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The merger of Proto-Burmish *ts and *č in Burmese

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1. Introduction

Because early attestations of a language are by definition more archaic than later forms of the same language, it behooves a historical linguist to take advantage of the earliest attestations of any particular language; Vedic Sanskrit is a better reflection of Proto-Indo-European than Nepali.[2] Similarly, when one examines the evidence of several languages within a putative family, keeping in mind the obvious fact that all languages change in time one way or another, earlier attested languages are often more archaic than more recently attested languages; Vedic Sanskrit is a better reflection of Proto-Indo-European than Albanian. Thus, as a general principle the earliest attested languages in a family should be the historical linguist's first port of call.

Nonetheless, the generally archaic character of early languages in no way implies that

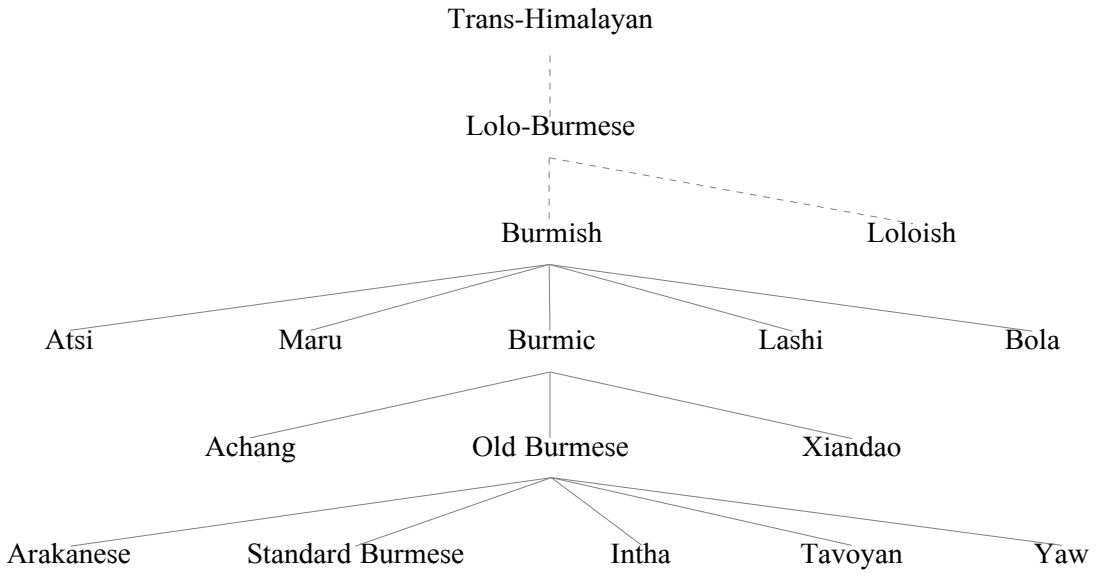

Figure 1: The Burmish language family (dotted relationships are unproven)

[1] Abbreviations: Written Burmese (WBur.), Spoken Burmese (SBur.), Chinese (Chi.), Tibetan (Tib.). In order to force a consistency of notation on citations of the Burmish languages from various sources a raised glottal stop (ˀ) is used for glottalized initials or tense vowels and 'č is used in place of 'c' or 'ʧ' in citations of languages other than OBur. and WBur. Burmese 'c' was probably articulated as [ts]. I would like to thank the British Academy for support in the course of the research that led to this paper.

[2] Although this principle may appear too obvious to merit mention, Matisoff (2003) fails to adhere to it, inexplicably preferring Written Tibetan to Old Tibetan and, except in rare cases, Written Burmese to Old Burmese.

on every point a particular early attested language is more archaic than its more recently attested kin. Although Gothic is the most conservative Germanic language and preserves many archaic features lost in the other Germanic languages, it fails to distinguish Proto-Germanic *ē¹ and *ē², which have separate reflexes in other Germanic languages (Fortson 2004: 304). The reconstruction of Proto-Germanic takes Gothic as a point of departure, but Gothic and Proto-Germanic are not the same, with the evidence for this difference residing among the overall more innovative Germanic languages. Even more strikingly, Akkadian, although it is the earliest attested of all Semitic languages has "undergone a more radical development in its phonological system than exhibited by any other Semitic language until the modern period" (Huehnergard 1997: 586).

Old Burmese is the earliest attested and most conservative languages of the Burmish family;[3] however, like Gothic or Akkadian it is not conservative in every respect. Knowledge of its conservative and innovative features permits one to accept its testimony on the former case and supplement its testimony where innovative. The Burmish family also includes Achang, Xiandao, Atsi, Maru, Lashi, and Bola. Nishi sees the merger of aspirate and glottalized consonants as an iso-gloss, which in his terminology divides the Burmic languages (Burmese, Achang, Xiandao) from the Maruic (Atsi, Lashi, Maru, Bola) languages (Nishi 1999: 70). Although this criterion is sufficient to posit 'Burmic' as a branch in its own right, it does not suggest that the 'Maruic' languages form a coherent subgroup; to do so they would need to have together undergone an innovation for which the Burmic languages have maintained the original form. Figure 1 provides a working Stammbaum of the Burmish language family in its Trans-Himalayan context.[4] In addition to the loss of glottalized initials, the defining innovation of the Burmic sub-branch, Burmese has also innovated by merging Proto-Burmish *ts and *c. Although this change is a "major change in Burmese and its

[3] Some terminological clarification is in order. Shafer (1966) posits Burmese as a member of the Southern Burma branch, itself on the Burma branch, which makes up the Burmish branch (together with Lolo and Tangut); the Burmish branch is, in his terminology, a member of a very large Burmic branch that includes also Nungish, Luish, Kukish, etc. None of these elaborate branches or subbranches does he articulate in terms of shared innovations. Bradley (2012) follows Shafer's terminology, using 'Burmic' where others use 'Lolo-Burmese'. In Nishi's (1999: 68) terminology Burmese is a member of the Burmic branch, which together with Maruic constitutes Burmish, which itself is one of the two branches of Lolo-Burmese. By analogy to Tournadre's (2008: 283) 'Tibetic' one would like to have a word for the language family which consists of Burmese dialects; the term 'Burmic' Shafer and Nishi already claim for quite different purposes. I propose to call the languages which descend from Old Burmese 'Mranmaic'. In my terminology, similar to Nishi's, the Mranmaic languages together with Achang and Xiandao form the Burmic family. The family of which the Burmic languages together with Atsi, Maru, Lashi and Bola are members is the 'Burmish' languages. The Burmish and Loloish languages together constitute Lolo-Burmese. One should note that Lolo-Burmese has not been demonstrated as a subgroup in terms of shared innovations vis à vis the Trans-Himalayan Ursprache.

[4] This family is known by names including 'Tibeto-Burman', 'Sino-Tibetan', and 'Indo-Chinese' (cf. van Driem 2012).

dialects" (Bradley 2012: 174), it has not been hitherto subject to separate study.[5]

2. Merger of *ts- and *č- as c

Burling (1967: 6, 33-34) was the first researcher to propose a distinction between *ts-, *ʔts-, *tsh- and *č-, *ʔč-, *čh- in Proto-Burmish, referring in the former case to the correspondence of Spoken Burmese s- (< WBur. *c*-)[6] to Atsi and Maru ts- (Table 1)[7] and referring in the latter case to the correspondence of Spoken Burmese č- (< WBur. *ky*-, *kr*-) to Atsi and Maru č- (Table 2).[8] On the basis of the Written Burmese reflexes with initial *ky*-, *khy*-, and *khy*-, Matisoff amends Burling's reconstructions *č-, *ʔč-, *čh- to *ky-, *ʔky-, and *khy- (1968: 882). In place of Burling's reconstructions *ky-, *ʔky-, *khy-, which is based on the correspondence of Spoken Burmese č- (< WBur. *ky*-, *kr*-) to Atsi and Maru ky- (cf. Table 3),[9] Matisoff (1968: 882) proposes *kr-, *ʔkr-, and *khr-. An examination of the evidence partially bears out Matisoff's suggestion (cf. Table 3), but there are exceptions in which Written Burmese has *ky*-, rather than the *kr which Matisoff predicts (cf. Table 4).[10] Matisoff acknowledges that 'dung', 'sew', 'break', and 'undress' do not conform to his stated correspondence (1968: 892); he appears not to note that this is also true of 'fall', 'horns' and 'throat'. Matisoff suggests that "one might set up a complex medial -ry- in these cases, or invoke a variation between -r- and -y-; but the last word has yet to be said here" (Matisoff 1968: 892). Had Matisoff availed himself of Old Burmese data the solution, to posit *kl-, *ʔkl-, and *khl- in Proto-Burmish, would have presented itself. In the six cases where an Old Burmese attestation

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5 Frequently an Old Burmese attestation of a word in Written Burmese is not (currently) available. In such cases, I reconstruct the Old Burmese equivalent of a Written Burmese form. By reversing well known sound changes (cf. Hill 2012: 67-68).

6 Tables 1 and 2 provide WBur. equivalents in place of Burling's SBur. Forms.

7 A few remarks may be made on specific entries in Table 1. First, although a Burmese cognate is missing for 'bridge', compare WTib. *zam* < *dzam 'bridge'. The change of *dz- to z- is regular (Schiefner's law, cf. Schiefner 1852: 364). Second, Burling notes that the final of WBur. *cañ* 'drum' is irregular. Third, although the correspondence of the initials for Burmese *sāḥ* 'son' is irregular, the Burmese cognate is not in doubt. The uncanny correspondence of Thangmi *ca* 'son' with Bur. *sāḥ* 'son' on the one hand and Thangmi *camăi* 'daughter' with Bur. *sa-mīḥ* 'daughter' on the other hand confirms this suggestion (cf. Turin 2012). Also compare Tibetan *tsha-bo* 'nephew, grandson' and *sras* 'son'. Fourth, the initial for *chūḥ* 'thorn-I' is irregular; one anticipates *c-. Sixth, Burling notes that Atsi *ătsho?* 'join, joints' has an irregular rime.

8 A few remarks may be made on specific entries in Table 2. First, the Maru cognate *ʔčikX* 'borrow-2', missing in Burling (1967), is supplied from Nishi (1999). Second, the initial of WBur. *kyī* 'granary' is irregular, one expects *kh*-. Third, for 'marrow' Burling (1967: 86) offers a Loloish comparison. Matisoff remarks on WBur. *khr*- in this word as an irregularity, but has no explanation to offer (1968: 891). Fourth, Burling notes that the final for Atsi *čhúi* 'sweet' is irregular. Fifth, I have been unable to identify a WBur. equivalent to Spoken Burmese *chîn* 'follow' provided by Burling (1967: 82).

9 The Atsi cognate *ʔkjú?* 'dry', missing in Burling (1967), is supplied from Lustig (2010).

10 Okell points out that the Arakanese pronunciation of WBur. -*khyoṅḥ* < OBur. *khlo*$_2$*ṅḥ* suggests *kr- rather than *kl- (1971: 72).

Burling	Matisoff	WBur.<OBur.	Atsi	Maru	meaning
(*ts)	(*ts)	---	tsâm	tsìn	bridge
		cāḥ	tsó	tsō	eat
		-cuṃ	tsûm	---	pair
		-cā	---	tsò	rice (cooked)
		cañ̃ñ	tsîŋ	tsàŋ	drum
		---	tsoʔ	tsòʔ	key
		cwan	tsûn	tsùm-ʔkyā	kite (bird)
		---	lîŋtsîŋ	làŋtsàŋ	neck
		cuiḥcaṃ	tsáu	---	rule
		pucwan	pàutsún	---	shrimp
		sāḥ	tsò	tsō	son
		chūḥ	tsù	tsàu	thorn-1
		cway	tsûi	tsòi	tooth
		---	tsân	tsìn	year
(*ʔts)	(*ʔts)	chū	ʔtsû	ʔtsàu	boil
		chup	ʔtsup	---	clench
		chut	ʔtsut	---	lungs
		chok	ʔtsuʔ	---	build
(*tsh)	(*tsh)	chū	tshú	tshàu	fat
		chak	ătshoʔ	tshák	join
		chuṃ	tshúm	tshàm	mortar
		chay	tshé	tshè	ten
					deer
		chat	tshíŋ	---	(sambhur)
		chuiḥ	tsháu	tshúk	dye (verb)
		chaṅ	---	tshà	elephant
		chaṁ	tshàm	tshìn	hair
		chac	ătshoʔ	tshák	joints
		chap	tshap	---	repay
		chāḥ	tshò	tshō	salt
		chuiʔ	---	tshúk	stop up

*Table 1: Burling's reconstruction of *ts,*ʔts, *tsh in Proto-Burmish*

is at hand the older spelling indicates a medial lateral (cf. Okell 1971, Nishi 1999: 1, 105). This pattern permits one to hypothesize that 'horns' also had a *kl- cluster in Old Burmese.

Nishi (1999: 100) suggests that, despite the Written Burmese spelling, *kr is the original value for 'horns'. Perhaps Nishi's reason for suggesting *kr for 'horn' is comparison with such forms as Old Tibetan *ru* 'horn' and Old Chinese 角 *C.kˁrok[11] 'horn, corner'.

[11] Open syllables in Burmese and Tibetan (or Tibetan -ḫ) do sometimes correspond to Old Chinese velar

Burling	Matisoff	WBur.<OBur.	Atsi	Maru	meaning
(*č)	(*ky)	kyeḥ<*kiyḥ	čì	čìtàu	parrot
		kywan<kyo$_1$n	čûn	---	slave
(*ʔč)	(*ʔky)	khiyḥ	ʔčí	ʔčikX	borrow-2
		kyī	ʔčí	ʔčì	granary
		khyat	ʔcit	---	love
(*ch)	(*khy)	---	čhô	čhí	deer (barking)
		khraṅ	---	---	marrow
		khyak	čhoʔ	čhóʔ	navel
		khyui	čhúi	čhùk	sweet
		---	---	čhè	this
		muiḥcyup	màučhut	---	dusk
		???	čháŋ	---	follow
		khyaṅḥ	čhàŋ	čhā-ʔkoʔ	ginger

*Table 2: Burling's reconstruction of *č,*ʔč, *čh in Proto-Burmish*

Burling	Matisoff	WBur.<OBur.	Atsi	Maru	meaning
(*ky)	(*kr)	kya<kla	---	píkyó	fall
		krok	kyuʔ	kyòk	fear
		krāḥ	kyó	kyō	hear
(*ʔky)	(*ʔkr)	khrok	ʔkjúʔ	ʔku	dry
		khraṅ	ʔkyáŋ	ʔkyà	mosquito
(*khy)	(*khr)	khriy	khyí	khyìt	foot-leg
		khraṁ	khyám	khìnɣìn	garden
		khyui	khyúi	khyùʔ	horns
		khrok	khyuʔʔlùm	khyók	six
		khyuiḥ<khluiwḥ	khyúi	khyúʔ	break
		khyeḥ<khliyḥ	khyì	khyít	dung-1
		khyup<khlup	khyup	khyáp	sew
		-khyoṅḥ<khlo$_2$ṅḥ	khyùŋ	khyōŋ	throat
		khywat<khlwat	khyut	khyátkhyó	undress

*Table 3: Burling's reconstruction of *ky, *ʔky, *khy in Proto-Burmish*

Presumably the explanation Nishi intends is that the Burmese spelling with *ky-* is late, postdating the change of *r-* to *y-* in Burmese, and that if 'horns' were attestable in early

finals OTib. *brgyaḥ* < *brjaḥ (Li's law), OBur. *ryā*, Chi. 百 *pˁrak 'hundred'; Tib. *ḥdaḥ* 'to pass', Chi. 渡 *dˁaks 'to ford'; Tib. *mdaḥ* < *mlaḥ (Bodman's law) 'arrow', OBur. *mlāḥ*, Chi. 射 *Cə.lak 'hit w/ bow and arrow'; OTib. *brlaḥ*, WBur. *prā*, Chi. 魄 *pʰˁrak 'soul'; Tib. *ñi-ma*, OBur. *niy*, Chi. 日 *C.nik 'sun'; Tib. *ḥbu* 'worm, insect', Bur. *puiwḥ* 'insect', Chi. 蝮 *phuk 'a kind of snake'; Tib. *ru* 'horn', *gru* 'corner', WBur. *khyui* 'horn', Chi. 角 *C.kˁrok 'horn, corner', Tib. *rǰe* < *rlʲe 'exchange', Bur. *lai* 'exchange', Chi. 易 *lek 'change; exchange', Tib. *tshi* 'sticky matter', Bur. *ceḥ* < OBur. *ciyḥ 'be sticky, adhesive', Chi. 漆 *tsʰik 'varnish'; Tib. *rṅa* 'drum', Chi. 鼓 *ŋˁak 'beat a drum'.

Burling	Matisoff	WBur.<OBur.	Atsi	Maru	meaning
(*ky)	(*kr)	kya<kla	---	píkyó	fall
(*khy)	(*khr)	khyeḥ<khliyḥ	khyì	khyít	dung-1
		khyup<khlup	khyup	khyáp	sew
		khyui	khyúi	khyùʔ	horns
		khyuiḥ<khluiwḥ	khyúi	khyúʔ	break
		-khyoṅḥ<khlo$_2$ṅḥ	khyùŋ	khyōŋ	throat
		khywat<khlwat	khyut	khyátkhyó	undress

*Table 4: Exceptions to Matisoff's (1968) reconstruction of *kr and *khr in Proto-Burmish*

Burling	Matisoff	WBur.<OBur.	Atsi	Maru	meaning
(*tl)	(*č)	cok	čuʔ	čòk	vulva
		a ce<*ciy	ǎčī	ǎčít	seed
(*ʔtsl)	(*ʔč)	cuiʔ	suʔʔčup	ʔčap	suckle-1
(*thl)	(*čh)	chuiḥ	čhú	čhúk	widow
		chā	čôkhyāŋ	---	sparrow
		chan	čhín	čhìn	rice (husked)
		chut	čheʔ	láčhát	tear
		cheḥ<chiyḥ	čhí	čhít	wash
		cheḥ<*chiyḥ	čhì	čhikX	medicine

*Table 5: Matisoff's (1968) reconstruction of *č and *čh in Proto-Burmish*

pBrmsh	OBur.	WBur.	SBur.	Atsi / Maru
*TS	C	C	S	TS
*Č				Č
*KY	KY	KY	Č	
*KL	KL			KY
*KR	KR	KR		

Table 6: Summary of developments from Proto-Burmish to spoken Burmese, Atsi and Maru

documents it would be found to be spelled with *kr. To me it seems more judicious to reconstruct *kl-, since the change of *kl-* to *ky-* occurred much earlier than the change of *kr-* to *ky-*.

In sum, although Burling saw himself as suggesting a merger of *ts- and *č- in Burmese, in fact he points to the well-known change in Burmese of *ky-* to č-. Atsi and Maru have likewise changed *ky- to č-, but whereas this change led to the merger of original *č- and *ky- in these two languages, such a merger has not occurred in Burmese. Thus, Burmese must have changed *c-* to s- before it changed *ky-* to č-; the change of *ky- to č- in Atsi and Maru is independent of the same change in Burmese, although perhaps contact from Burmese introduced the change to Atsi and Maru.

	WBur.<OBur.	meaning	Atsi	Lashi	Maru	Bola
(*ts)	cañ<**ciŋ	drum	ts-	ts-	ts-	t-
	-cā	cooked rice	---	---	ts-	t-
	cāḥ	eat	ts-	ts-	ts-	t-
	coṅʔ<*co$_2$ṅʔ	guard	ts-	ts-	ts-	---
	-cuṃ	pair	ts-	ts-	ts-	ts-
	cuiḥ<*cuiwḥ	rule(r)	ts-	**tsh-**	ts-	t-
(*ʔts)	chut	lungs	ʔts-	ʔts-	ʔts-	ʔts-
	chuiḥ<*chuiwḥ	cough	ʔts-	ʔts-	ʔts-	**ʔt-**
(*tsh)	chay	ten	tsh-	tsh-	tsh-	th-
	chāḥ	salt	tsh-	tsh-	tsh-	th-
	chaṁ-	hair	tsh-	tsh-	tsh-	tsh-
	chaṅ	elephant	---	tsh-	tsh-	tsh-
	chap	repay	tsh-	tsh-	tsh-	---
	chat	deer	tsh-	tsh-	tsh-	**čh-**
	chū	fat	tsh-	tsh-	tsh-	tsh-
	chuṃ	mortar	tsh-	tsh-	tsh-	---
	chuiḥ<*chuiwḥ	dye	tsh-	tsh-	tsh-	tsh-
(*c)	cīḥ	ride	č-	č-	č-	č-
	-ceʔ<-ciyʔ	pit, stone	č-	č-	č-	č-
	cok<*co$_2$k	vagina	č-	č-	č-	č-
(*ʔc)	**cwat<***co$_1$t	wet	----	ʔč-	ʔč-	ʔč-
	-cwap<*-co$_1$p	ring	ʔč-	ʔč-	**č-**	---
(*ch)	chan	rice	čh-	čh-	čh-	čh-
	cheḥ<chiyḥ	wash	čh-	čh-	---	čh-
	cheḥ<*chiyḥ	medicine	čh-	čh-	čh-	čh-
	chut	tear	čh-	čh-	čh-	čh-
	chuiḥ<*chuiwḥ	widow	čh--	čh-	čh--	čh-

*Table 7: The separate reflexes of *ts- and *č-*

	WBur.<OBur.	meaning	Bola
(a)	cañ	drum	taŋ
	-cā	cooked rice	ta
	cāḥ	eat	taV
	chay	ten	-thai
	chāḥ	salt	thaH
	chaṁ-	hair	tshɛ̃
	chaṅ	elephant	tshɔ̃
	chat	deer	**čhɛtV**
(u)	chut	lungs	ʔtsɔt
	chū	fat	tshu
	-cuṃ	pair	tsamH
(ui)	cuiḥ<*cuiwḥ	rule(r)	tauV
	chuiḥ<*chuiwḥ	cough	**ʔtsauH**
	chuiḥ<*chuiwḥ	dye	tshauH

*Table 8: Bola refexes of Burmish *ts arranged according to Burmese vowel*

Matisoff (1968: 889) reconstructs Proto-Burmish *č-, *ʔč-, *čh- for the correspondence of Written Burmese *c*- to Atsi and Maru č- (cf. Table 5).[12] Burling (1967: 46-47) reconstructs this correspondence as *tl. Table 6 summarizes the development in Burmese, Atsi, and Maru of the Proto-Burmish initials discussed here.

Nishi argues that *ts*- and *č*- may have remained distinct in Burmese into the historical period (1974, esp. 15-16, 1999: 57-58). This result is a corollary of his demonstration that Old Burmese distinguished the rimes -*yan* and -*yan* both from -*an* and -*at* and from -*añ* and -*ac*. The presence of the medial -y- in words with the rimes -*yan* and -*yat*, suggests that when such words begin with *c*- and *ch*- these letters should be interpreted as representing alveo-palatals rather than plain alveolar affricates. Nishi offers WBur. *chat* 'sambar', WBur. *chat* 'be brittle', and WBur. *chan* 'stretch out' as examples of alveolar affricates and WBur. *chat* ~ *chac* 'to hew (stone)', OBur. *cat* > WBur *cac* 'examine',

[12] I have added 'suckle-1' to Table 5. Burling included this word in the correspondence presented in in Table 2, marked as having an irregular initial. The word 'widow' I am unable to find in Burling (1967), so am unsure of Matisoff's source for it; Nishi (1999: 102) provides comparable forms. I have added 'medicine' to Table 5. Because Burling lacked a Burmese or Maru cognate he included 'medicine' in the correspondence presented in Table 2. The Maru cognate *čhikX* 'medicine', missing in Burling (1967), is supplied from Nishi (1999).

and OBur. *a-can* > WBur. *a-cañ* 'succession of' as examples of alveo-palatals. He later also mentions OBur. *cat* > WBur *cac* 'sift, sieve', *myak-canḥ* > *myak-cañḥ* 'eye-salve', and *canʔ* > *cañʔ* 'glaze, glazed' (1999: 41). Nishi's article leaves no room to doubt the need to distinguish the rimes *-yat* and *-yan* both from *-at* and *-an* and from *-yac* and *-yañ*, but it is less clear that this evidence necessarily suggests the preservation of a distinction between *č and *ts in Old Burmese. It is certainly imaginable that Proto-Burmish distinguishes *tsyat, *tsat, *čat and *čyat all as separate syllables. This scenario allows one to propose the reconstructions WBur. *chat* < *tsat 'sambar', WBur. *chat* < *tshat 'be brittle', WBur. *chan* < *tshan 'stretch out', WBur. *chat* ~ *chac* < *tsyat 'to hew (stone)', WBur *cac* < OBur. *cat* < *tsyat 'examine', WBur. *a-cañ* < OBur. *a-can* < *a-tsyan 'succession'. In contrast, in the word WBur. *chan* 'rice' comparative evidence confirms *č-, but we do not observe the change *-yan* > *-añ*; this word can thus be reconstructed *čhan.

Although Nishi approves of reconstructing a distinction between *č and *ts in Proto-Burmish on the basis of correspondences among the Burmish languages, he notes that "Achang and Xiandao reflexes complicate the correspondences of Burmish affricates" (1999: 70). These two languages share with Burmese the merger of glottalized initials with aspirate initials. As noted above, this shared innovation is what permits one to postulate the Burmic sub-branch (Nishi 1999: 70). Because these two languages are on the same sub-branch as Burmese, the complications evinced among their affricates are likely restricted to the historical phonology of this one branch. If so, they may be set aside for the purposes of the current investigation. The exclusion of Achang in particular is further warranted because Mann (1998) often disagrees with Nishi about the status of affricates in Achang (e.g. Mann *tshaŋ*^{3}, Nishi *tɕhaŋ*^{55} 'elephant')[13]. Mann (1998: 119) also distinguishes *č and *ts in Proto-Burmish, but offers no new examples or useful discussion (cf. Appendix 1).

Table 7 presents the correspondences among the Burmish cognates assembled by Nishi for words with initial *c-* and *ch-* in Written Burmese, omitting data from Achang and Xiandao; those forms which Nishi (1999) points out as irregular are set in bold face. The evidence in Table 7 clearly permits one to distinguish *ts and *č in Proto-Burmish.[14]

Two anomalies require comment. First, the only two examples of *ʔč give *c-* rather than *ch-* in Written Burmese. Rather than regarding these as exceptions to the general pattern, they may be viewed as a phonetically conditioned sub-pattern; two examples are

[13] Further examples include: Mann *tshiu*^{3}, Nishi *tɕho*^{55} 'fat'; Mann *tshɔt*^{53}, Nishi *-tɕhot*^{55} 'lungs'; Mann *tshi*^{3}, Nishi *tɕhe*^{55} 'ten'; Mann *tshat*^{53}, Nishi *tɕhet*^{55} 'deer'; Mann *ʔtsaʔu*^{5}, Nishi *tʂhau*^{31} 'cough'. For the word 'cough' Mann gives a glottalized vowel in Achang which according to Nishi does not happen (1999: 68). Furthermore, Nishi gives Achang *cɔ*^{31} 'eat', which is probably merely a typo for *tɕɔ*^{31}, but nonetheless creates a problem for the consideration of Achang data.

[14] The apparent asymmetries in the distribution of the two initials, e.g. that *ts does not occur before *-o$_1$-*, are more plausibly credited to accidental gaps than to phonetic motivation.

however insufficient to confidently draw this conclusion. Second, Bola reflexes of *ts vary between t- and ts-. A look at the distribution of these reflexes organized by the Burmese vowel (cf. Table 8) throws up some patterns, e.g. that t- never occurs before reflexes of *-u. I am however unable to identify a pattern that explains the distribution of t- and ts- before *-a and *-ui. Nishi identifies two forms as irregular, while this is clearly the case for *čhɛt*^{31} 'deer', his choice of marking *ʔtsau*^{35} 'cough' as irregular is rather arbitrary; the word *ʔtsau*^{35} 'cough' follows the same pattern as *tshau*^{35} 'dye'. If one must posit one of the examples before *-ui as anomalous, identifying *tau*^{31} 'rule(r)' as the irregular reflex would yield a more elegant correspondence. It is clear that the historical phonology of Bola requires further clarification; nonetheless Bola gives clear testimony for dividing between *ts- (with the reflexes t- and ts-), versus *č- (with invariably the reflex č-).

In conclusion, the passing decades have only strengthened the evidence for distinguishing *č, *ʔč, and *čh from *ts, *ʔts, and *tsh in Proto-Burmish, which Matisoff first proposed in 1968. Because today's exceptions to sound laws are tomorrow's sound laws, the most valuable contribution of a treatment of the merger of Proto-Burmish *ts and *č in Burmese is to draw new focus to data that mar this pattern. Four topics for future investigation are identifiable: 1) the complex affricate reflexes that Achang and Xiandao display, 2) the variation between ts- and t- as reflexes of Proto-Burmish *ts in Bola, 3) the philological evidence demonstrating the spelling of *khyui* 'horns' in Old Burmese, 4) numerous isolated anomalies in various lexemes (e.g. Lashi *tshou*^{35} 'ruler' instead of *tsou^{35}, Bola *čhɛt*^{31} 'deer' instead of *tshɛt^{31} or *thɛt^{31}, Maru *-čɔʔ*^{55} 'ring' instead of *-ʔčɔʔ*^{55}, Written Burmese *cwat* 'wet' and *cwap* 'ring' instead of *chwat and *chwap).

Appendix 1: *č and *ts in Proto-Burmish according to Mann (1998)

Mann distinguishes an alveolar and alveopalatal series of affricates in Proto-Burmish (1998: 119). He presents the correspondences in two tables relying on six examples for the aspirated affricates (1998: 76) and three for the unaspirated (1998: 77).

Mann	Burmese	Achang	Atsi	Lashi	Maru	Bola	Phun	meaning
(*tsh)	chaṁ	tsham^{3}	tsham^{53}	tshæm^{53}	tshe^{41}	tshi^{3}	shɛ^{55}	hair
	chaṅ	tshaŋ^{3}	---	tshaŋ^{2}	tsha^{53}	---	---	elephant
	chū	tshɨu^{3}	tshu^{43}	---	---	---	---	fat
(*čh)	khyaṅḥ	čhaŋ^{5}	čhaŋ^{31}	čhaŋ^{54}	čha^{3}	čhaŋ^{23}	ʃo^{31}	ginger
	cheḥ	čhei^{5}	čhi^{31}	čhe^{5}	čhit^{54}	čhə^{23}	ʃiʔ^{31}	medicine
	cheḥ	čhei^{5}	čhi^{53}	čhe^{43}	čhit^{5}	čhə^{23}	ʃe^{31}	wash
(*ts)	chi	dzɔ^{45}	dzɛ^{31}	dʒoŋ^{51}	---	tsai^{23}	---	earth, soil
	thuiṅ	dzọŋ^{3}	dzuŋ^{31}	dzoŋ^{2}	dzauŋ^{3}	tsāŋ^{3}	---	sit
(*č)	---	dʒɛt^{31}	dʒɪt^{32}	---	dʒit^{53}	---	shi^{31}	blind

*Table 9: Mann's evidence for reconstructing *ts and *č in Proto-Burmish*

There are several problems with this presentation. The cognates of *khyaṅḥ* 'ginger' are clearly to be assigned to *khy- rather than *čh-. Even if the Burmese word *thuiṅ* 'sit' is cognate to the other forms shown, it is not relevant to the question at hand. However, most investigators believe that no Burmese words with the rime -uiṅ are inherited (Luce 1985: I. 100, Pulleyblank 1963: 217, Nishi 1999: 19). The Burmese word *chi* 'earth' I am unable to confirm. As mentioned above, Mann's forms disagree with those given by Nishi. In sum, Mann offers no reliable data not already discussed by Burling or Matisoff.

Appendix 2: detailed reflexes of *č and *ts in Burmish languages

This appendix gives the full reflexes of the data given in Table 7. The data is taken from Nishi (1999), with the occasional form added from Mann (1998) or Lustig (2010); such cases are marked with a following (M) and (L) respectively. In using Lustig (2010) I follow his own description of Atsi phonology to convert his phonemic transcription into symbols of the International Phonetic Alphabet. For ease of presentation it is convenient to substitute tone symbols for the numerical tone values. Using the correspondences which Nishi establishes among the tones of Burmish languages (1999: 53), I make the following orthographic substitutions: Achang: 55 > Ø, 31 > H, 35 > X; Xiandao: 55 > Ø, 31 > H, 33 > X; Atsi: 51 >Ø, 21 > H, 55 > X, Lashi: 33 > Ø, 31 > V, 55 > H, 53 > X; Maru: 31 > Ø, 35 > H, 55 > X; Bola: 55 > Ø, 31 > V, 35 > H.

Burmese	meaning	Achang	Xiandao	Atsi	Lashi	Maru	Bola
cañ	drum	tɕeŋ	---	tsiŋ	tsəŋV	tsaŋ-	taŋ
-cā	cooked rice	tɕɔ	čɔ	---	---	tsɔ	ta
cāḥ	eat	cɔH	---	tsoH	tsɔ:	tsɔH	taV
coṅʔ	guard	tɕɔŋX	čoŋ[35]	tsuŋX	tsu:ŋH	tsauŋX	---
-cuṃ	pair	tɕɔmX	čumH	tsumX	tsɔmH	tsamX	tsamH
cuiḥ	rule(r)	tʂauH	tʂuH	tsauH	**tshou[35]**	tsukX	tauV
chut	lungs	-tɕhot	-chut	ʔtsutX	ʔtsɔtH	ʔtsatX	ʔtsɔt
chuiḥ < *chuiwḥ	cough	tʂhauH	tʂauH	ʔtsauH	ʔtsa:uH	ʔtsukX	ʔtsau
chay	ten	tɕhe	-tshi	tshe	-tshe	tshɛ	-thai
chāḥ	salt	tɕhɔH	čhɔH	tshoX	tshoH	tshɔH	tha[23] (M)
chaṃ-	hair	tsham[3]	---	tsham	tsham	tshɛ̃	tshɛ̃

		(M)					
chaṅ	elephant	tɕhaŋ	čhaŋ	---	tshaŋ	tshɛ̃	tshɔ̃
chap	repay	tɕhap	---	tshap	tsha:pH	tshɛʔX	---
chat	deer	tɕhet	thɛt	tshat	tshatH	tshɛtX	**čhɛtV**
chū	fat	tɕho	---	tshu	tshu:	tshau	tshu
chuṃ	mortar	tshɔm^{3} (M)	---	tshum^{31} (L)	tshæm^{43} (M)	tsham^{41} (M)	---
chuiḥ < *chuiwḥ	dye	tʂhauH	tʂhauH	tshauH	tsha:uH	tshukX	tshauH
cīḥ	ride	tsiH	tsiH	čiH	čy:	čuiH	čuiV
-ceʔ < -ciyʔ	pit, stone	-tsiʔH	-tsi^{3}H	-čiX	-čeiH	čikX	-čïH
cok	vagina	tɕuʔH-	čuʔ	čuʔ^{1} (L)	čùʔV	čauk^{31}	čauʔV
cwat	wet	---	čoʔ	-	ʔču:ʔH	ʔčukX	ʔčɔʔ
-chap < *-cop	ring	---	-tʂɔp	ʔčop	-ʔčɔʔH	**-čɔʔX**	---
chan	rice	tshen	tshɛn	čhin	čhɛn	čhin	čhɔn
chiyḥ	wash	čhei^{5} (M)	---	čhi^{53} (M)	čhe^{43} (M)	---	čhə^{23} (M)
cheḥ < *chiyḥ	medicine	čhei^{5} (M)	---	čhiH	čheiH	čhikX	čhïH
chut	tear	tsheʔ	tshiʔ	čheʔ	čhɛ:ʔH	čhatX	čhak
-chuiḥ- < *-chuiwḥ-	widow	---	---	čhuiH-	čhouH-	čhukX-	čhuH-

*Table 10: detailed reflexes of *č and *ts in Burmish languages*

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