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EVOLUTION OF THE BURMESE VOWEL SYSTEM

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Abstract

Tibeto-Burman historical linguistics has relied heavily on the spelling of Burmese and Tibetan words as found in standard modern dictionaries, at the expense of the earliest attested records. This examination of the development of the Burmese vowel system, in the light of early Burmese philological data and comparisons to Old Chinese and Old Tibetan, facilitates a refined understanding of Burmese historical phonology and the reconstruction of Tibeto-Burman.

1. Introduction

James Matisoff (1968) and David Bradley (1979: 16) have inappropriately criticised the trailblazing monograph of Robbins Burling (1967) for the omission of Written Burmese (WrB) data.[1] Burling explicitly set himself the goal of reconstructing Lolo-Burmese (LB) without recourse to WrB (1967: 3) and did exactly thus. It may be that to arrive at a definitive reconstruction of LB due consideration of written evidence is a *sine qua non*, but a definitive reconstruction was not Burling's goal and indeed is everywhere and always a will-o'-the-wisp. The goal of comparative linguistics is not the invention of unattested languages but rather the explanation of systematic relationships among attested languages; progress in reconstruction is a by-product of increasingly precise statements of such relationships. Knowing what reconstructions the modern languages support independent of written evidence is itself a worthwhile scientific goal – one appreciated by Robert Hall, who reconstructed proto-Romance (1976), and no less appreciated by Robert Jones (1988), who undertook a reconstruction of proto-Burmese on the basis of the Burmese dialects, without recourse to WrB. Far from lamenting, one should laud such explicit statements of methodology, which specify the evidence to be considered and the limitations this evidence imposes.

Matisoff and Bradley appear unaware that their criticism of Burling, namely, that he ignores at his peril the written records of Burmese, may be applied equally to their own research: these two scholars largely leave aside the evidence of Old Burmese (OB). WrB is an idealised standard reflecting the usage of no specific time or place, whereas OB reflects the usage of Burmese speakers in Pagan at the time of the Pagan dynasty (1113–1287 CE).[2] While the exclusion of written records entirely may sharpen our epistemological acumen, the use of WrB as opposed to OB cannot be defended on methodological grounds. This ignorance of OB vitiates many of Matisoff and Bradley's reconstructions. For example, Bradley reconstructs **m-rwe*[1] (Bradley 1979: 298 #60a) for 'snake' on the basis of WrB *mrwe* where OB has *mruy*.

[1]Despite Matisoff's enthusiasm for the evidence of early written languages in 1968, as recently as 2003 (cf. Matisoff 2003) he chose to generally exclude the evidence of Tangut, Newar, Methei and Old Tibetan from his reconstructions of Proto-Tibeto-Burman.

[2]For a discussion of the primary sources of OB philology and their research see Frasch (1996: 1–16). For a discussion of the standardization of WrB orthography see Nishi (1999: 1–26).

The OB forms agree not only with Tibetan *sbrul* and Chinese 虵 *xjwɨjX* <*[m̥r]uj? (0572a), but also with the Burmish and Loloish languages.[3] Matisoff suffers from a similar over-reliance on WrB; as will be discussed below, he reconstructs Proto-Tibeto-Burman (TB) **wa* on the basis of WrB, even against the clear-cut correspondence of OB *o*, WrT *o* and OC *o*.

Bradley's use of WrB may further be criticised because his goal is the reconstruction not of LB but of Loloish. In such a project, Burmese should be used only as a point of reference external to the family, which can help to determine the direction of a sound change; instead, Bradley freely projects features of WrB directly into proto-Loloish. For example, Bisu maintains *-l-* after velars (Bradley 1979: 124, 134), but does not have an *-l-* in the word for 'wash'. Consequently it is odd that Bradley reconstructs 'wash' as **klo*[2] (1979: 358 #678). Following the relevant chart of correspondences (1979: 134), the only possible reconstruction is **kr-*. In this case Bradley has let WrB *khyuiḥ* < OB *khluiwḥ* 'wash' point the way.[4] In another case Bradley's reconstructs **rwa*[1] 'village' (1979: 326–7 #355c) on the basis of Burmese *rwā* 'village' alone. He reconstructs a proto-Loloish word on the sole basis of a non-Loloish language.

Such problems in the reconstruction of proto-Loloish highlight the danger of using a 'stepwise' approach in the reconstruction of Proto-TB, whereby one first reconstructs the subgroups and subsequently compares the reconstructed branches, instead of directly comparing languages from different subgroups. Although the reconstruction of subgroups is a wholly worthwhile enterprise, the comparison of reconstructed languages cannot substitute for the direct comparison of the earliest attested languages of the family. Any reconstruction is provisional, and a reconstruction based upon reconstructions incorporates all the errors made in the constituent reconstructions. In addition, cognates found in the older written languages but lacking in the modern languages will be missed entirely by a stepwise approach.

Like Burling's pioneering work, this essay seeks to explicate the systematic relationships among a limited number of attested languages. I propose to identify sound correspondences among OB, Old Tibetan (OT) and Old Chinese (OC), with a particular focus on the diachronic development of the Burmese vowel system.[5] I use OT and OC to identify whether a given Burmese vowel is conservative or innovative. When any two of the three languages agree, I generally take that value as original. For example, in the word for 'fish' Burmese (*ṅāḥ*) and Chinese (魚 *ŋgjo* <*ŋa [0079a]) have a velar nasal, whereas Tibetan (*ña*) has a palatal nasal. In this case Burmese retains the original form. In contrast, for the word 'six' Tibetan (*drug*) and Chinese (六 *ljuwk* <*[r]uk [1032a]) have the vowel *-u-*, whereas Burmese *khrok* 'six' has the vowel *-o-*. In this case the Burmese vowel *-o-* is an innovation. Democracy is, however, not always a sure guide. If a distinction exists in one language which cannot be accounted for as a conditioned split with reference to the other two languages, it is prudent to project the distinction onto the proto-language. A good instance of such a case is the distinction in Chinese between *a* and *ə* (cf. Table 1). However, it is imprudent to reconstruct all idiosyncratic correspondences into proto-Tibeto-Burman.[6] Irregularities in the correspondences I point out in the footnotes.

In those cases where the Burmese vowel is innovative, a cursory look at Loloish or Burmish languages provides some indication of the node of the Stammbaum at which the innovation

[3]Dempsey reconstructs **-uj* in proto-North-Burmish for 'snake' (2003: 82) on the basis of such forms as Xiandao Achang *mruj*, Lashi *mju*, Zaiwa *muj*. The Loloish forms such as Lahu *vuiˬ*, Lisu *hu*[3] and Akha *uiˇ* also appear compatible with a vowel **u*. Bradley himself appears to acknowledge his own mistake a few years later (1985: 187).

[4]Tibetan √kru 'wash' (present *ḫkhrud* past *bkrus*, future *bkru*, imperative *khrus*) agrees with Bisu.

[5]To my knowledge this is the first paper to attempt such a comparison. Gong Hwang-cherng (1980; 1995) compared WrB, WT and OC in a reconstruction now quite outdated.

[6]With the term 'Tibeto-Burman' I name the Ursprache of which Burmese, Chinese, and Tibetan are all descended without prejudice concerning the Stammbaum of this family.

Table 1. The need to distinguish *a* and *ə*

WrB	Meaning	WrT	Meaning	OC	Meaning
ma	not	ma	not	無 mju < *ma (0103a)	not have
cā	love	mdzaḻ	love	慈 dzi < *dzə (0966j)	kind (adj.)
ṅāḥ	five	lṅa	five	五 nguX < *ŋˤaʔ (0058a)	five
nāḥ	ear	rna	ear	耳 nyiX < *nəʔ (0981a)	five
khaṅ	hill	sgaṅ	hill	岡 kang < *kˤaŋ (0697a)	hill
braṅ	breast	raṅ	breast, chest	膺 'ing < *[ʔ](r)əŋ (0890e)	breast(plate); oppose

occurred. A systematic re-evaluation of Proto-LB or Proto-Burmish lies beyond the task at hand.

1.1. Conventions

Tibetan is here transliterated in the Library of Congress system, with the exception that the letter ཁ is transliterated as 'ḫ' rather than an apostrophe.[7] The transliteration of Burmese also follows the Library of Congress system with several small modifications.[8] For Chinese I provide the character, followed by Baxter's Middle Chinese (1992),[9] an OC reconstruction compatible with the current version of Baxter and Sagart's system,[10] and the character number in Karlgren (1964[1957]). I cite OT from my own knowledge.[11] OB is cited after Nishi (1999) and Luce (1985). In many cases I cite a WrB form, but reconstruct an OB equivalent following the well-attested changes between these two languages (Yanson 2006). In citations of the Burmish languages 'D' refers to Dempsey (2003), 'M' to Mann (1998), 'N' to Nishi (1999) and 'Y' to Yabu (1982).

2. Written Burmese and Old Burmese

Many researchers have deemed the WrB vowel system too messy and asymmetrical to be suitable for use in comparative reconstruction without first being subjected to internal reconstruction (Miller 1956; Pulleyblank 1963; Gong 2002[1980]). Table 2 presents the rimes of WrB.[12]

[7]In earlier publications I substituted the apostrophe of the Library of Congress with 'ḥ'. However, because the letter 'ḥ' has a quite different meaning in the transliteration of Burmese employed here, it would cause confusion if used for the Tibetan letter ཁ also. Since the Tibetan letter ཁ represents a voiced velar fricative, 'ḫ' seems an appropriate transliteration (cf. Hill 2005, 2009b).

[8]The *visarga*, which corresponds in modern spoken Burmese to the heavy tone, is transliterated 'ḥ' as in Sanskrit. Creaky tone is represented as 'ʔ'. I also use *w* instead of *v* and *au* instead of *o'*.

[9]Like Baxter in his own recent work, I use 'ae' and 'ea' in place of his original 'æ' and 'ɛ'. I do not, however, follow him in changing 'ɨ' to '+'.

[10]The current version of Baxter and Sagart's OC system has not yet been published. In general it is similar to the system presented in Sagart (1999), with the changes that type (b) syllables are unmarked and type (a) syllables are marked (following Norman 1994) with phargynealised initials. The current version also posits final -r for 諧聲 Xiesheng series which mix final *-n* and *-j*, and uvulars for 諧聲 Xiesheng series that mix velar and glottal initials (cf. Sagart & Baxter 2009).

[11]To my previous discussion of OT lexicographical resources (Hill 2009a: 179) one can add Imaeda et al. (2007) and Iwao et al. (2009).

[12]Other orthographic rimes do occasionally occur, in particular due to an induced creaky tone or the representation of foreign words; but there is no need to consider such rimes here. Throughout this essay I take the romanised value of letters at face value, although there is considerable controversy about the phonetic value in some cases (e.g. *ui* cf. Nishida 1955: 21–2; Pulleyblank 1963: 217; Miller 1956: 34; Yanson 1990: 84; 2006: 114; Dempsey 2001: 206–11). There is no harm in doing so, because, if a correspondence to a Burmese segment is found consistently in another language, this correspondence will hold irrespective of the phonetic value of the Burmese segment. I take *-ṃ* to be an orthographic variant of *-m*.

Table 2. Rimes of Written Burmese

	Level	Creaky	Heavy	Final stop
(a)	ā	a	āḥ	
	aṅ	aṅʔ	aṅḥ	ak
	añ	añʔ	añḥ	ac
	an	anʔ	anḥ	at
	am	amʔ	amḥ	ap
(wa)	wā	wa	wāḥ	
	waṅ	waṅʔ	waṅḥ	wak
	wan	wanʔ	wanḥ	wat
	wam	wamʔ	wamḥ	wap
(i)	ī	i	īḥ	
	in	inʔ	inḥ	it
	im	imʔ	imḥ	ip
(u)	ū	u	ūḥ	
	un	unʔ	unḥ	ut
	um	umʔ	umḥ	up
(e)	e	eʔ	eḥ	
(we)	we	weʔ	weḥ	
(ai)	ay	aiʔ	ai	
(wai)	way	waiʔ	wai	
(o)	au	oʔ	o	
	oṅ	oṅʔ	oṅḥ	ok
(ui)	ui	uiʔ	uiḥ	
	uiṅ	uiṅʔ	uiṅḥ	uik

There are four sets of asymmetries in this vowel system: (1) The vowels *e* and *ai* occur only in open syllables. (2) The vowels *o* and *ui* occur only in open syllables or before velars. (3) The vowels *u* and *i* do not occur before velars. (4) The palatal finals occur only after the vowel *a*, but are lacking after *wa*.

Because the ancestor of WrB, namely OB, is itself directly attested, there is no need to use WrB in comparative linguistics, except when an OB attestation for a particular word is lacking.[13] A number of sound changes are directly observable in the transition from OB to WrB. All instances of the vowel *e* are innovative, resulting from the changes *iy* > *e* and *uy* > *we* (Nishida 1955: 28–9; Pulleyblank 1963: 217; Wun 1975: 88). Cases of open syllable *ui* were originally accompanied by a final glide -*w* (i.e. OB *uiw* > WrB *ui*, cf. Pulleyblank 1963: 217; Yanson 2006: 112). The rimes *uik* and *uiṅ* occur only in loanwords[14] (Luce 1985: I.100; Pulleyblank 1963: 217); although they form part of OB synchronic phonology, they may be ignored for the purposes of comparative linguistics. The sequence -*wa*- originates from vowel breaking of an original *o* (Nishida 1955: 30–33; Wun 1975: 89; Dempsey 2001: 222–3). The vowel *o* which gave rise to *wa* will be marked o_1 in order to distinguish this *o* from the cases of *o* which remain in WrB (noted o_2).[15] With the exception of two grammatical morphemes, the

[13]The instability of OB orthography complicates the synchronic analysis of OB phonology. I have not undertaken the kind of thorough philological investigation that would be needed to establish a definitive analysis, but rather rely on the existing secondary literature. The results arrived at are necessarily provisional.

[14]Matisoff gives TB etymologies to some closed-syllable Burmese words with the vowel *ui*. In particular I find WrB *khruiṅʔ* 'cave' and *khyuiṅʔ* 'valley' (2003: 287). His evidence for the TB heritage of *khruiṅʔ* 'cave' is rather slim. For 'valley' a better comparandum to OT *kluṅ* is OB *khloṅ* < proto-Burmish**khluṅ* (*vide infra*).

[15]Ultimately it would be useful to distinguish these two vowels phonetically. The relevant data for doing so are largely at hand: the vowel o_1 deriving from **o* occurs in all positions and changed into -*wa*- early in the history of Burmese writing; the vowel o_2 derives from **u* and occurs only before velars. To those who may find subscript numbers an overly mechanical or agnostic device for distinguishing these vowels, apart form pointing out that h_1, h_2 and h_3 have served Indo-Europeanists well, I can only agree with Wittgenstein: 'Wovon man nicht sprechen kann, darüber muß man schweigen [That which one cannot speak of one must be silent about]'.

Table 3. Rimes of Old Burmese

	Nasal	Open/Glide	Stop
(a)		a	
	am		ap
	an		at
	añ	ay	ac
	aṅ	au	ak
(i)		i	
	im		ip
	in	iy	it
(o_1)		o_1	
	o_1m		o_1p
	o_1n	o_1y	o_1t
	o_1ṅ		o_1k
(u)		u	
	um		up
	un	uy	ut
(o_2)	o_2ṅ		o_2k
(ui)		uiw	

vowel o_2 does not occur in open syllables (Yanson 1990: 68);[16] open syllable o_2 can thus be excluded from consideration. The vowel *ai* is written *ay* in the Myazedi inscription, and may be analysed thus (Pulleyblank 1963: 216). Nishi demonstrates that OB kept *an* and *at* distinct as finals from *añ* and *ac* (1974).[17]

The vowel represented with the letter ဪ requires special comment. The position of this letter in the alphabet suggests the value of a 'long o'. The Library of Congress system recommends the transliteration *-o*' based purely on the graphic similarity of the hook on the upper right part of the letter to the *virāma*, transliterated similarly. One might also transliterate this vowel as *-au*, viewing it as structurally equivalent to a Devanāgarī औ. The paleographic origin of this symbol and the phonetic value in the OB period of those words written today with this symbol are topics deserving further study.[18] Matisoff transcribes all examples of 'o' in WrB as <au> (2003: xl) and Gong regards open syllable *o* as deriving from **aw* (1980: 5–6). Although it may be unwarranted, there appears to be precedence for analysing *o* in the level tone as *-au*. Here I will assume that words written with this symbol were indeed pronounced *-au* in OB. One must however bear in mind that this assumption is likely to be revised in light of future research.

When WrB is used in historical linguistics it should always be used with these changes in mind. For example, although I have not located an OB equivalent of WrB *swāḥ* 'tooth' and *leḥ* 'heavy', the corresponding OB forms can be predicted to be **soḥ* and **liyḥ* on the basis of well-known historical phonology. Such a practice is essentially philological and concomitantly is more secure than reconstruction.

Reflecting the known origin of various WrB rimes in OB, Table 3 presents the rimes of OB; the tone categories are not separated out because tone is not generally indicated in OB texts. The system of rimes of OB is more elegant and symmetric than that of WrB. The vowels *e* and *ai* of WrB, with their odd distribution, are no longer present. The origin of WrB *wa* from OB o_1 explains the absence of palatals after *wa* in WrB. Elsewhere achievements are more limited.

[16]The words *khau* 'call' and *rau* 'whither' are given Tibeto-Burman comparanda below (cf. Matisoff 2003: 225). The spelling of these two words remain to be confirmed in OB texts.

[17]Nishi points out that the difference between *-an* and *-añ* in OB corresponds to the distinction between *-ñ* and *-ññ* in later WrB (Nishi 1974: iv, 16).

[18]Yanson's observation that with the exception of two grammatical morphemes o_2 does not occur in open syllables in OB (1990: 68) suggests that if such words are attested in OB they are written with a different vowel.

The vowels *o₂* and *ui* still have odd distributions. The absence of **uṅ*, **uk*, **uw* and **iṅ*, **ik*, **iw* remain as gaps. The palatal finals continue to occur only after the vowel *a*.

These remaining asymmetries give rise to a number of temptations in phonemic analysis. Common strategies include analysing *o₂* as /au/ (Pulleyblank 1963: 216; Matisoff 2003: xl) or /u/ (Gong 2002[1980]: 4–6), analysing *ac* and *añ* as /ik/ and /iŋ/ (Pulleyblank 1963: 218; Gong 2002[1980]: 4–6), analysing *ui* as /o/ (Yanson 2006: 112), /uw/ (Gong 2002[1980]: 4–6), or /iw/ (Pulleyblank 1963: 217) and analysing *o₁* as /wa/ (Pulleyblank 1963: 216, Gong 2002[1980]: 4–6; Matisoff 2003: 167). Although all such proposals are plausible, the methods of internal reconstruction alone provide no means to adjudicate among them. Different decisions lead to different vowel charts.

i
a (Pulleyblank 1963: 218)

i u
a (Gong 2002[1980]: 4–6)

i u
e o
ai a au (Yanson 2006: 112)

Such divergent analyses cannot equally reflect the truth. In order to decide among proposals for internal reconstruction, one must test any hypothesis against comparative evidence.

3. Diachronic analysis of Old Burmese vowels

Either a vowel of OB reflects a retention of the TB Ursprache, or OB will have changed the original value of the vowel. If the Burmese vowel is an innovation, it should be possible to isolate whether the innovation occurred before or after the break up of Proto-LB or Proto-Burmish. Determining the juncture on the Stammbaum at which a given innovation occurred also enables an overall sketch of the vowel systems of Proto-TB, Proto-LB and Proto-Burmish. A proposed vowel chart for Proto-TB is provided in the concluding section.

3.1. Burmese retentions from Proto-TB

In some environments the Proto-TB vowels **a*, **u*, **o* and **i* remain unchanged in all three languages, OB, WrT and OC (cf. Tables 4–7). Although a number of scholars have drawn attention to the beautifully straightforward correspondence of OB *o*, WrT *o*, and OC *o* (Wun 1975: 89; Nishida 1972: 258; Pān 2000: 19–20; Dempsey 2001: 222–5), it has remained unnoticed in the work of others (Pulleyblank 1963: 216; Gong 2002[1980]: 4–6; Matisoff 2003: 167).

The Burmese reflexes of Proto-TB **i* in open syllables require some discussion. OB *iy* corresponds regularly to *i* in WrT and *ij* in OC. At face value, the comparison with Chinese suggests that the final *-y* of *-iy* in the Burmese forms is original, and that Tibetan has lost the

Table 4. OB *a* < Proto-TB **a*

OB	Meaning	OT	Meaning	OC	Meaning
khāḥ	bitter	kha	bitter	苦 khuX < *k^{hs}aʔ (0049u)	bitter
ṅāḥ	five	lṅa	five	五 nguX < *ŋ^{s}aʔ (0058a)	five
ṅāḥ	fish	ña	fish	魚 ngjo < *ŋa (0079a)	fish
ryā	hundred	brgyaḥ	hundred	百 paek < *p^{s}rak (0781a)	hundred
ṅā	I, me	ṅa	I, me	吾 ngu < *ŋ^{s}a (0058f)	I, my
pha	father	pha	father	父 bjuX < *[b](r)aʔ (0102a)	father
ma	not	ma	not	無 mju < *ma (0103a)	not have
khaṅ	hill	sgaṅ	hill	岡 kang < *k^{s}aŋ (0697a)	hill
nhaṅḥ	to give	gnaṅ	to give	讓 nyangH < *naŋ-s (0730i)	yield
waṅʔ	spin	phaṅ	spindle	紡 phjangX < *p^{h}aŋʔ (0740r)	spin
ryak	day, 24hrs	źag	day, 24 hrs	夜 yaeH < *[G](r)ak-s (0800j)	night
lak	hand	lag	hand	胳 kak < *kl^{s}ak (0766d)	armpit
sat	kill	√sad	kill	殺 sreat < *srat (0319d)	kill
wa	tuber	gro-ma	tuber[19]	芋 hjuH < *[G]^{w}(r)as (0097o)	taro

Table 5. OB *u* < Proto-TB **u*

OB	Meaning	OT	Meaning	OC	Meaning
mruy	snake	sbrul	snake	虺 xjwɨjX < *[m̥r]ujʔ (0572a)	snake
sumḥ	three	gsum	three	三 sam < *s^{s}um (0648a)	three
lū	person	lus	body	–	
sū	him	su	who?	–	

Table 6. OB *o*$_1$ < Proto-TB **o*

WrB < OB	Meaning	OT	Meaning	OC	Meaning
kwan < *kon	casting net	rkon	net	–	
lwat < lot	be free	glod	loose, relaxed	脫 thwat < * l̥^{s}ot (0324m)	peel off
thwan < *thon	plough	thoṅ	plough	–	
thwā < *tho	a span	mtho	a span	–	
twaṅḥ < toṅḥ	pit	doṅ	pit	–	
nwāḥ < *noḥ	cow	nor	cattle	犖 nywin < *nu[r] (?)	ox
phwamʔ < *phomʔ	fat, plump	sbom	thick, stout	–	
swāḥ < *soḥ	tooth	so	tooth	–	

Table 7. OB *i* < Proto-TB **i*

WrB < OB	Meaning	WrT	Meaning	OC	Meaning
khiyḥ	to borrow	skyi	borrow	–	
khre < *khriy	gall, bile	mkhris	gall, bile	–	
kriyḥ	copper	gri	knife	–	
khliyḥ	excrement	lci	excrement	屎 syijX < *lhijʔ (0561d)	stool, feces
lheḥ < *lhiyḥ	flea	lji	flea	–	
leḥ < *liyḥ	heavy	ljid-po		–	heavy
niyʔ	sun/day	ñi-ma	day	日 nyit < *nik (0404a)	sun
phiyḥ	grandmother	phyi	grandmother	妣 pjijX < *pijʔ (0566n)	deceased mother
riy	water	rtsi	fluid, juice	–	
re < *riy	count	rtsi	count	–	
ceḥ < *ciyḥ	be sticky	tshi	sticky, viscous matter	–	
mliy	earth, soil	gźi	base	–	
liyḥ	four	bźi	four	四 sijH < *s.li[j]-s (0518a)	four
riyḥ	to write	√ri	to write	–	
siy	die	√śi	die	死 sijX < *sijʔ (0558a)	die (v.)
ʔim	house	khyim	home	–	
ʔip	lie down	yib	hide one's self	–	

[19]The Tibetan vowel *-o-* is an innovation due to the sound change Proto-TB *K^{w}a > Tibetan Ko, where 'K' represents any velar or uvular (cf. Gong 2002[1995]: 85–6; Hill 2011).

Table 8. OB *au* < Proto-TB **aw*

WrB < OB	Meaning	WrT	Meaning	OC	Meaning
khau	call	sgo	say	號 haw < *[g]aw (1041q)	call out
rau	withered	ro	corpse	–	

final *-y* [j]. Dempsey, however, points out that Baxter does not have the final *-i* in his version of OC, and since there is thus no contrast between *-i* and *-ij* in Chinese, these Chinese forms in no way discourage the reconstruction **-i* (2001: 214). Although some authors suggest that *-iy* was not pronounced [ij] in OB (e.g. Yanson 1990: 72–5; Dempsey 2001: 211–16), because OB has a structural opposition among *ay*, *iy*, *oy* and *uy*, it is necessary to analyse *iy* phonemically as /iy/; analyses of the form /Vy/ using any vowel other than /i/ are unavailable, and analyses of some other structure (e.g. without the final glide) would diverge too far the epigraphic data to be credible.

If one interprets the letter ဪ as /au/ this vowel also can be regarded as a retention from PTB (cf. Table 8).

3.2. Old Burmese innovations from Proto-TB

3.2.1. WrB a < *Proto-TB* *ə

In several examples WrB *a* corresponds to WrT *a* and OC ə (cf. Table 9, and Jacques forthcoming). The distinction in Chinese between ə and *a*, which no researcher has attempted to account for as a phonetically conditioned Chinese innovation, nonetheless warrants that these vowels be separately reconstructed in PTB. The vowel *-o-* in the Tibetan WrT *dom* 'bear' can be explained as a result of an original labio-velar (Hill 2011). The vowel *-o-* in *ḥdom-pa* 'fathom n.' and *srog* 'life' and the *-r-* in *srog* 'life' still require explanation.

3.2.2. WrB i < *Proto-TB* *e

In some words WrB *i* corresponds to WrT *e* (cf. Table 10).

Table 9. OB *a* < Proto-TB *ə

WrB	Meaning	WrT	Meaning	OC	Meaning
cā	love	mdzaḥ	love	慈 dzi < *dzə (0966j)	kind adj.
nāḥ	ear	rna	ear	耳 nyiX < *nəʔ (0981a)	five
raṅ	breast	braṅ	breast	膺 'ing < *[ʔ](r)əŋ (0890e)	breast(plate); oppose
ap	needle	khab	needle	箴鍼 tsyim < *t.qəm (0671no)	needle
wam	bear n.	dom	bear n.	熊 hjuwng < *Gʷəm (0674a)	bear
laṃ	fathom n.	ḥdom-pa	fathom n.	尋 zim < *[s-m-]l[ə]m (0662a)	measure of 8 chǐ 尺
sak	life, breath	srog	life	息 sik < *sək (0925a)	breathe

Table 10. OB cognates of Proto-TB **e*

WrB	Meaning	WrT	Meaning	OC	Meaning
krīḥ	be great, big	bgre	grow old	–	
līḥ	penis	mje	penis	–	
nīḥ	near	ñe	near	邇 nyeX < *najʔ (0359c)	near, draw near to
mīḥ	fire	mye	fire	火 xwaX < *m̥ˤ[ə]jʔ (0353a)	fire
si	know	śes	know	–	

Table 11. Loloish cognates of Proto-TB *e

WrB	Meaning	Lisu	Phunoi	Bisu	Akha	Mpi	Common Lahu
līḥ	penis[20]	–	hlè	–	a˧˩loe˧˩	–	ni_
nīḥ	near[21]	nrgh[5]	–	–	–	–	pa˘ne˘
mīḥ	fire[22]	–	bì	bì thɔ	mi˧˥dza˧˥	–	mi_
siʔ	know[23]	srghe[1]	sə̀	–	si˧˥-eu	sɯ[1]	shi_

Table 12. Burmish cognates of Proto-TB *e

Burmese	Meaning	Achang	Xiandao	Atsi	Lashi	Maru	Bola
si	know	sa[35] (N)	sa[35] (N)	se[55] (N)	sɛ̯:[53](N)	sɛ[55](N)	sɛ[35] (N)
krīḥ	big	kz̥ə[31] (N)	kɯ[31] (N)	kɵ- (Y)	kji:[33](N)	ɣə[35] (N)	–
mīḥ	fire	ni[31]- (N)	n̥i[31]- (N)	mji[21] (N)	mji[33] (N)	mji[35](N)	mi[31] (N)

Despite the ambiguity of the Chinese data, because Tibetan distinguishes *e and *i in open syllables whereas Burmese does not, it is reasonable to reconstruct this correspondence as *e as Miller does (1956: 38).

Bradley reconstructs *i for Proto-Loloish in these examples (cf. Table 11); it is, however, difficult to confirm the correctness of this reconstruction on the basis of the five available cognates alone. Dempsey reconstructs the vowel *e in Proto-North Burmish for 'big', 'penis' and 'fire' (2003: 74–5; cf. Table 12).[24] The word 'know' Dempsey, however, reconstructs with the vowel -ɛ- (2003: 76). Whether true or not because a distinction between -e- and -ɛ- cannot be set up on the basis of Tibetan and Burmese alone, I will disregard it here. At the current state of research it is difficult to be certain at what juncture in the Stammbaum the change of Proto-TB *e to OB *i took place.

3.2.3. OB a < *Proto-TB* *i *and* *e

Shafer suggests WrT *-ig* corresponds to WrB *-ac*, and WrT *-iṅ* to WrB *-añ,* reconstructing the Tibetan value as original (1940: 311, 1941: 20–21). Miller (1956: 39) and Pulleyblank (1963: 218) repeat these suggestions. Nishi further specifies three origins for Burmese *-ac* and *-añ* in Proto-LB, namely **ik*, **it* and **yat*, and **iŋ*, **in* and **yan* (1974). He provides convincing evidence that, although **ik*, **it* and **iŋ*, **in* had merged by the time of OB, *yat* and *yan* remained distinct from them in the early period.

Dempsey questions the importance of Tibetan for reconstructing the origins of *-ac* and *-añ,* pointing to other languages which suggest *-e-* (2001: 217). He mentions that Indic loanwords with the rimes *-et* and *-ek* are adapted into WrB with the rime *-ac* (2001: 218). Such loanword evidence is not conclusive; if OB lacked the rimes *-et* and *-ek*, it is equally possible that the rime *-ac* was perceived to be phonetically most appropriate as an equivalent to a foreign *-et* or *-ek*.

Dempsey concludes somewhat vaguely that *-ac* 'was used to represent the convergence of both a rime with a low vowel, more fronted than *-ak*, and also a rime with a mid vowel having either *-t* or *-k* as a final stop' (2001: 218). Evidence from Chinese suggests that Dempsey is

[20]*(n)-li[2] (Bradley 1979: 304–5 #122).

[21]*b-ni[2] (ibid. 366–7 #751).

[22]*C-mi[2] (ibid. 324–5 #329).

[23]*si[2] (ibid. 350–51 #590).

[24]For the word 'penis' the Burmish languages other than Burmese have nasal initials. Because it is not immediately clear that they are cognate, I have excluded them from Table 12.

Table 13. Cognates of OB *-ac* and *-añ* in WrT and OC

Burmese *-ac* and *-añ* corresponding to OC i

WrB	Meaning	WrT	Meaning	OC	Meaning
nhac	two	gñis	two	二 nyijH < *ni[j]-s (0564a)	two
nhac	heart	sñiṅ	heart	身 syin < *hni[ŋ] (0386a)	body; self
anhac	year	niṅ	year	年 nen < *[n]ˁi[ŋ] (0364a)	harvest; year
achac	joint	tshigs	joint	節 tset < *tsˁik (0399e)	joint of bamboo
sac	wood, timber	śiṅ	tree, wood	薪 sin < *si[ŋ] (0382n)	firewood

Burmese *-ac* and *-añ* corresponding to OC e

WrB	Meaning	WrT	Meaning	OC	Meaning
tac	one	gcig	one	隻 tsyek < *tek (1260c)	one of a pair
lañ	neck	mjiṅ	neck	領 ljengX < *[r]eŋʔ (0823f)	neck
mañ	name	myiṅ	name	名 mjieng < *[m]eŋ (0826a)	name

Table 14. Loloish cognates of OB *-ac* and *-añ*

Loloish cognates of OC i

OB	Meaning	Lisu	Phunoi	Bisu	Akha	Mpi	Common Lahu
nhac	two[26]	nyï[5]	hnə̌	nì	nyi˄	ɲi[2]	ni˅
nhac	heart[27]	ni[2]ma[3]	–	–	nui ma	no[4] wo[4]	ni:
anhac	year[28]	ni[2]	ni	hnɯ	–	–	–
achac	joint[29]	lá[6]tsï[3]	–	là tshɯ̀	la˄ tsui˄	–	tsuh¯
sac	wood, timber[30]	–	–	–	sah	sɑ[4]tɯ[6]	suh^

Loloish cognates of OC e

OB	Meaning	Lisu	Phunoi	Bisu	Akha	Mpi	Common Lahu
tac	one[31]	hti[5]	thə̌	tɯ̀	ti˅ /ti˄	thɯʔ[2]/tho[2]	te˅
lañ	neck[32]	–	ʔɑ́ líŋ	–	kaw˅ lah˅	ʔi[2]lɯ[6]	lui:
mañ	name[33]	mye[3]	ʔɑ́ hmín	ʔaŋ hméŋ	tsaw˅ myah˅	m[2]mi[6]	meh:

correct to distinguish two separate vowels as sources for *-ac*; Burmese *-ac* and *-añ* correspond both to *i* and to *e* in OC.

Because there is no obvious conditioning environment for a split of **i* into *e* and *i* in OC, OB and WrT must be taken to have merged originally distinct **e* and **i* in these cases. The question naturally arises whether the merger of Proto-TB **e* and **i* occurred between Proto-TB and Proto-LB, between Proto-LB and Proto-Burmish, or between Proto-Burmish and Burmese.

Matisoff reconstructs **ek* and **et* in Proto-LB (1972),[25] but considering Matisoff's evidence, Nishi (1974: 9) concludes:

[25]Matisoff does not systematically present the reconstruction of rimes in this work. However, Nishi meticulously assembles Matisoff's reconstructions and supporting cognate sets from throughout the volume.

[26]*s-ni(k)$^{2/L}$ (Bradley 1979: 338–9 #479).

[27]*ni^{3} (ibid. 306–7 #142).

[28]*s-nik^{H} (ibid. 338–9 #477A).

[29]*C-dzik^{L} (ibid. 304–5 #109–110).

[30]*sik^{H} (ibid. 322–3 #303A).

[31]*t/di^{2} (ibid. 338–9 #478).

[32]*liŋ^{1} (ibid. 302–3 #104).

[33]*ʔ-m(y)iŋ^{1} (ibid. 334–5 #419).

Table 15. Burmish cognates of OB *-ac* and *-añ*

Burmish cognates of Chinese *i*

Burmese	meaning	Achang	Xiandao	Atsi	Lashi	Maru	Bola
nhac	heart	nạị k^{54} (M)	–	nị k-^{55} (N)	nạ̣k^{55}- (N)	nạk^{55}- (N)	nạk^{55}- (N)
anhac	year	hnək (D)	–	-xnik (D)	xnək (D)	xnak (D)	xnak (D)

Burmish cognates of Chinese *e*

Burmese	meaning	Achang	Xiandao	Atsi	Lashi	Maru	Bola
tac	one	dai^{3} (M)	–	–	–	–	ta^{52} (M)
lañ	neck	laŋ^{31} (N)	lɤŋ^{31}- (N)	–	lə ŋ^{31}- (N)	laŋ^{31}- (N)	laŋ^{55}- (N)
mañ	name	-ñiŋ^{55} (N)	niŋ^{55} (N)	mjiŋ^{51} (N)	mjiŋ^{31} (N)	mạ ŋ^{31} (N)	maŋ^{55} (N)

また*ekと*etの末尾音の区別は、LB言語の対応形からだけでは不可能であるし、どのような母音を推定すべきかも不明である。

*mata *ek to *et no matsubi oto no kubetsu ha, LB gengo no taiōkei kara dakedeha fukanō dearushi, donoyōna boin wo suitei subekikamo fumei dearu.*
[Not only is it not possible to distinguish the finals of **ek* and **et* only on the basis of the corresponding forms of LB languages, even the type of vowel it is necessary to postulate is unclear].

Even if one accepts Matisoff's reconstructions, his examples of **e* do not occur in words where OC has *e* (cf. Nishi 1974: 9), and therefore cannot be taken as counterevidence to the merger of Proto-TB **e* and **i* in Proto-LB.

Although Bradley also accepts that Proto-Loloish has the rimes **et* and **ek* (1979: 196), he reconstructs **i* in Proto-Loloish for all of the relevant examples.

By the time of Proto-Burmish, the vowels Proto-TB **e* and **i* have unambiguously merged before velars.[34] The Proto-Burmish finals do remain velars, not having become palatals as they have in Burmese.

It is noteworthy that Burmese does not have the rime *añ* corresponding to OC *iŋ* but only to OC *eŋ*. Perhaps the distinction between *e* and *i* in OC provides a conditioning environment to account for the two divergent correspondences of Burmese, namely *ac* and *añ* to WrT *iṅ*. This hypothesis suggests the sound changes **eŋ* > *añ*, **iŋ* > *ac*. Such a suggestion remain speculative, however, because of the small number of examples on which it is based. Combining this proposal with the knowledge that **e* and **i* merged before velars, and the change of **-e* to *-i* in open syllables, a parsimonious description of the combined effects of these changes as ordered sound changes would be: (1) TB **iŋ* > **ik*, (2) **e* > *i*, (3) **iŋ*, **in* > OB *añ* and **ik*, **it* > OB *ac*.

*3.2.4. OB o_2 < Proto-Burmish *u*

Written Burmese *o* occurs only before velars (Yanson 1990: 68), where it corresponds to *u* in WrT and OC (cf. Table 16). Maung Wun first pointed out that this correspondence suggests that the Burmese o_2 is of secondary origin (Wun 1975: 88, originally written in 1937). Miller interprets this correspondence similarly, reconstructing **u* in Proto-TB (1956: 39). Gong

[34]Dempsey reconstructs 'year' with the rime **-ek* for Proto-North Burmish (2003: 100), and 'neck' and 'name' with the rime **-eŋ* for Proto-North Burmish (2003: 89). These reconstructions are in keeping with his view that *-e-* and not *-i-* is the vowel behind *-ac* and *-añ*. Even if one accepts his reconstructions, the result is still a merger of **e* and **i*.

Table 16. Cognates of WrB *o* (OB *o*$_2$) in WrT and OC

WrB	Meaning	WrT	Meaning	OC	Meaning
khloṅḥ	river	kluṅ	stream, river	谷 kuwk < *C.qˤok (1202a)[35]	valley
koṅḥ	sky	dguṅ	sky	–	
tok	poison	dug	poison	毒 dowk <*dˤuk (1016a)	poison
khrok	six	drug	six	六 ljuwk <*[r]uk (1032a)	six

Table 17. Cognates of WrB *o* (OB *o*$_2$) in the Burmish languages

Burmese	Meaning	Achang	Xiandao	Atsi	Lashi	Maru	Bola
khrok	six	xz̥oʔ^{55}(N)	chuʔ^{55}(N)	khjuʔ^{55}(N)	khjuk^{55} (N)	khjauk^{55} (N)	khjauʔ^{55} (N)
koṅḥ	sky	k^{h}oŋ^{32} (M)	–	khûŋ (Y)	–	gauŋ^{51} (M)	–

Table 18. Cognates of WrB *o* (OB *o*$_2$) in the Loloish languages

WrB	Meaning	Lisu	Phunoi	Bisu	Akha	Mpi	Common Lahu
khloṅḥ	river[37]	law^{4}hku^{5}	–	kà kjù	–	–	–
khrok	six[38]	hchaw	khà	–	k'oˬ	khoʔ	hkuhˬ

explicitly formulates the sound changes Proto-TB *$u\acute{n}$ > WrB $o\acute{n}$ and Proto-TB *uk > WrB ok (2002[1980]: 4). Dempsey also supports the change Proto-TB *uk > WrB ok (2001: 223).

Burmish languages suggest that the change $u > o$ took place after the breakup of Proto-Burmish (cf. Table 17), leading Dempsey to reconstruct *uk in Proto-North Burmish for 'six' (2003: 97).[36]

One would expect Proto-LB to also have u in these cases (cf. Table 18); Bradley, however, reconstructs *-o- almost certainly on the basis of WrB; these reconstructions merit reconsideration. Bradley does not reconstruct the rime *$u\eta$ in Proto-LB (1979: 187). One may therefore suggest that all instances of his *$o\eta$ be revised to *$u\eta$. Bradley does distinguish *uk and *ok (1979: 195–7). According to the chart of correspondences on p. 196, this distinction is primarily based on the Lahu reflex. In his system, Burmese collapses *uk and *ok into ok. Matisoff appears to have formerly agreed with Bradley but now to see the evidence of Lahu as insufficient for distinguishing *uk and *ok in LB, instead favouring *uk in all cases (2003: 379, n. 59).

3.2.5. OB uiw < *Proto-TB* *uw *and* *-əw

The vowel OB uiw regularly corresponds to u in WrT and either u or o in OC (cf. Table 19). Miller reconstructs this correspondence as ы, which is also the symbol he uses for the Burmese vowel represented as ui in the Duroiselle system (1956: 39). This is a rather mechanical approach which accounts neither for the Chinese reflexes nor for the presence of the -w in OB.

Dempsey, who sees Burmese and North Burmish as the two sub-branches of the Burmish family (2003: 59), derives this rime from Proto-TB *u, which he explains becomes -$əw$ in Burmese and *aw in Proto-North Burmish (he mentions the words 'nine', 'steal', 'breast', 'sky'

[35]Schuessler reconstructs *klˤok (2009: 158).

[36]The Achang word *xz̥oʔ^{55}* 'six' suggests that the change of u to o before velars might be an isogloss that groups Burmese and Achang together.

[37]*C-kyoŋ^{1} (Bradley 1979: 340–41, #313). A reconstruction *C-kluŋ^{1} is probably more appropriate.

[38]*C-krok^{L} (ibid. #483). A reconstruction *C-kruk^{L} is probably more appropriate.

Table 19. Cognates of OB *uiw* in WrT and OC

Cognates of Chinese *u*

WrB	Meaning	WrT	Meaning	OC	Meaning
kuiḥ < *kuiwḥ	nine	dgu	nine	九 kjuwX < *(tə.)[k](ʷ)uʔ (0992a)	nine
puiwḥ	insect	ḫbu	worm, insect	蝮 phjuwk < *phuk (1034j)	a kind of snake
ruiwḥ	bone	rus	bone	律 lwit < *Cə.[r]ut (0502c)	pitch-pipe[39]
kui < *kuiw	brother	khu	paternal uncle	昆 kwon < *kˁu[n] (0417a)	elder brother

No Chinese example

WrB	Meaning	WrT	Meaning	OC	Meaning
kruiwḥ	try hard	ḫgrus	zeal, diligence	–	
muiwḥ	sky	dmu	a class of gods	–	
ṅui < *ṅuiw	weep	ṅu	cry	–	

Cognates of Chinese *o*

WrB	Meaning	WrT	Meaning	OC	Meaning
khuiwḥ	steal	rku	steal	寇 khuwH < *[k]ʰˁ(r)o-s (0111a)	rob, robbery
kruiw	horn	ru	horn	角 kaewk < *k.rˁok (1225a)	horn
nuiʔ < *ɲuiwʔ	milk, breast	nu-ma	breast	乳 nyuX < *noʔ (0135a)	milk; nipple

Table 20. Burmish cognates of OB *uiw*

Burmese	Meaning	Achang	Xiandao	Atsi	Lashi	Maru	Bola
khuiwḥ	steal	xau^{31} (N)	xau^{31} (N)	khau^{21} (N)	kʰau^{52}(N)	kha:u^{55} (N)	khuk^{55} (N)
kuiḥ < *kuiwḥ	nine	kau^{31} (N)	kau^{31} (N)	kau^{21} (N)	gau^{32} (N)	kou^{33} (N)	kuk^{31} (N)
ṅui	weep	ŋau^{55} (N)	ŋau^{55} (N)	ŋau^{51} (N)	ŋau^{32} (N)	ŋa:u^{31} (N)	ŋuk^{31} (N)
nuiʔ	milk, breast	nau^{35}- (N)	–	nau^{55} (N)	nau^{3}(N)	nou^{55} (N)	nuk^{55} (N)
puiḥ < *puiwḥ	insect	pau^{31} (N)	pau^{31} (N)	pau^{21} (N)	bau^{31} (N)	pou^{33} (N)	puk^{55}
muiwḥ	sky	mau^{31} (N)	mau^{31} (N)	mau^{21}- (N)	mau^{3}(N)	mou^{33}- (N)	muk^{55} (N)
kruiw	horns	khzau^{55}(N)	-khzau^{55}(N)	khjui^{51} (N)	kʰjui^{53} (N)	khjou^{33} (N)	khjuk^{31} (N)
ruiwḥ	bone	-zau^{31}(N)	-zau^{31}(N)	-vui^{21} (N)	wi^{32} (N)	-jou^{33} (N)	-*y*uk^{55} (N)

Table 21. Cognates of Proto-Burmish **u* in WrT and OC

OB < Proto-Burmish	Meaning	Tib.	Meaning	Chinese	Meaning
tū	hammer	tho-ba	a large hammer	段 twanH < *tˁo[n]-s (0172a)	hammer
tū	be similar	do	an equal, match	–	
phū	to bud	√bo	to sprout	–	
chū	be fat	tsho-ba	fat	膲 tsjwenX < *tsonʔ (0235b)	
kho$_2$k < *khuk	bark	skog	shell, peel	殼 khaewk < *[kʰ]ˁrok (1226a)	shell
kyo$_2$ṅ < *kyuṅ	feed, tend cattle	skyoṅ	guard	–	
kro$_2$k < *kruk	fear	dkrog	scare	–	
tho$_2$ṅ < *thuṅ	thousand	stoṅ	thousand	–	
pro$_2$ṅ < *pruṅ	buffalo, bison	ḫbroṅ	wild yak	–	
ʔo$_2$k < *ʔuk	under part	ḫog	below	–	

and 'horn', 2003: 65–6). It is not clear whether he sees these as independent innovations or (probably more likely) as a change **u* > **-əw* > **aw* in North Burmish.[40]

[39]Suggested by L. Sagart.

[40]Postulating *u* > *aw* > *əw* in Burmese would have led to a merger of Proto-TB **aw* and Proto-TB **u* in Burmese, which did not take place (cf. Dempsey 2003: 69 for **au*).

Table 22. Proto-TB vowels

	Nasal	Open/Glide	Stop
(a)		a	
	aṅ		ak
	an	ay	at
	am	aw	ap
(ə)		ə	
	əṅ		ək
	əm		
		əw	
(e)		e	
	eṅ		ek
(i)		i	
	iṅ		ik
	in	iy	it
	im		ip
(o)		o	
	on	oy	ot
	om	ow	op
	oṅ		ok
(u)		u	
	un	uy	ut
	um	uw	up
	uṅ		uk

Dempsey's explanation, however, does not account for the distinct outcome of Proto-TB **u* in open syllables as *ui* and *u* (in words like 'person' or 'him') in Burmese (cf. Table 5). He seems to have overlooked these words.

I propose to reconstruct the correspondence of WrB *ui* with WrT *u* and OC *u* as **uw*. The correspondence of WrB *ui* with WrT *u* and OC *o* is difficult. The existence of *aw in Old Chinese renders such a reconstruction unavailable. Since OC lacks -*əw*, this possibility is available for PTB reconstruction. I therefore suggest the correspondence of WrB *ui* with WrT *u* and OC *o* be reconstructed as -*əw*. These reconstructions account for the -*w* in OB as a retention.

3.2.6. OB u < *Proto-TB* *ow

In some cases proto-Burmish *u* corresponds to *o* in WrT and OC (cf. Table 21). This correspondence is difficult to reconstruct. It is tempting to see it as **o*, but this reconstruction has already been used for the correspondence of OB *o*, WrT *o* and OC *o*. Matisoff reconstructs this correspondence as **ow*, and I see no reason to object to this suggestion.

4. Conclusions

Table 22 presents the rimes of proto-Tibeto-Burman arrived at here. The system of finals established here for Proto-TB is still not a perfectly balanced system: it lacks **en*, **ey*, **et*, **ew*, **ən*, **əy*, **ət*, **əp*, and **iw*. I do not claim that Proto-TB itself lacked such rimes, but simply that evidence for them has not come up in this investigation of the history of Burmese vowels.

For convenience of reference it is perhaps useful to summarise those points where this investigation has let to different conclusions from those of other researchers. I reject the TB provenance of two WrB words put forward by Matisoff (*khruiṅ*ʔ 'cave', *khyuiṅ*ʔ 'valley'). I reject Bradley's reconstruction of the rimes **-we*, **-ok* and **-oṅ* in LB, favouring **-uy*, **-uk*

and *-*uṅ*. I reject both Bradley and Matisoff's reconstruction of the rime **wa* in Proto-TB,[41] LB and proto-Burmish, replacing it with **o* in all cases. I have come across no important points of disagreement with Dempsey.

4.1. Summary of proposed sound changes

Burmese

TB **iŋ* > **ik*
TB **ə* > OB *a*
TB **e* > OB *i*
TB **iŋ*, **in* > OB *añ*
TB**ik*, **it* > OB *ac*

TB **əw* > OB *uiw*
TB **uw* > OB *uiw*
TB **ow* > OB *u*
pre-Burmese **uK* > OB o_2K

Tibetan

TB **ek* > OT *ik*
TB **eŋ* > OT *iṅ*
TB **əw* > OT *u*
TB **uw* > OT *u*
TB **ow* > OT *o*

Chinese

TB **əw* > OC *o*
TB **uw* > OC *u*
TB **ow* > OC *o*

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References

Baxter, William H., 1992. *A Handbook of Old Chinese Phonology*, Berlin: Mouton de Gruyter.
Bradley, David, 1979. *Proto-Loloish*, London: Curzon Press.
Bradley, David, 1985. 'Arakanese vowels', in D. Thurgood, J. Matisoff & D. Bradley (eds), *Linguistics of the Sino-Tibetan Area: The State of the Art*, Canberra: Australian National University, 185–200.
Burling, Robbins, 1967. *Proto Lolo-Burmese*, Bloomington: Indiana University Press.
Dempsey, Jakob, 2001. 'Remarks on the vowel system of old Burmese', *Linguistics of the Tibeto-Burman Area* 24(2), 205–34. Errata 26(1), 183.
Dempsey, Jakob, 2003. 'Analysis of rime-groups in Northern-Burmish', *Linguistics of the Tibeto-Burman Area* 26(1), 63–124.
Frasch, Tilman, 1996. *Pagan: Stadt und Staat*, Stuttgart: Steiner.

[41]I do believe that PTB had labio-velars and labio-uvulars before the vowel **a*. Such examples gave rise to Anlaut *wa* in Old Burmese and the vowel *o* after velars in Tibetan (cf. Hill 2011).

GONG HWANG-CHERNG, 1980. 'A comparative study of the Chinese, Tibetan, and Burmese vowel systems', *Bulletin of the Institute of History and Philology* 51(3), 455–90. Reprinted in: 漢藏語研究論文集 *Hanzangyu yanjiulun wenji/Collected Papers on Sino-Tibetan Linguistics* (Taipei: 中央研究院語言學研究所 籌備處 Zhong yang yan jiu yuan yuyanxue yanjiusuo choubeichu, 2002), 1–30.

GONG HWANG-CHERNG, 1995. 'The system of finals in Proto-Sino-Tibetan', in William S. Y. Wang (ed.), *The Ancestry of the Chinese Language*, Berkeley: Project on Linguistic Analysis, University of California, 41–92. Reprinted in: 漢藏語研究論文集 *Hanzangyu yanjiulun wenji/Collected Papers on Sino-Tibetan Linguistics* (Taipei: 中央研究院語言學研究所籌備處 Zhong yang yan jiu yuan yuyanxue yanjiusuo choubeichu, 2002), 79–124.

HALL, ROBERT, 1976. *Proto-Romance Phonology*, New York: American Elsevier.

HILL, NATHAN W., 2005. 'Once more on the letter ར', *Linguistics of the Tibeto-Burman Area* 28(2), 111–41.

HILL, NATHAN W., 2009a. Review of Matisoff (2003), 語言暨語言學 *Language and Linguistics* 10(1), 173–95.

HILL, NATHAN W., 2009b. 'Tibetan <ḥ-> as a plain initial and its place in Old Tibetan phonology', *Linguistics of the Tibeto-Burman Area* 32(1), 115–40.

HILL, NATHAN W., 2011. 'Multiple origins of Tibetan *o*', 語言暨語言學 *Language and Linguistics* 12(3), 707–21.

IMAEDA, YOSHIRO et al., 2007. *Tibetan Documents from Dunhuang kept at the Bibliothèque nationale de France and the British Library*, Tokyo: Research Institute for Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies.

IWAO, KAZUSHI et al., 2009. *Old Tibetan Inscriptions*, Tokyo: Research Institute for Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies.

JACQUES, GUILLAUME, forthcoming. 'The genetic position of Chinese', in Rint Sybesma, Wolfgang Behr, Yueguo Gu, Zev Handel & C.-T. James Huang (eds), *Encyclopedia of Chinese Language and Linguistics*, Leiden: Brill.

JONES, ROBERT B., 1988. 'Proto-Burmese as a test of reconstruction', in Caroline Duncan-Rose & Theo Vennemann (eds), *On Language: Rhetorica, Phonologica, Syntactica: A Festschrift for Robert P. Stockwell from his friends and colleagues*, London: Routledge, 203–11.

KARLGREN, BERNHARD, 1964[1957]. *Grammata Serica Recensa*, Gothenburg: Elanders.

LUCE, G. H., 1985. *Phases of Pre-Pagán Burma: Languages and History*, Oxford: Oxford University Press.

MANN, NOEL WALTER, 1998. 'A phonological reconstruction of Proto Northern Burmic', thesis, University of Texas, Arlington.

MATISOFF, JAMES, 1968. Review of Robbins Burling, *Proto-Lolo-Burmese*, *Language* 44(4), 879–97.

MATISOFF, JAMES, 1972. *The Loloish Tonal Split Revisited*, Berkeley: Center for South and Southeast Asia Studies, University of California.

MATISOFF, JAMES, 2003. *Handbook of Proto-Tibeto-Burman: System and Philosophy of Sino-Tibeto-Burman Reconstruction*, Berkeley: University of California Press.

MILLER, ROY ANDREW, 1956. 'The Tibeto-Burman ablaut system', 国際東方学者会議 紀要 *Kokusai Tōhō Gakusha Kaigi kiyō/Transactions of the International Conference of Orientalists in Japan* 1, 29–56.

NISHI, YOSHIO, 西義郎 1974. 'ビルマ文語の-ac について Birumabungo-no-ac-ni tsuite' [On *-ac* in Burmese], 東洋学報 *Tōyō gakuhō: The Journal of the Research Department of the Toyo Bunko* 56(1), 1–43.

NISHI, YOSHIO, 1999. *Four Papers on Burmese: Toward the History of Burmese (the Myanmar Language)*, Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies.

NISHIDA, TATSUO, 西田龍雄, 1955. 'Myazedi 碑文における中古ビルマ語の研究 Myazedi hibu ni okeru chūko biruma go no kenkyū [Studies in the later ancient Burmese language through Myazedi inscriptions]', 古代學 *Kodaigaku Palaeologia* 4(1), 17–31 and 5(1), 22–40.

NISHIDA, TATSUO, 西田龍雄 1972. 緬甸館訳語の研究:ビルマ言語学序説 Mendenkan yakugo no kenkyū : Biruma gengogaku josetsu [A study of Burmese–Chinese vocabulary], in *Mien-tien-kuan i-yu* [An introduction to Burmese linguistics] (Kyoto: 松香堂 *Shōkadō)*.

NORMAN, JERRY, 1994. 'Pharyngealization in early Chinese', *Journal of the American Oriental Society* 114(3), 397–408.

PĀN WÙYÚN, 潘悟雲 2000. '緬甸文元音的轉寫 Miǎndiàn wényuán yǎn de zhuǎn xiě [The transliteration of vowels of Burman script]', 民族語文 *Mínzú Yǔwén* 2000(2), 17–21.

PULLEYBLANK, E. G., 1963. 'An interpretation of the vowel systems of Old Chinese and of Written Burmese', *Asia Major* (new series) 10(2), 200–221.

SAGART, LAURENT, 1999. *The Roots of Old Chinese*, Amsterdam: Benjamins.

SAGART, LAURENT & WILLIAM H. BAXTER, 2009. 'Reconstructing Old Chinese uvulars in the Baxter–Sagart system (version 0.99)', *Cahiers de Linguistique – Asie Orientale* 38(2), 221–44.

SCHUESSLER, AXEL, 2009. *Minimal Old Chinese and Later Han Chinese*, Honolulu: University of Hawai'i Press.

SHAFER, ROBERT, 1940. 'The vocalism of Sino-Tibetan', *Journal of the American Oriental Society* 60(3), 302–37.

SHAFER, ROBERT, 1941. 'The vocalism of Sino-Tibetan', *Journal of the American Oriental Society* 61(1), 18–31.

WUN, MAUNG, 1975. 'Development of the Burmese language in the medieval period', 大阪外国語大学学報 *Ōsaka gaikokugo daigaku gakuhō* 36, 63–119.

YABU, SHIRŌ, 藪 司郎, 1982. アツィ語基礎語彙集 *Atsigo kiso goishū /Classified dictionary of the Atsi or Zaiwa language (Sadon dialect) with Atsi, Japanese and English indexes*, Tokyo: 東京外国語大学アジア・アフリカ言語 文化研究所 Tōkyō Gaikokugo Daigaku Ajia Afurika Gengo Bunka Kenkyūjo.

YANSON, RUDOLF, 1990. *Вопросы фонологии древнебирманского языка. Voprosy fonologii drevnebirmanskogo jazyka* [Topics in the phonology of Old Burmese], Moscow: Nauk.

YANSON, RUDOLF, 2006. 'Notes on the evolution of the Burmese phonological system', in Christopher I. Beckwith (ed.), *Medieval Tibeto-Burman Languages II*, Leiden: Brill, 103–20.