IOL Tib J 0737/1 line 168, cf. de Jong 1989:115).

There are also grounds internal to Tibetan for proposing Benedict's law (cf. Gong 1977[2002:391-392]).

Tib. གཞོགས་ *gźogs* < *glʲogs 'side of the body' : Tib. ལོགས་ *logs* 'side'
Tib. བཞེང་ *bźeṅ* < *blʲeṅ 'rise' : Tib. ལང་ *laṅ* 'rise'

If the *lʲ in *ḫlʲi-ba (> ཧྲི་བ་ *lʲi-ba*) 'flea' and similar words did not undergo Benedict's law, the sequence *lʲ in such words must have already changed to something else before the change *lʲ > *ź* occurred. Examining the chain of changes *ḫlʲi-ba > *ḫdlʲi-ba > *ḫldʲi-ba > ཧྲི་བ་ *lʲi-ba*, in order for the sequence *lʲ to avoid Benedict's law, the metathesis of *dl- to *ld-* must have taken place prior to its application, i.e. Conrady's law precedes Benedict's law.

However, conflicting evidence suggests that Benedict's law occurred before Conrady's law. Since Japhug Rgyalrong *tʂ-lu* 'milk' confirms that Tibetan ཞོ་ *źo* 'yoghurt' derives from *lʲo (Jacques 2008:128), in order to account for འཞོ་ *ḫźo* as the present of the verb √*źo* 'to milk', the change *ḫź- > *ḫź-* must have occurred after the change *lʲ- > *ź-*, i.e. Conrady's law (*ḫź- > *ḫź-*) took place after Benedict's law (*lʲ- > *ź-*). Gong also implicitly puts Benedict's law prior to Conrady's when he compares Tibetan འཞོལ་ *ḫźol* 'to hang down' to WBur. လွယ် *lway* 'suspend from shoulder'; he reconstructs the Tibetan form *ḫlʲol (1995[2002:168, #45]). His view might be paraphrased as suggesting *ḫlʲol > *ḫźol (Benedict's law) > /ḫdźol/ (Conrady's law), spelled འཞོལ་ *ḫźol*.

There is a thus a choice between the ordering (1) Conrady, (2) Benedict (to explain ཧྲི་བ་ *lʲi-ba* < *ḫlʲi-ba 'flea' and the like), or the ordering (1) Benedict, (2) Conrady (to explain the present འཞོ་ *ḫźo* of √*źo* < *lʲo 'to milk'); either words like 'flea' or the paradigm of 'to milk' arose due to analogical change. A verb such as √*źu* 'melt' (present འཞུ་ *ḫźu*, past བཞུས་ *bźus*, future བཞུ་ *bźu*, imperative ཞུས་ *źus*) serves as a perfect analogy to motivate the present stem འཞོ་ *ḫźo* of √*źo* 'to milk' (past བཞོས་ *bźos*, future བཞོ་ *bźo*, imperative ཞོས་ *źos*). In contrast, it is unclear how analogy can explain ཧྲི་བ་ *lʲi-ba* 'flea' and other nominals. Gong is probably mistaken to reconstruct Tib. འཞོལ་ *ḫźol* 'to hang down' as *ḫlʲol, on the basis of comparison with Written Burmese လွယ် *lway* 'suspend from shoulder'. Luce instead proposes Written Burmese ဆွဲ *chwai* 'hang' as its cognate (1985: chart x, #61). Comparison to Chinese 垂 *dzywe* < *doj (0031a) 'hang down, fall' also supports the rejection of a lateral origin for Tib. འཞོལ་ *ḫźol*.[10] In sum, Conrady's law took place before Benedict's law, and analogy accounts for the present stem འཞོ་ *ḫźo*

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[10] Gong reconstructs Chi. 垂 *dzywe* < *gljual (0031a) 'hang down, fall', where the lateral compares more favorably to WBur. လွယ် *lway* 'suspend from shoulder'. Schuessler reconstructs *doj (2007:196), like Baxter & Sagart (2011).

in the paradigm of √źo < *lʲo 'to milk'.[11]

Not only ḥ- alters the development of laterals in Tibetan; according to Bodman's law, a prefix m- leads to the fortition of *l- into d- (Bodman 1980:170, Hill 2011:450). Two words furnish comparative evidence for Bodman's law.

> Tib. མདའ mdaḥ < *mlaḥ 'arrow' : Monpa mla³⁵, OBur. မ္လား mlāḥ, Chi. 射 zyek < *Cə.lak (0807a) 'hit with bow and arrow'
>
> Tib. མདོམ mdom 'fathom'[12] : Monpa glam³⁵, Bur. လံ laṃ, Chi. 尋 zim < *sə-ləm (0662a) 'measure of circa 8 feet'

Tibetan internal evidence supports such a proposal.

> Tib. མདོངས་པ mdoṅs-pa < *mloṅs-pa 'blind' : Tib. ལྡོང་པ ldoṅ-pa 'go blind' < *ḥloṅ-pa (Conrady's law), Tib. ལོང loṅ 'be blind'
>
> Tib. མདན་པ mdan-pa < *mlan-pa 'cheek' : Tib. ལྡན་པ ldan-pa 'cheek' < *ḥlan-pa (Conrady's law)

Nominals also provide examples of Bodman's law before inherited palatalized laterals.

> Tib. མཇིང mǰiṅ /mdʲiŋ/ < *mlʲiŋ 'neck'[13] : WBur. လည် lañ ñ (< *liŋ, Shafer's law, cf. Shafer 1940:311, 1941:20-21), Chi. 領 ljengX < *reŋʔ (0823f)
>
> Tib. མཇེ mǰe /mdʲe/ < *mlʲe 'penis' : Kur. plik, WBur. လီး līḥ

The question again arises as to the relative timing of this law (*ml > md) relative to Benedict's (*lʲ > ź). If Bodman's law occurred before Benedict's then *mlʲiŋ develops into མཇིང mǰiṅ /mdʲiŋ/ 'neck' without an intermediate stage. If Benedict's law occurred before Bodman's, the result is *mlʲiŋ > *mźiŋ > མཇིང mǰiṅ, where the change of *mź- to

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[11] As a corollary, when this analogical change occurred ཞོ źo must have still meant 'milk' and not yet changed its meaning to 'yoghurt'.

[12] The variant འདོམ་པ ḥdom-pa for མདོམ mdom 'fathom' is probably not an etymological spelling. After the change of the Old Tibetan velar fricative ḥ- before a stop consonant to prenasalization in Common Tibetan (Hill 2005:114-115, 2009:131), the sequence /nd-/ would be spelled 'ḥd' regardless of its etymological origin. The assimilation of /m-/ to /n-/ before d- explains the change of /mdom/ to /ndom/. This hypothesis will be difficult to confirm philologically until the relative chronology of Old Tibetan texts is better understood.

[13] The variant འཇིང་པ ḥǰiṅ-pa for མཇིང mǰiṅ 'neck' is probably not an etymological spelling; compare note 12.

mǰ- must be explained as a change analogous to Conrady's law, but after *m-* rather than *ḫ-*.[14] If Conrady's law subsumes *mź > *mǰ*, then Benedict's law precedes Conrady's law, i.e. *mlʲiŋ > *mźiŋ (Benedict) > སྨིང་ *mǰiṅ* (Conrady), but words like ལྗི་བ་ *lǰi-ba* 'flea' have already led to the rejection of this ordering of the sound changes. If *mź- > *mǰ-* is not linked to Conrady's law, then, because *mź- > *mǰ-* would be neither a result of Conrady's nor of Bodman's law, the ordering of Benedict's law before Bodman's law leads inexorably to the postulation of a new sound change that would otherwise not be required; William of Ockham would not approve. One must conclude that Bodman's law preceded Benedict's law. Summarizing the progress made so far: Benedict's law occurred subsequently to both Conrady's law and Bodman's law. Because Conrady's law and Bodman's law do not interact, their relative chronology is not subject to direct exploration.

Jacques accepts Benedict's[15] and Bodman's[16] laws and proposes a number of additional sound changes involving inherited laterals (2004:8-9). Although he accepts Conrady's law, he restricts its application to verb paradigms. Outside of verb paradigms he proposes that *ḫl leads to *ḫd-* and offers the comparison of Tibetan འདབ་མ་ *ḫdab-ma* 'leaf' to Chinese 葉 *yep* < *lap 'leaf' (0633d) as supporting evidence (Jacques 2004: 8).[17] The proposal that a sound law is conditioned by a morphological category rather than a phonetic environment appears to violate a basic principle of historical linguistics, that sound change is exceptionless and ignores the meaning of the affected words.[18] However, because Jacques proposes that *ḫ-* itself has a separate origin before nouns and in verb paradigms (2004:8), there is no methodological objection to his proposal. One could paraphrase Jacques morphological account in phonological terms by distinguishing *ḫ$_1$ and *ḫ$_2$ and proposing *ḫ$_1$l- > *ḫd-* and *ḫ$_2$l- > *ld-* as exceptionless sound laws, together with a subsequent merger of *ḫ$_1$ and *ḫ$_2$ as *ḫ*.

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[14] Some proposed reconstructions also suggest the insertion of an epenthetic dental after *m-*. Gong reconstructs མཆིན་པ་ *mčhin-pa* as *m-śin-pa 'liver' in light of WBur. အသည်း *a-saññḥ* 'liver' and Chinese 辛 *sin* < *sin (0382a) 'pungent; painful' (1995[2002:91, #82]) and for different reasons both Beckwith (2008:179, note 59) and Jacques & Michaud (2011: appendix, p.11) reconstruct མཚོ་ *mtsho* 'lake' as *m-swa.

[15] Jacques separately catalogs *lʲ- > *ź-*, *blʲ- > *bź-*, and *glʲ- > *gź-* (2004:9).

[16] Jacques separately catalogs *ml > *md-* and *mlʲ- > *mǰ-* (2004:9).

[17] Jacques also points to Tib. འདོམ་པ་ *ḫdom-pa* 'fathom', but མདོམ་པ་ *mdom-pa* is probably the etymologically correct spelling (cf. note 12).

[18] An apparent counterexample is loss of Uto-Aztecan *p- in Nahuatl nouns but not in verbs. However, since "verb roots rarely stand alone and are usually preceded by some prefix, a hypothesis is suggested that **p- is lost in absolute initial position, a regular change" (Campbell & Langacker 1978:201, note 43).

Interpreting *ḥ* as a nasal, Jacques sees *$*ḥ_1l$- > *ḥd*- as parallel to Bodman's law (*ml > *md*). Since *ḥ* is not a nasal but a velar fricative (cf. Hill 2009) the elegance of *$*ḥ_1l$- > *ḥd*- as parallel to *ml > *md* vanishes. Keeping in mind that འདབ་མ་ *ḥdab-ma* means 'wing' as well as 'leaf' one can suggest that the true Chinese cognate of this word is 翊/翼 *yik* < *$*ɢrəp$ 'wing' (0912b, 0954d) and not 葉 *yep* < *$*lap$ 'leaf' (0633d). The correspondence of Tibetan *d*- to Chinese *$*ɢ$- receives support from the comparison of Tibetan དོམ་ *dom* 'bear' and Chinese 熊 *hjuwng* < *$*C.ɢ^w(r)əm$ 'bear' (0674a).[19] Because Jacques restricts Conrady's law to verb paradigms (*$*ḥ_2l$- > *ld*-), for him it cannot subsume the change *$*ḥl^j$ > *lj*- seen in nouns such as ལྗི་བ་ *lji-ba* (a proposal which he accepts, cf. 2004:8). Jacques' proposal *$*ḥ_1l$- > *ḥd*- entails both the separation of *$*ḥ_1$ and *$*ḥ_2$ and the separation of *$*ḥl^j$ > *lj*- from *$*ḥ_2l$ > *ld*-. These machinations are a high price to pay in order to safeguard the comparison of Tibetan འདབ་མ་ *ḥdab-ma* 'leaf' to Chinese 葉 *yep* < *$*lap$ 'leaf' (0633d). Multiplying unattested elements in order to account for one comparison is not elegant, in particular when an alternative etymology is available. Because it is poorly motivated and entails inelegant consequences, Jacques' proposed sound change *$*ḥl$- > *ḥd*- is best rejected.

Jacques proposes a sound change *$*pl$ > *phy* in order to account for alternations within Tibetan noted by Gong (1977[2002:392]).

Tib. ལག་ *lag* 'hand' : Tib. ཕྱག་ *phyag* 'hand (hon.)'
Tib. ལོགས་ *logs* 'side' : Tib. ཕྱོགས་ *phyogs* 'side'
Tib. ལོག་ *log* 'to return, to go back' : Tib. ཕྱོགས་ *phyogs* 'to turn'
Tib. ལྷུག་པོ་ *lhug-po* 'rich' : Tib. ཕྱུག་པོ་ *phyug-po* 'rich'
Tib. ལུག་ *lug* 'sheep' : Tib. ཕྱུགས་ *phyugs* 'cattle'
Tib. གླིངས་པ་ *gliṅs-pa* 'felt rug' : Tib. ཕྱིང་པ་ *phyiṅ-pa* 'felt'
Tib. ལྕམ་ *lcam* 'beam, rafter' : Tib. ཕྱམ་ *phyam* 'beam, rafter'

Gong himself suggests that the attested forms in *l*- derive from *$*phl$- and the attested forms in *phy*- have their origin in *$*phl^j$- (1977[2002:392]). This proposal has the advantage of making these pairs analyzable in terms of the -*j*- honorific infix that Gong notes in other words (e.g. སྐམ་ *skam* 'dry' and སྐྱེམས་ *skyem* 'be thirsty [hon.]', cf. Gong 1977[2002:389]).

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[19] Cognates of Chi. 葉 *yep* < *$*lap$ 'leaf' (0633d) may instead be sought among words such as ལྡེབས་ *ldebs* 'side, surface', ལེབ་ *leb* 'flat', ལྷེབས་ *lhebs* 'piece of something flat', གླེབ་ *gleb* 'press', ལེབ་མོ་ *gleb-mo* 'flat', ལོ་མ་ *lo-ma* 'leaf' or ལབ་ *lab* 'radish'. One might also compare OBur. က္လပ် *klap* 'disk, coin'. Since 'generation' is one of the Chinese word's attested meanings, Schuessler also compares it with Tibetan རབས་ *rabs* 'generation' (2007:562).

From the perspective of the Old Tibetan phonological system such reconstructions are meaningless. Old Tibetan lacks a phonemic contrast of aspiration (Hill 2007), so Gong's reconstruction *ph must be understood as simply *p. This results with *pl > *l* and *plʲ > *pʲ*. All consonants in an Old Tibetan initial cluster agree in voicing with the final consonant of the cluster (Hill 2010a:122). Consequently, Gong's reconstructions must be again rewritten, now appearing as *bl̥ > *l* and *bl̥ʲ > *pʲ*. The cluster /bl̥/ is however attested in Old Tibetan and thus is not available for this reconstruction. The Old Tibetan spelling <bl> reflects both /bl/ and /bl̥/. For example, the stems of the verbal root √l̥ag 'read' are written as present ཀློག་ *klog*, past བླགས་ *blags*, future བླག་ *klag*, imperative ལྷོགས་ *lhogs* with the phonemic interpretation /gl̥og, bl̥ags, gl̥ag, l̥ogs/ (Hahn 1999).[20] The same considerations apply to Jacques' reconstruction of the alternation as *l*- versus *pl > *phy*- (2004:8-9); his reconstruction *pl*- must be interpreted as the attested /bl̥/. Although the examples of *l*- and *phy*- alternations that Gong puts forward inspire the conviction that the sequence *phy*- sometimes derives forms laterals through a morpho-phonological process, Gong and Jacques do not succeed at explaining this process.

Jacques' most tentative proposal is *bli*- > *byi*- for which he provides one example (2004:9), viz. Tibetan བྱིངས་པོ་ *byiṅs-po* 'completely, entirely' compared both to Tibetan ལིངས་པོ་ *liṅs-po* 'id.' and to Tamang *¹pliŋ* 'id.'. This suggestion presumes that pre-Tibetan distinguish *bli*- (> *byi*-) and *blʲi*- (> *bźi*-), which serves the added purpose of explaining why the sequence *li*- is still found in some Tibetan words; one may thus contrast ཞིང་ *źiṅ* < *lʲiṅ* 'field' with ལིངས་ *liṅs* 'hunt'. Although some languages do distinguish /i/ and /ʲi/, e.g. Modern Burmese ပိ /pi/ 'be distinct' versus ပြိ /pji/ 'vie with, rival' and မီး /mi/ 'fire' versus မြီး /mji/ 'tail', this solution is not satisfying. Examples of laterals before the vowel 'i' in Tibetan are vanishingly few and all end in velars: གླིང་ *gliṅ* 'island', གླིང་ *gliṅ* 'flute', ལིང་ངེ་ *liṅ-ṅe* 'dangling, waving', ལིང་ཏོག་ *liṅ-tog* 'a film or pellicle on the eye', ལིང་བ་ *liṅ-ba* 'a piece', ལིང་ཚེ་ *liṅ-tshe* 'lattice',[21] ལིངས་ *liṅs* 'hunt', and རླིག་པ་ *rlig-pa* 'testicle'.[22]

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[20] The sound change */bl̥ʲ/ > /pʲ/ does not suffer the same problems as its partner; the change is phonologically plausible and Old Tibetan has no /bl̥ʲ/, but in the absence of */bl̥/ > /l/ there is no motivation for suggesting */bl̥ʲ/ > /pʲ/.

[21] Note that most Tibetan words that end in -*tse* or -*tshe* are Chinese loanwords, e.g. དོང་ཙེ་ *doṅ-tse* 'copper coin' (< 銅子 *tóngzi*), ལྕོག་ཙེ་ *lcog-tse* 'table' (< 桌子 *zhuōzi*).

[22] This list is based on Jäschke's dictionary (1881), excluding regional dialect forms, loanwords, or words for which the only authority is the extremely unreliable dictionary of Schroeter (1826). This work was compiled by F. Francesco Orazio della Penna (1680-1745) as a Tibetan-Italian glossary. Schroeter died while revising the work and learning Tibetan; the editors who saw the work through publication knew no Tibetan (cf. Simon 1964, Bray 2008). Jäschke does not give Tib. ལིངས་པོ་ *liṅs-po* 'completely, entirely', which Jacques cites.

Jacques' explanation takes no account of this limited distribution.[23]

According to Dempsey's law, Tibetan changed original *-eŋ and *-ek to -iṅ and -ig (e.g. Tib. གཅིག་ gčig 'one', Chi. 隻 tsyek < *tek [1260c] 'one of a pair', Tib. མིང་ myiṅ 'name', Chi. 名 mjieng < *[m]eŋ [0826a] 'id.', cf. Dempsey 2003:90, Hill 2012:73). If Dempsey's law occurred after Benedict's law, this would explain why all instances of li- appear in words with velar finals. The words 'field' and 'hunt' were originally *liŋ (with *lʲiŋ a subphonemic pronunciation) 'field' and *leŋs 'hunt'; after the application of Benedict's law they became *źiŋ 'field' and *leŋs 'hunt'; after the application of Dempsey's law they became the attested ཞིང་ źiṅ 'field' and ལིངས་ liṅs 'hunt'. Dempsey's law also accounts for the lack of palatalization in most words that contain the sequences -di- and -ni-. All but two words that contain the sequence -di- end in a velar. The seven examples with velar final are: དིག་པ་ dig-pa 'a stammerer', འདིག་ ḥdig 'stop, stammer', སྡིག་ sdig 'thick', སྡིག་པ་ sdig-pa 'scorpion, sin', √sdig 'show, aim, threaten', སྡིངས་ sdiṅs 'cavity, depression', རྡིག་ rdig 'household utensils').[24] The two counterexamples are the grammatical word འདི་ ḥdi 'this' and the verb √rdib 'collapse, break down'. Grammatical morphemes often undergo different sound changes that the bulk of lexical stock; འདི་ ḥdi 'this' need not cause concern.[25] The exception √rdib 'collapse, break down' is harder to account for; this verb is the intransitive pair of √rtib 'break, pull down'. The fact that the distribution of -i- after t- is less restricted than it is after d-[26] suggests that √rdib 'collapse, break down' may have derived from √rtib 'break, pull down' after the general

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[23] Jacques (2004:10) includes a list of words that contain the sequence -li-. He does not give textual or lexicographical authorities for the cited words. The only examples not before velars are ལི་ li 'bronze', ལི་བ་ li-ba 'curled (of hair)', རླིད་ཅ rlid-bu 'animal skin', and རླིབས་ rlibs 'wear'. Of these ལི་ li 'bronze' is certainly a loanword and རླིབས་ rlibs 'wear' is likely an attempt to etymologize a dialect pronunciation of ཀླུབ་ klub 'wear'.

[24] One might also include here the present stem འདིང་ ḥdiṅ of the verb √tiṅ 'spread out', but perhaps it should instead be considered together with words that have initial t-.

[25] In an analogous case, Old Chinese 之 tsyi < *tə (0962a) should have lead to zhī in Mandarin, but the word is instead pronounced de [tə], now written with the character 的.

[26] For ti- there are quite a few more examples སྟི་ sti 'rebuke, scold', སྟིབས་ stibs 'offer sacrifice', སྟིམ་ stim 'enter, penetrate', སྟི་ sti 'rest, repose', གཏིབ་ gtib 'gather', གཏིག་ gtig 'drop', གཏིང་ gtiṅ 'bottom, depth', གཏི་མུག་ gti-mug 'ignorance', མཐིང་ mthiṅ 'deep blue', མཐིལ་ mthil 'bottom', འཐིག་ ḥthig 'drop', འཐིང་སླད་ ḥthiṅ-slad 'a term of abuse', འཐིབས་ ḥthibs 'cover, covering', འཐིབས་ ḥthibs 'gather', ཐིགས་ thigs 'a drop', ཐིབ་ thib 'dark', and other forms of the verb √tiṅ 'spread', past བཏིངས་ btiṅs, future གཏིང་ gtiṅ, imperative ཐིངས་ thiṅs. There are no Tibetan words that contain the sequence -pi- or -ki-. Only grammatical suffixes contain -gi- (gi, gin, gis) and they are just one allophone of these. The two examples of -bi- are easily dismissed: འབི་འབི་ ḥbi-ḥbi 'a type of clay' is likely a loanword or dialect form and the present stem of འབིགས་ ḥbigs of the verb √bug, where the present stem suffix -d has induced a 'u' to 'i' ablaut (cf. Coblin 1976:58).

palatalization of *d-* before *-i-*.[27] Four out of five of the words that contain the sequence *-ni-* end in velars: དནིང *na-niṅ* 'last year', ཞེནིང *źe-niṅ* 'year before last', and མནིང *ma-niṅ* 'hermaphrodite'. The exception is the topic marker ནི *ni* which is a grammatical word like འདི *ḥdi* 'this'.

Dempsey's law is motivated by evidence independent of explaining the pattern of Tibetan palatalization (Dempsey 2003:90, Hill 2012:73). If Benedict's law took place after Dempsey's law then one must invoke a distinction between *i and *ʲi in order to explain such pairs as འཇིག *ḥǰig* /ḥdʲig/ 'destroy' and འདིག *ḥdig* 'stop' or ཞིང *źiṅ* 'field' and ལིངས *liṅs* 'hunt', with the prevalence of *-i-* before velars credited to coincidence. However, if Benedict's law took place before Dempsey's law such pairs and their prevalence before velars is an automatic consequence of sound change. A consequence of failing to distinguish between *i and *ʲi is the rejection of Jacques' proposal *bli > *byi*.

One of Jacques' suggestions may be tentatively embraced; he offers three examples of *rlʲ- > *rǰ-* (= *rdʲ*) (2004:4-5).

Tib. རྗེ *rǰe* < *rlʲe 'exchange',[28] Monpa *ple⁵⁵*, Bur. လဲ *lai*

Tib. རྗེ *rǰe* < *rlʲe 'lord', Tamang *⁴kle* 'king'

Tib. བརྗེད *brǰed* < *mrǰed (Simon's law, cf. Hill 2011:448-449) < *mrlʲed 'forget', Tamang *²mlet-pa*

Bodman had previously offered the comparison of 'exchange' (1980:127).[29] Rather than *rlʲ-* directly yielding *rǰ-* (before Benedict's law), Bodman presents *rǰ-* as the outcome of the series of changes *rlʲ > *rź- > *rǰ-*, of which the first change is Benedict's law. In the absense of evidence for proposing *rź- > *rǰ-* as a change in its own right[30] there is

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[27] Both རྡིབ *rdib* and རྟིབ *rtib* are attested in Old Tibetan. Thus, the *Old Tibetan Chronicle* offers the phrase མཐོས་ཏེ་ནྀ་དགུང་མྱི་རྡིབ *mthos-te nĭ dguṅ myi rdib //* 'being high, the heavens did not fall' (PT 1287, l. 457) and the verb *rtib* occurs four times in PT 1134 always in the phrase ཕོ་བྲནྀ་ གཡོན་ཏུ་རྟིབས་ཤིག ཞུགས་ཐབ་ནི་གཡསུ་གླིངས་ཤིག *pho-braṅ ni g.yon-tu rtibs-śig ! źugs thab ni g.yasu gliṅs-śig !* "collapse the tent (?) to the right! Spread (?) the hearth-fire to the right!".

[28] The Monpa word suggests that the root of the Tibetan verb is √brǰe rather than √rǰe. Some lexicographical sources agree with this, but it is not the majority opinion (cf. Hill 2010b:101). The question merits more detailed philological investigation.

[29] Bodman also adds Chinese 易 *yek* < *lek 'change; exchange' (0850a) to the comparison (1980:127), whereas Gong proposes Chinese 移 *ye* < *laj (0003q) 'change' as the cognate and Schuessler proposes Chinese 買 *meaX* < *mˤrajʔ (1240c) 'buy' (2007:66).

[30] One might suggest that the change *rź- > *lǰ-* would parallel a change *lź- > *lǰ-*, which the spelling of the word ཁུལཞོ *khul-źo* 'crib' as ཁུལྗོ *khu-lǰo* in the *Old Tibetan Chronicle* (PT 1287 line 43) might be taken as evidence for. However, since ཁུལྗོ *khu-lǰo* is attested prior to ཁུལཞོ

no way to decide whether *rlʲ- > *rǰ- occurred before Benedict or whether *rź- > *rǰ-occurred after Benedict's law.

The relative chronology of sound changes affecting laterals is now more or less clear. Conrady's (*ẖl- > *ld-) and Bodman's (*ml- > *md-) laws preceed Benedict's law (*lʲ- > *ź-). Possibly a change *rlʲ- > *rǰ- also occurred before Benedict's law or alternatively a change *rź- > *rǰ- occurred after Benedict's law. It is also clear that Dempsey's law (*-eŋ > -iṅ and *-ek > -ig) took place after the sound changes affecting laterals. Every sound law is potentially associated with a node on the Stammbaum of a language family. The question naturally arises as to whether any of these changes are shared by other languages, and can thus help to clarify the structure of the family. Citing comparisons such as Tibetan ཞིང་ *źiṅ 'field' to Kurtöp ᴸleŋ 'field', Michailovsky & Mazaudon point out that Benedict's law (*lʲ > *ź) had not yet occurred in proto-Bodish (1992:553). The comparison of Tibetan ལྗི་བ *lǰi-ba < *ẖlʲi-ba 'flea' and མདའ *mdaẖ < *mlaẖ 'arrow' respectively to Mtsho-sna Monpa *liu⁵⁵ 'flea' and *mla³⁵ 'arrow' demonstrates that Conrady's law and Bodman's law also took place after Tibetan split from proto-Bodish. The Monpa word *ple⁵⁵ 'exchange' makes clear that, like the laws of Conrady, Bodman, and Benedict's, the change of *rlʲ > *rǰ- (if it took place before Benedict's law) occurred after Tibetan broke off from proto-Bodish. The evidence of the East Bodish languages shows that all four changes affecting laterals took place after the split of Tibetan from the other Bodish languages.

Houghton's law (*ŋʲ- > *ñ-) and Schiefner's law (*dz- > *z-) do effect Kurtöp and Monpa (Tib. ཉ *ña 'fish', Kur. *ɲa, Monpa *ŋa³⁵ versus Bur. ငါး *ṅāẖ 'fish', Chi. 魚 *ngjo < *ŋa [0079a], and Tib. ཟ *za 'eat', Kur. *zù, Monpa *za³⁵ versus Bur. စား *cāẖ, Japhug Rgy. *ndza, Chi. 咀 *dzjoX < *dzaʔ [0046u]). Consequently, Houghton's and Schiefner's laws preceeded all of the sound changes affecting Tibetan laterals and Dempsey's law.

In conclusion, Houghton (*ŋʲ- > *ñ-) and Schiefner's laws (*dz- > *z-), affecting Kurtöp and Monpa, are shared innovations that characterizes the Bodish branch, which precede all of the Tibetan internal changes that affect laterals. Within the history of Tibetan, Conrady (*ẖl- > *ld-) and Bodman's (*ml- > *md-) laws precede Benedict's law (*lʲ- > *ź-) and Benedict's law in turn precedes Dempsey's law (*-eŋ > -iṅ and *-ek > -ig). Coblin's law (loss of prefixes) took place after Conrady's law, but it does not interact with Benedict's or Dempsey's law. In addition, either a change *rlʲ- > *rǰ- occurred before Benedict or a change *rź- > *rǰ- occurred after Benedict's law. Table 2 attempts to present these conclusions in tabular format.

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khul-źo it is unattractive to suppose *lǰ-* the innovative variant. A superior analysis is to cite these two words as an example of the change *ǰ > *ź at syllable initial position in syllable initial position (Schiefner's law, cf. Schiefner 1852:364).

Table 2: Relative chronology of Tibetan sound laws

Tibeto-Burman (common ancestor of Tibetan, Burmese, Chinese)		
Phase 1:	Houghton's law (*ŋʲ- > *ñ-)	Schiefner's law (*dz- > *z-)
Bodish (common ancestor of Tibetan, Kurtöp and Monpa)		
Phase 2:	Conrady's law (*ḫl- > *ld-) Bodman's law (*ml- > *md-)	possibly *rlʲ- > *rǰ-
Phase 3:	Benedict's law (*lʲ- > *ź-)	Coblin's law (loss of prefixes)
Phase 4:	Dempsey's law (*-ek, *-eŋ > *-ig, *-iṅ)	possibly *rź- > *rǰ-
Old Tibetan as attested		

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影響古藏文邊音衍變的語音規律
及其相對順序

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藏語有若干語音變化影響了古藏文邊音的衍變。主要是康拉德 (Conrady 1896) 的 *ẖl- > *ld-*，包擬古 (Bodman 1980) 的 *ml- > *md-*，和白保羅 (Benedict 1972) 的 *lʲ- > *ź-*。其中，白保羅的規律 *lʲ- > *ź-* 在康拉德與包擬古的規律之後運作。而康拉德的 *ẖl- > *ld-* 和包擬古的 *ml- > *md-* 不存在互相作用，兩者的相對年代不容易直接探測。與古藏文邊音衍變相關，向柏霖 (2004) 還提出了幾個附帶假設，其中的 *rlʲ- > *rj-* 可以進一步討論。這三組影響古藏文邊音衍變的語音規律，都發生在席夫納 (Schiefner 1852) 的 *dz- > *z-* 及胡和彤 (Houghton 1898) 的 *ŋʲ- > *ñ-* 之後，但是早於田雅客 (Dempsey 2001, 2003) 的 *-eŋ > *-iṅ* 和 *ek > *-ig*。

關鍵詞：語音規律，邊音，藏語，藏語群