

A Comparative Study of the Chinese, Tibetan, and Burmese Vowel Systems*

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I. INTRODUCTION

The Sino-Tibetan family comprises hundreds of languages and dialects. Among them, the most important languages having long histories in written form are Chinese, Tibetan, and Burmese. Chinese preserves literature of the first millenium B.C., and of the language in that time we already possess considerable reliable knowledge. For Tibetan there is an Inscription of A.D. 821-822, which was studied by Fang-kuei Li (1956). The earliest document for Burmese is the Myazedi inscription of A.D. 1112, studied by Nishida (1955, 1956). The purpose of this paper is to compare the vowel systems of these three literary languages and to reconstruct the vowels of their parent language.

The development of comparative Sino-Tibetan linguistics is closely connected with progress made in the field of Chinese historical linguistics. When Conrady published his *Eine Indochinesische Causativ-Denominativ-Bildung und ihr Zusammen-*

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hang mit den Tonaccenten in 1896, the reconstruction of Middle Chinese had not yet begun; consequently, he had to base his comparison on modern Chinese dialects. In 1916 Laufer listed 96 Chinese-Tibetan cognates in the Appendix to his article, "The Si-hia Language." In his comparison he marked most of the Chinese forms with asterisks; however, his reconstruction was made more on *ad hoc* basis than on any clearcut principle.

The first systematic reconstruction of Middle Chinese (called Ancient Chinese at first) was made by Karlgren in 1919 in his "Etudes Historiques." His work provided solid ground for comparative study, and his *Analytic Dictionary of Chinese and Sino-Japanese*, published in 1923, became an indispensable reference book for all students in the field. The road to an extensive comparative study was thus opened.

Simon's "Tibetisch-Chinesische Wortgleichungen: Ein Versuch" (1929) was the first attempt at a systematic comparative study. He gave 338 Chinese and Tibetan likely cognates, with Chinese represented by Middle Chinese forms as reconstructed by Karlgren, and compared them by their final consonants, initials, and vowels. However, as Karlgren (1931:30) pointed out in his review of Simon's work, "Every Chinese vowel seems to correspond to a whole row of different Tibetan vowels, and each of these Tibetan vowels in its turn corresponds to a long series of Chinese vowels." From such correspondences it would be difficult to reconstruct the vowels of the parent language.

However, failure in establishing sound correspondences was largely due to the circumstance that the historical study of Chinese and Tibetan had not yet been finished. Karlgren first published some research on Archaic Chinese (called Old Chinese in this paper) as early as 1923 in his *Analytic Dictionary*; and the research was later joined by Simon and Fang-kuei Li. But achievements in this field were not applied in comparative study until after 1940 when Karlgren published *Grammata Serica*. During this time there was very little progress in the study of Tibetan historical phonology, one of the few thoroughly modern linguistic approaches to the internal reconstruction of Tibetan being made by Li in 1933.

Grammata Serica replaced *Analytic Dictionary* and became the pivot in the comparative study. Most authors turned then to Archaic Chinese for comparison,

with the exception of R. Shafer, who remained with Ancient Chinese.

Karlgren's Archaic Chinese system later was partially revised by subsequent study. Tung (1945) recombined the two parts respectively, of the rhyme categories *yü* 魚 and *hou* 侯, which had been split by Karlgren, and reconstructed a final consonant *-g for all the members of these two classes. Tōdō (1957) reconstructed a final consonant *-r for the *ko* 歌 rhyme category. Archaic Chinese thus appeared to be a language without open syllables, as Simon argued long ago. But on the other hand Wang Li (1957) reconstructed a whole series of open syllables for the *yin-sheng* 陰聲 part of the *yü* 魚, *hou* 侯, *chih* 之, *chih* 支, *yu* 幽, and *hsiao* 宵 rhyme categories. Opinions were divided so far as the final consonants were concerned.

In 1971 Fang-kuei Li published his "Studies on Archaic Chinese Phonology." This article, written tersely in 61 pages, integrates new developments in this field during the previous decades and contains many new solutions of his own to various problems in this reconstruction. Chinese has been regarded as a language with a complicated vowel system. In comparative Sino-Tibetan research, this has been a great obstacle. Li, starting from his basic hypothesis of "the same rhyme category, the same vowel," revising the theory of Yakhontov (1963) and Pulleyblank (1962-63) concerning the -l- medial for words of the second division, and explaining the double rhymes in the second division with *ia, arrived at a reconstruction which is in accordance with his basic hypothesis. The vowel in the *chih* 脂, *chen* 真, *chia* 佳, and *keng* 耕 categories was reconstructed as *e by Karlgren. This reconstruction has been generally accepted since then and it seems that no one has ever wondered why there was *u and no corresponding *i. An Archaic Chinese rhyme category generally contains words of all divisions, but it happens that the four rhyme categories mentioned above lack words of the first division. Li changed *e into *i and solved all these problems in one stroke. At the same time, the reconstruction *i solves a puzzle in our comparative study.

It is on this reconstruction that I base my study. I have examined many proposed cognate words and selected those which seem certain to me, added

some of my own findings, and tried to fix the rules governing these cognate words. I do not mean to deny other kinds of correspondences, but I think a substantial number of examples should be required to establish them.

In the following examples, Chinese tones "level," "rising," and "departing" are designated by A, B, and C in order to facilitate comparison with the Burmese tone system.

II. THE VOWEL SYSTEMS OF OLD CHINESE, WRITTEN TIBETAN, AND WRITTEN BURMESE

According to Li (1971:24) there are four vowels: *i, *u, *ə, *a, and three vocalic clusters: *iə, *ia, *ua in Old Chinese.

Vowels	i	u	Vocalic clusters: iə, ia, ua
	ə		
	a		

In written Tibetan there are five vowels: i, u, e, o, a.

i	u
e	o
a	

The vowel system of Written Burmese needs some explanation before it can be applied in comparative study. For convenience of discussion, I cite the following list of finals given in Pulleyblank (1963:216):

	Level	Creaky	Heavy	Final Stop
(a)	ā	a	āḥ [a]	
	aŋ	aŋ.	aṅḥ [iŋ]	ak [ɛʔ]
	ań	ań.	ańḥ [iŋ, i, ɛ]	ac [iʔ]
	an	an.	anḥ [aŋ]	at [aʔ]
	am	am.	amḥ [aŋ]	ap [aʔ]
(i)	ī	i	īḥ [i]	
	in	in.	inḥ [eiŋ]	it [eiʔ]
	im	im.	imḥ [eiŋ]	ip [eiʔ]

(u)	ū	u	ūh	[u]	
	un	un.	unh	[ouŋ]	ut [ouʔ]
	um	um.	umh	[ouŋ]	up [ouʔ]
(e)	e	e.	eh	[e]	
(ai)	ay	ai.	ai	[ɛ]	
(o)	o	o.	o	[ɔ]	
	oŋ	oŋ.	oŋh	[auŋ]	ok [auʔ]
(ui)	ui	ui.	uih	[o]	
	uiŋ	uiŋ.	uiŋh	[aiŋ]	uik [aiʔ]

"Level," "Creaky," and "Heavy" represent three different tones. In the present study they will be designated as A, B, and C, respectively. As the vowel length is correlated with the tones and has no phonemic significance, it will be omitted in my transcription. The above list shows that Written Burmese, like Written Tibetan, has five vowels. Irregularity in the distribution, however, suggests that this is not original. As we can see from the table, only a, i, and u can combine with final consonants -m/-p and -n/-t, whereas e and o cannot. The vowel e always occurs alone, whereas o occurs only in front of velar finals -ng/-k. Shafer (1941:22) posits the following shifts:

*-ing > -əing > -ań

*-ik > -əik > -ać

Parallel to this are the shifts:

*-ung > -əung > -əung (transcribed as -ong)

*-uk > -əuk > -auk (transcribed as ok) > -aũʔ

By means of this postulation, the parallelism in distribution of a, i, and u is restored.

-ang(k)	*-ing(k) > ań(ć)	*-ung(k) > -ong(k)
-an(t)	-in(t)	-un(t)
-am(p)	-im(p)	-um(p)

However, the counterpart of o[o] is not e[e], but ai[ɛ], as can be seen from their sound values given in square brackets. From the way they are written in the Burmese writing system and from their modern pronunciation, it can be easily inferred that *au and *ai have undergone the following shifts:

*-au > [ɔ] (transcribed as -o)

*-ai > [ɛ] (transcribed as -ai)

It seems that what we usually transcribe as o has in fact two sources: *-u- (in -ung and -uk) and *-au. The former must have already broken into -au- and coalesced with original *-au at the time the Burmese writing system came into being. The later divergent development is conditioned by the presence or absence of the final consonants -ng and -k.

**au > *-au > [ɔ] (transcribed as -o)

**ung > *-aung > [aung] (transcribed as -ong)

**uk > *-auk > [au?] (transcribed as -ok)

The counterpart of e[e] is ui[o], as their modern pronunciation indicates. In the Myazedi inscription, e is written iy, while ui is written with the sign for u below and the sign for i above the consonant. Blagden (1914) transcribed the sound as ui, and since then this transcription has been generally followed. As for its sound value, opinion differs. Wolfenden (1929:197) supposes it was pronounced like the Dutch colloquial "ui" in huis, buis. Nishida (1955:21-22) takes it to be [u]; and since there are in the inscription words of other origin written -uy (which is later written -we in Written Burmese), he writes it ö in order to avoid confusion. The same sound is transcribed as ɔ in Miller (1957: 42), and Pulleyblank interprets it as /iw/ in the article quoted above. In a comparative study, Benedict (1972) posits -ui < *-uw in the main text, but in a new footnote (No. 188, p. 57) declares *-əw to be preferable to *-uw.

In my opinion, a new proposal must take the following facts into consideration: (1) It corresponds to OC *-ug and WT -u; (2) it is written with the signs for u and i in the Myazedi orthography; and (3) the later development

shows parallelism with $-iy > -e$. In order to account for all these, I posit the following sound shifts:

ST $*-ug > \text{Myazedi } -u\bar{i} > *-uw > -o$

ST $*-id > \text{Myazedi } -iy > -iy > -e$

At the time of the Myazedi inscription, the second element of ui (our $u\bar{i}$) must have sound close to i , for it was written with that sign. A sound which goes back to $*g$ and is similar to i might have retained the features of both. It seems therefore reasonable to assume that the sound was back (like g), high and unrounded (like i). (I write $[i]$, which is equal to $[u]$ of the International Phonetic Alphabet.) The shift $-u\bar{i} > -uw$ can be easily explained by assimilation.

As far as $-uing$ and $-uik$ are concerned, Pulleyblank quotes Shorto to the effect that words with these finals may not be native Burmese. If we exclude them from the list, we get the following system:

1. Closed Syllables

(a)	ang	ak
	an	at
	am	ap
(i)	ing > ań	ik > ać
	in	it
	im	ip
(u)	ung > aung (=ong)	uk > au? (=ok)
	un	ut
	um	up

2. Open Syllables

(a)	a	ay (=ai)	aw (=o)
(i)	i	iy (> e)	—
(u)	u	uy (> we)	$u\bar{i} > uw (=ui)$

According to this analysis, the vowel system of Written Burmese goes back to an earlier three-vowel system.

i u
a

III. VOWEL CORRESPONDENCES AND THEIR RECONSTRUCTION

A ST (Sino-Tibetan) *a OC (Old Chinese) a :
 WT (Written Tibetan) a : WB (Written Burmese) a

Involved in this kind of correspondence are Chinese words in the *yü* 魚, *yang* 陽, *ko* 歌, *chi* 祭, *yuan* 元, *yeh* 葉, and *t'an* 談 categories. Difficulties arise when one bases such a comparison on the reconstruction of Karlgren, who splits the *yü* 魚 category in two parts, one having open syllables with final -o and another having closed syllables with final -ag. The diacritical marks employed to distinguish words of different divisions complicate the matter further and lead to wrong conclusions. The use of Middle Chinese in comparative study and the choice of incorrect cognates also increases confusion. As a matter of fact, the correspondence of ST *a is the clearest one. The problem of medials and final consonants exceeds the scope of the present study and will not be discussed here.

(The number in parentheses refers to the phonetic series in *Grammata Serica Recensa*)

- | | | | |
|-------|-------------|--------|------------------------|
| 1. OC | ngag | B 五 | five (58, a) |
| WT | Inga | | five |
| WB | nga | C | five |
| 2. OC | ngag | A 吾 | we, my, our (58, f) |
| WT | nga | | I, we |
| WB | nga | A | I |
| 3. OC | ngjag | B, C 語 | speak (58, t) |
| WT | ngag, dngag | | speech, talk, word |
| 4. OC | ngjag | A 魚 | fish (79, a) |
| WT | nya | | fish |
| WB | nga | C | fish |
| 5. OC | khag | B 苦 | bitter, suffer (49, u) |
| WT | kha | | bitter |
| WB | kha | C | bitter |

6. OC	khag C 苦	difficulty, hardship (KYSH 93)
WT	khag-po	difficult, hard
	dka-ba	difficult, hardship
WB	khak	difficult, hard
7. OC	pljag A 膚	skin (69, g)
WT	pags, lpags	skin, hide
8. OC	mjag A 無	not, no (103, a)
WT	ma	not
WB	ma B	not
9. OC	tsjag A, tshjiag B 且	on the point of, will soon (46, a)
WT	cha	to be about, to be on the point
WB	ca B	to begin, make a beginning or commencement
10. OC	dag C 渡	to ford (801, b)
WT	'da	to pass over
11. OC	njag A 如	if (94, g)
	njak 若	if (777, a)
WT	na	if, in case, supposing
12. OC	njag B 汝	you (94, j)
WB	nang A, B	you, your
13. OC	kjag B 舉	lift, raise (75, a)
WT	'khyog pf. khyag	to lift, lift up
14. OC	bjag B 父	father (102, a)
WT	pha	father
WB	a-pha B	father
15. OC	mjag A 巫	magician (105, a)
WT	'ba	magician, sorcerer, conjurer
16. OC	tag B 睹, 覩	see (45, c', d')
WT	lta	to look, to view
17. OC	mrang B 馬	horse (40, a)
WT	rmang	horse, steed (see Coblin 1974)
WB	mrang C	horse, pony

- | | | |
|--------|-----------------------------|--|
| 18. OC | prak < *priak 百 | hundred (781, a) |
| WT | brgya < *brya | hundred (see Li 1959 p. 59) |
| WB | a-ra A < a-rya | hundred |
| 19. OC | ·ak 惡 | bad, evil (805, h) |
| WT | ʔag | bad |
| 20. OC | khrjak 赤 | red (793, a) |
| WT | khrag | blood |
| WB | hrak | to be ashamed, to be shy |
| 21. OC | phjang B 紡 | spin (740, r) |
| WT | phang | spindle |
| WB | wang B | to spin |
| 22. OC | pjang C 放 | loosen, let go, banish (740, i) |
| WT | spong, spang,
pf. spangs | to give up, to renounce |
| 23. OC | dzang A 藏 | conceal, to store (727, g') |
| WT | gsang | to conceal, secret, hidden |
| 24. OC | tsang A 臧 | good (772, f') |
| WT | bzang | good, fair, beautiful |
| 25. OC | trjang A 張 | give tension to a bow (721, h) |
| WT | thang | tense, tight |
| WB | tang C | to tighten, become tense or taut |
| 26. OC | drjag A, C 除 | eliminate, remove, to clear out (82, m) |
| WT | 'dag | to clear, to wash away, to wipe off |
| 27. OC | kang A 岡 | a hill, ridge (697, a) |
| WT | sgang | a projecting hill or spur |
| WB | khang-A ruw C | a strip of high ground, a spur of a
range of mountains or hills |
| 28. OC | njang C 讓 | cede, yield, give way (730, i) |
| WT | gnang | to give, grant, concede |
| WB | hnang C | to give, deliver over |
| 29. OC | njang A 灑 | heavy with dew (730, f) |

	WT	<i>na-bun</i>	fog, thick mist
		<i>khug-rna, khug-sna</i>	fog, mist, haze
	WB	<i>hnang</i> C	dew, fog, mist
30.	OC	<i>nang</i> B 曩	in past time, formerly (730, k)
	WT	<i>gna-bo</i>	ancient
31.	OC	<i>njang</i> A 攘, 穰	expel, sacrifice to expel evil influences (730, e, g)
	WB	<i>hnang</i> A	to drive, to drive away
32.	OC	<i>krang</i> B 梗	strong (745, e)
		<i>ngrang</i> C 鞅, 硬	hard, stiff, firm
	WT	<i>mkhrang, khrang</i>	hard, solid, firm
	WB	<i>rang</i> B	mature, firm
33.	OC	<i>gljang</i> A 涼	cold (755, l)
	WT	<i>grang</i>	cold, cool
34.	OC	<i>ljang</i> A, C 量	to measure (737, a)
	WT	<i>'grang</i>	to number, to count
		<i>grangs</i>	number
	WB	<i>khrang</i> A	to measure with a measure of capacity
35.	OC	<i>priat</i> 八	eight (281, a)
	WT	<i>brgyad</i> < *bryad	eight (see Li 1959 p. 59)
36.	OC	<i>tar</i> B, C 瘡	disease, suffering (147, e) wearied, disease arising from overwork
	WT	<i>ldar</i>	to be weary, tired
37.	OC	<i>ljar</i> A 籬	hedge (23, g)
	WT	<i>ra</i>	fence, enclosure, wall
38.	OC	<i>nga</i> A 鵞	goose (2, p)
		<i>ngran</i> C 雁	wild-goose (186, a)
	WT	<i>ngang</i>	goose
	WB	<i>ngan</i> C	goose
39.	OC	<i>gar</i> A 河	river (1, g)
	WT	<i>rgal</i>	a ford, to ford (a river)
40.	OC	<i>gar</i> A, B 荷	carry (1, o)

	WT	sgal	load of a beast of burden
		'gel, pf. bkal fut. dgal	to load, to lay on a burden
		khal	burden, load
	WB	ka B	to harness, attach a daught animal to a carriage
41.	OC	tjan C 顫	shivering, shaking, trembling (Analytic Dictionary p. 279)
	WT	'dar	to tremble, shudder, shiver
		sdar	trembling
42.	OC	nan A, C 難	difficulty, calamity (152, d)
	WT	mnar	to suffer, be tormented, torture
43.	OC	sjan A 鮮	fresh fish, fresh meat (209, a)
	WT	gsar	new, fresh
	WB	sa B	to make anew, do afresh
44.	OC	kan A 竿	bamboo pole, rod
	WT	mkhar	staff, stick
		'khar	staff
45.	OC	tshan C 燦	bright, splendid (154, b)
	WT	mtshar	bright, shining, of metals, fine, beautiful
46.	OC	djan A 纏	bind, wind (204, c)
	WT	star	to tie fast, to fasten to
	WB	ta A	to cling to
47.	OC	tshan A 餐	eat, food, meal (154, c)
	WT	'tshal	to eat
		'tshal-ma	breakfast
48.	OC	trjan R 展	roll over, unfold, develop (201, a)
	WT	rdal	to spread, to extend
49.	OC	kan A 干	shield, violate (139, a)
		gan C 扞, 捍	to ward off, protect, guard (139, q, i')
	WT	'gal	violate, to counteract
	WB	ka A	a shield of any kind, to make a barrier against, ward off, debar

50. OC	han	A	鼾	to snore
WT	hal			to pant, to snort
51. OC	kan	A	乾	dry (140, c)
	gan	B	旱	drought, dry (139, s)
WB	khan	C		to be dried up, exhausted, as a liquid
52. OC	gjan	C	健	strong (249, g)
WB	kyan	C		to be well, healthy
53. OC	pran	A	般	turn round (182, a) (<i>KYSH</i> 381)
WB	pran	A	< plan	to return, to repeat
54. OC	hrjab	C	< hrjaps 世	generation, epoch (339, a)
	rap		葉	generation, epoch (633, d)
WT	rabs			generation
55. OC	kab	C	< kaps 蓋	to cover, conceal, a cover (642, q)
	gap		蓋	to thatch, to cover (642, q)
WT	'gebs,	pf. bkab, ft. dgab		to cover, to put on a cover
56. OC	krap		甲	shell (629, a)
WT	khra		ab	shield, scales
57. OC	tsjap		接	connect (635, e)
WB	cap			to join, unite, connect
58. OC	tam	A	擔	carry on the shoulder (619, k, h)
WB	tam	C		to bear or carry on the shoulder
59. OC	dam	A	談	speak (617, l)
WT	gtam			talk, discourse, speech
60. OC	phjam	C	泛, 汎	to float (641, b; 625, f)
	phjam	C	汜	overflow, inundate (626, c)
	bjam	A	汜	disperse, float about (626, c)
WT	'byam			to flow over, to be diffused
61. OC	grjam	A	鹽	salt (609, n)
WT	rgyam-tshwa			a kind of salt-like crystal
	lgyam-tshwa			a kind of rock-salt

B ST *i

As mentioned above, Li (1971) reconstructs *i for the words in the *chia* 佳, *keng* 耕, *chih* 脂, and *chen* 眞 categories. The vowel of these words corresponds to Tibetan i. Since there are no -im and -ip syllable types in Old Chinese, it seems reasonable to assume that ST *-im and *-ip have shifted to OC *-əm and *-əp and coalesced with the original ST *-əm and *-əp, which are reflected in Chinese words in the *ch'in* 侵 and *ch'i* 緝 categories. In Written Burmese, ST *-ing and *-in have shifted to ań, while ST *-ik and *-it have shifted to ać. In this analysis of Written Burmese, we have seen syllables like -in and -it. However, it turns out that words with these finals do not play a part in the comparison. It seems that we are dealing here with a renovation.

This irregularity in the correspondences of final consonants seems to have been caused by dialectal shifts in Chinese (*-ing > -in, *-ik > -it) on one hand, and by the morphophonemic alternation in Sino-Tibetan languages on the other.

- | | | |
|--------|-------------------|--|
| 62. OC | tik 滴 | a drop, to drop (written as 澍 in the <i>SW</i>) |
| WT | thigs | a drop |
| | 'thig | to drop, to fall in drops |
| | gtig(s) | to fall in drops, to drop |
| | btig | to drop, to let fall in drops |
| 63. OC | mjing A 名 | name, fame (826, a) |
| WT | ming < *mying | name |
| WB | mań A < *ming | to be named, have a name |
| | hmań B < *hming | to name, give a name |
| | a-mań A < *a-ming | a name |
| 64. OC | ljing B 領 | neck (823, f) |
| WT | 'jing < *'lying | neck, to turn or move round |
| WB | lań A < *ling | neck, to turn around |
| 65. OC | tsring A 爭 | strife, quarrel (811, a) |
| WT | 'dzing | to quarrel, contend, fight |
| WB | cać < *tsik | war, battle |
| 66. OC | jit 一 | one (394, a) |

	WB	ʔač < *ʔik	a unit, one
67.	OC	srjit 虱	louse (506, a)
	WT	shig < *syig	louse
68.	OC	njid C 二	two (564, a)
	WT	gnyis	two
	WB	hnač < *hnit	two
69.	OC	sjin A 薪	firewood (382, k)
	WT	shing < *syig	tree, wood
	WB	sač < *sik	wood, timber
70.	OC	sjin A 新	new, renew (382, k)
	WB	sač < *sik	new
71.	OC	nin A < *ning 年	year (364, a)
	WT	na-ning, kha-ning	last year
	WB	a-hnač < *hnik	a year
72.	OC	njin A < *njing 仁	kind, good (388, f). cf. 佞 *ning
	WT	snying	the heart, the mind
	WB	hnač < *hnik	heart
73.	OC	rin B 引	draw the bow, pull, stretch, prolong (371, a)
	WT	ring	long, high, tall
		sring	to extend, stretch, prolong
	WB	hrañ A < *hring	to be long
74.	OC	ljit 慄	fear (403, d)
	WT	'jigs < *'lyigs	to be afraid of a thing, fear, dread
75.	OC	tsit < *tsik 節	knots or joints of bamboo (399, e) ¹
		sjit 𦵏, 膝	knee (401, c)
		tshit 切	cut (400, f)
	WT	tshigs	joint, knee, knot
	WB	chač < *tshik	to cut in parts
		a-chač < *a-tshik	a joint

1. This character contains the phonetic 卽 tsjək (923, a)

76. OC	kit 結	tie, knot
WT	'khyig	to bind
WB	khyañ A < *khing	to tie, bind, fasten by tying
77. OC	njit 日	sun, day (404, a)
WT	nyi-ma	the sun, day
WB	ne A < *niy	the sun
	ne C < *niy	a day
78. OC	tshjit 漆, 漆	vanish (401. a, b)
	tshjid C 髹	to varnish, to lacquer
WT	tshi	tough, viscous, sticky matter
WB	che C < *tshiy	paint, pigment
	ce C < *tsiy	to be sticky, adhesive
79. OC	tid B 底	bottom (590, c)
	tid A 低	to lower (590, e), low
WT	mthil	bottom, lowest part
WB	mre A < mliy ²	earth, ground, soil (For the semantic connection, cf. English bottom and German Boden.)
80. OC	hwrjid B 水	water (576, a), The character is phonetic in 寢 gwjid C
WT	rtsi	all fluids of a somewhat greater consistency
WB	re A < *riy	water (For the semantic connection, cf. WT chab < *thyab water and OC tjəp 汁 juice, sap (686, f). For the phonetic correspondence between WT and WB, cf. WT rtsi, to count and WB re < *riy, to count, enumerate)
81. OC	sjid B 死	die, death (558, a)
WT	'chi < */syi	to die

2. See Yoshio Nishi (1977) p. 42.

	WB	se A < *siy	to die
82.	OC	ɕjid C 四	four (518, a)
	WT	bzhi < *blyi	four
	WB	le C < *liy	four
83.	OC	tshjit 七	seven (400, a)
	WB	khu B hnač < *khu-hnit	seven
84.	OC	njid B 爾	you (359, a)
	WT	nyid	self, same, thou, you
85.	OC	pjid C 界	give (521, a)
	WT	sbyin, pf. byin	to give, to bestow
	WB	pe C < *piy	to give, to present for acceptance
86.	OC	tjid C 至	arrive, come to (413, a)
	WT	mchi < *mtshyi	to come, to go, to appear
	WB	ce B < *tsiy	to come, arrive
87.	OC	sid C 細	small, minute (1241, l)
	WT	se C < *siy	small, fine, slender
88.	OC	kjit 吉	luck, auspicious, good (393, a)
	WT	skyid	to be happy, happiness
89.	OC	dzjin C 盡	exhaust entirely (381, a)
	WT	zin	to be consumed (zin-pa med-pa, endless. cf. Ch. 無盡)
90.	OC	kjəp 急	hasty (681, g)
	WT	grim	to haste, to hurry
91.	OC	tshjəm B 寢	lie down to sleep (661, f)
	WT	gzim	to fall asleep, to sleep
92.	OC	tsjəm C 浸	to soak, overflow (661, m)
	WT	sib	to soak in
	WB	cim A	to steep, soak in liquor

C ST *u

In Old Chinese there are no syllables of the type *-un(t) and *-um(p).

However, the correspondence seems to show that ST *-un(t) and *-um(p) shift to *-ən(t) and *-əm(p) and coalesce with the original *-ən(t) (the *wen* 文 and *wei* 微 categories) and *-əm(p) (the *ch'in* 侵 and *ch'i* 緝 categories). Examples Nos. 121-125.

Examples Nos. 114-119 indicate clearly the sound shift ST *-ul > OC *-ən. In examples Nos. 116 and 117 we have OC *-jiən instead of simply *-jən. This distinction is made to account for the divergent development from Old Chinese to Middle Chinese on one hand, and the different reflexes of labials and labio-dentals in Mandarin on the other (see Li 1971: 37-38). For example:

*bjən > bjuən > fen 墳 tumulus

*bjien > bjən > p'in 貧 poor

Comparative evidence seems to indicate that this distinction in Old Chinese results in the loss of preinitial d-, and that the phenomenon is essentially a kind of compensatory lengthening. For example:

ST *dbjul	—	→	OC *dbjən > bjiən 貧 poor
		→	WT dbul
ST *dngjul	—	→	OC *dngjən > ngjiən 銀 silver
		→	WT dngul
		→	Myazedi nguy > WB ngwe
cf. ST *pjul	—	→	OC *pjən > pjuən > fen 分 distribute
		→	WT phul pf. imp. of 'bul to give

- | | | | | |
|--------|-------|---|---------------|-------------------------------------|
| 93. OC | gug | C | 候 | attend, wait upon (113, e) |
| | WT | | sgug | to wait, to await |
| 94. OC | khug | B | 叩 | strike, attack (110, d) |
| | | C | 叩, 扣 | strike (110, d, e) |
| | WB | | khauk < *khuk | to khock, rap |
| 95. OC | dug | C | 逗 | to remain, to stay |
| | WT | | 'dug | to remain, to stay, to live, to sit |
| 96. OC | trjug | C | 晝 | time of daylight, day (1075, a) |

	WT	gdugs	mid-day, noon
97.	OC	mjug C 霧	fog, mist (1109, t)
	WT	rmugs	a dense fog
		rmu	fog
		rmus	foggy
	WB	mru A khuw C	fog, mist, haze
98.	OC	khjug A 軀	body, person (122, g)
	WT	sku	body
	WB	kuwy A	an animal body
99.	OC	njug B 乳	nipple, milk (135, a)
	WT	nu-ma	breast, female breast, bosom
	WB	nuw B	the breast of a female, milk
100.	OC	khug C 寇	to rob, robber (111, a)
	WT	rku	to steal, to rob
	WB	khuw C	to steal
101.	OC	tug C 嚼, 味	beak (1224, n; 128 u)
		trjug A, C 味	beak (128, u; 1224 n) 嚼
	WT	mchu < *mthyu	lip, beak or bill of birds
102.	OC	tjug B 料	ladle (116, b)
		tjug C 注	to conduct water (129, c)
	WT	'chu < *'thyu	to ladle or scoop, to irrigate, to water
103.	OC	kuk 穀	grain, good (1226, i)
	WB	kauk < *kuk	the rice plant, rice
		kaung < *kung C	to be good
104.	OC	tjuk 燭	torch (1224, e)
	WT	dugs	to light, to kindle
	WB	tauk < *tuk	to blaze, flame, to shine
105.	OC	thjuk 觸	to butt, knock against (1224, g)
			to touch
	WT	thug	to touch, to hit or strike against
		gtug	to touch

106. OC khjuk 曲 bend, crooked (1213, a)
 WT 'gug(s) to bend, to make crooked
 kug crooked, a hook
 WB kauk < *kuk to be crooked, not straight
107. OC suk 嗽 suck, inhale (1222, o)
 WB sauk < *suk to drink, to smoke
108. OC khung B 孔 empty (1174, a)
 khung A 空 hollow, empty, hole (1172, h)
 WT khung hole, pit, hollow, cavity
 WB khaung C < *khung to be hollow
109. OC thung C 痛 to be pained (1185, q)
 WT gdung(s) to feel pain, to be pained
110. OC bung A 蜂 bee, wasp (KYSH p. 495)
 phjung A 蠶 bee, wasp (1197, s 蜂, t 蠶)
 WT bung a humming and stinging insect, bee
111. OC ljung A 龍 dragon (1193, a), phonetic in 龐 brung
 WT 'brug dragon, thunder
112. OC tuan B < *tun < short (169, a). The character contains
 **tung 短 the phonetic 豆 dug
 WT thung short
 WB taung C < *tung short
 tuw A < *tug short
113. OC tsjət 卒 finish, die (490, a)
 WT sdud to close, conclude, finish
114. OC kən B 頤 neck
 WT 'gul, mgul neck, throat
 mgur neck, throat
115. OC pjən A 分 divide, separate, distribute (471, a)
 WT 'bul to give
 'phul to give
116. OC ngjən A < *dngjən 銀 silver (416, k)

	WT	dngul < *dngjul	silver, money
	WB	ngwe A < nguy	silver
117.	OC	bjæn A < *dbjæn 貧	poor (471, o)
	WT	dbul < *dbjul	poor, poverty
118.	OC	dæn C 鈍	dull (427, i)
	WT	rtul	blunt, dull
119.	OC	djæn C 順	obey, submissive (462, c)
		sdjæn A 馴	docile (462, f), tame
	WT	'dul	to tame, to subdue
		dul	soft, tame, gentle
		'jun < *'djun	to subdue, make tame
		'chun < *'thjun	to be tamed, subdued
120.	OC	pjød A 飛	to fly (580, a)
		pjæn A 翫	to fly, soar (471, e)
		pjæn C 奮	spread the wings, fly up. (473, a)
	WT	'phur	to fly
121.	OC	hmæn A 昏	dusk, evening, darkness (457, k)
	WT	mun	obscurity, darkness
		dmun	darkened, obscured
		rmun	dull, heavy, stupid
	WB	hmun A	to be dim, to be dusky
122.	OC	tsæn A 尊	to honour, honorable (430, a)
	WT	btsun	respectable, noble, honourable
123.	OC	njæp 入	enter (695, a) to sink, to set in the expression 日入而息
	WT	nub	to sink, to set, west
	WB	ngup	to dive, to go beneath
124.	OC	səm A 三	three (648, a)
	WT	gsum	three
	WB	sum C	three
125.	OC	khəm A 殲	to kill (651, v)

WT 'gum to kill, to put to death

D ST *ə OC *ə : WT a : WB a

The OC vowel *ə in Chinese words of the *chih* 之, *cheng* 蒸, *wei* 微, *wen* 文, *ch'i* 緝, and *ch'in* 侵 categories, which correspond to a in Written Tibetan and Written Burmese, go back to ST *ə. Following are examples of this correspondence:

- | | | |
|---------|-----------------------------|--|
| 126. OC | njəg B 耳 | ear (981, a) |
| WT | rna | the ear |
| WB | na C | the ear |
| 127. OC | tsjəg B 子 | child, treat as a child (964, a) |
| | dzjəg C 字 | to breed, to love, fondle, written character (964, n) |
| | dzjəg A 慈 | affectionate, loving (966, j) |
| | dzjəg A, C 孳 | copulate, breed (966, k) |
| WT | tsha < *tsa | grandchild |
| | btsa | to bear, to bring forth |
| | mdza | to love, as friends or kinsmen do |
| WB | ca A < *dza | to have tender regard, to feel for another, as for one's self, a letter |
| 128. OC | dzrjəg C 事 | serve, affair (971, a) |
| WT | rdzas < *dzras | thing, matter, object |
| WB | a-ra A < *dzra | a thing, subject, matter |
| | ca A < *rdza | a thing |
| 129. OC | məg B 母 | mother (947, a) |
| WT | ma | mother |
| WB | ma B | sister. Compare the similar semantic development in Albania (Jespersen p. 118) |
| 130. OC | ngəg C 礙 (礙) | obstruct (956, g) |
| WT | 'gegs-pa pf. bkag fut. dgag | to hinder, prohibit, stop, to forbid |

131. OC mək 墨 ink, black (904, c)
 hmək 黑 black (904, a)
 WT smag dark, darkness
 WB mang A ink
 hmang A ink
132. OC dzək 賊 bandit (907, a)
 WT jag robbing, robbery
133. OC tjək 織 weave (verb) (920, f)
 tjæg C < *tjəks 織 stuff made of coloured silk (noun) (920, f)
 WT 'thag < 'tag to weave
 thags < *tags texture, web
 WB rak to weave, whether cloth, a mat, or a basket
134. OC sjək 息 breathe, sigh, rest (925, a)
 WB a-sak breath, life
135. OC rəng A 蠅 a fly (892, a)
 WT sbrang fly and similar insects without a sting
 WB yang A the common house fly
136. OC tsəng A 憎 hate (894; d)
 WT sdang to hate
137. OC hnər B 妥 tranquil, at ease (354, a)
 snjəd A 綏 give repose to, calm (354, g)
 WT rnal rest, tranquillity of mind
 WB na C to cease from motion or action through desire for rest
138. OC pjəd B 誹 slander (579, g)
 pjəd A 非 not, wrong (579, a)
 WT phyar-kha blame, affront, insult
 'phya-ba to blame, censure, chide
139. OC bjən A 焚 to burn, destroy (474, a)

	WT	'bar	to burn, to catch fire
		sbar	to light, kindle, inflame
	WB	pa B	to shine
140.	OC	sən A 孫	grand-son, grand-daughter (434, a)
	WT	mtshan ³ < *m-san	nephew
141.	OC	mjən A 聞	hear, to be heard (441, f)
	WT	mnyan-pa, nyan-pa	to hear, to listen
142.	OC	gljəp 立	to stand (694, a)
	WT	'khrab	to strike, to stam, tread heavily
		skrab	to beat the ground with one's feet, to stamp, tread
	WB	rap < ryap	to stand; to stop, halt, remain
143.	OC	khljəp 泣	weep (694, h)
	WT	khrab-khrab	a weeper, one that sheds tears on every occasion
144.	OC	təp 答	respond to, answer (676, a)
		təb C < təps 對	respond, reply (511, a)
	WT	'debs pf. btab, fut. gtab	to answer, to explain
145.	OC	sdjəp 習	to practise, exercise (690, a)
	WT	slob pf. bslobs	to learn, to teach
146.	OC	tjəp 摺	to fold
		diəp 疊, 褶	double (690, g) (1255, a)
	WT	ltab	to fold or gather up
	WB	thap	to place one on another, to repeat
147.	OC	kjəp 汲	draw water (681, h)
	WB	khap	to dip up, draw water
148.	OC	tjəp 汁	juice, sap (686, f)
	WT	chab < *thyab	water
149.	OC	sjəm A 心	heart (663, a)
	WT	sem(s), pf. sems, bsams, fut. bsam	to think

3. Wolfenden (1928:279). Thomas (1927:74; 1951; II 24, 1955:III29).

		bsam	thought, thinking
150.	OC	njəm B 恁	think (667, q)
	WT	nyam(s)	soul, mind, thought
		snyam	to think, suppose, fancy
151.	OC	gəm A 含	hold in the mouth, put in the mouth (651, l')
	WT	'gam	to put, or rather throw, into the mouth

Chinese words in the *yu* 幽 category, reconstructed as -əkʷ and -əgw by Li, show a different correspondence from the *chih* 之 category. It seems necessary to project the reconstruction of Old Chinese back into Sino-Tibetan.

	ST	*-əkʷ	OC	-əkʷ	:	WT	-ug	:	WB	-auk < *-uk
		*-əgw		-əgw			-u(g)			-o < *-uī, -u < *-u
		*-əngw		-ən			-ung			-aung < *-ung
152.	OC	ljəkʷ	六				six (1032, a)			
	WT	drug					six			
	WB	khrauk < *khruk					six			
153.	OC	dəkʷ	毒				poison (1016, a)			
	WT	dug, gdug					poison			
	WB	tauk < *tuk					to be poisoned			
154.	OC	tjəkʷ	粥, 糲				rice gruel (1024, a, b)			
	WT	thug < *tug					soup, broth			
155.	OC	təkʷ	篤				firm, solid, (1019, g). The <i>SW</i> defines it as 厚 thick			
		tən < təngw	A 惇, 敦				solid, thick (464, n, p). The <i>SW</i> defines 惇 as 厚 thick. For the sound change, cf. No. 164 (sec Gong, 1976, pp. 63-69)			
	WT	'thug < *tug					thick			
		mtnug < mtug								
		stug(s)					thickness, density, thick, dense			
	WB	thu A					to be thick, not thin			
		thu B					thickness			

156. OC	sthjəgw	B 手	hand (1101, a)
WT	sug		the hand
157. OC	hrjəgw	A, C 收	collect, harvest (1103, a)
WT	sgrug, rug		to collect, gather, pluck
158. OC	njəgw	A 揉	to make pliable (1105, b)
WT	nyug		to besmear, to rub gently
159. OC	kjəgw	B 九	nine (992, a)
WT	dgu		nine
WB	kuw	C	nine
160. OC	gjəgw	B 舅	maternal uncle (1067, b)
WT	khu-bo		uncle, on the father's side
WB	kuw	A	brother
161. OC	krjəgw	A 舟	boat (1084, a). The character is the phonetic in 𦨭 gak (?). See <i>KYSH</i> p. 713
WT	gru		boat, ferry, ship, vessel
162. OC	trjəgw	B 肘	wrist, elbow (1073, a)
WT	gru-mo		elbow
163. OC	njəgw	A 柔	soft, mild, tender (1105, a)
	njəgw	A 揉	to make pliable (1105, b)
WT	nyug		to rub gently
WB	nu	C	soft, to be made soft by some process
164. OC	tən < *təngw	A 墩	a heap, a mound. For the sound change, cf. No. 155 (see Gong, 1976, pp. 63-69)
WT	rdung		a small mound, hillock
WB	taung	A < *tung	a hill, mountain

IV. ORIGINS OF TIBETAN -e AND -o

The vowels -a-, -i-, and -u- are shared by Chinese, Tibetan, and Burmese, whereas the vowel -ə- was maintained only in Old Chinese. In the above section we have seen how these four vowels correspond in the three languages. What

remains to be analyzed now are the Tibetan vowels -e- and -o-, which are not found in Old Chinese as reconstructed by Li, nor in Written Burmese as I interpret it. The origins of these two Tibetan vowels present many difficulties in comparative study.

If we regard Tibetan -e- and -o- as inherited from the parent language, we are obliged to explain how ST *-e- and *-o- developed in Old Chinese and Written Burmese. Conversely, if we regard them as secondarily developed, we are obliged to explain how they came into existence.

It seems to me that we are here dealing with Tibetan innovations. The following facts can be pointed out in support of this view.

A. Tibetan -e- and -o- in the Verb Paradigm

The morphology of a language often reveals traces of phonetic change, and this seems also to be the case with Tibetan. As is well known, some Tibetan verbs show the following paradigm:

1. 'gebs-pa	'to cover'	pf. bkab,	fut. dgab,	imp. khob
2. 'debs-pa	'to answer'	btab,	gtab,	thob
3. gson-pa	'to hear'	bsan,	gsan,	gson
4. slob-pa	'to learn'	bslabs,	bslab,	slob(s)

In the above examples, the vowel -a- occurs in perfect and in future tenses, whereas -o- occurs in the imperative. As for the present form, we have -e- in the first two verbs and -o- in the last two verbs. In these verbs, vowels show $e \sim a \sim o$ and $o \sim a \sim o$ alternation. Since Schiefner (1851), many writers on the morphology of Tibetan verbs have regarded the vowel -a- as original, and the vowels -e- and -o- as secondarily developed, though different writers have different interpretations as to the process of this development. Schiefner noted, that words often were written in two different ways, varying between -a- and -e- or -a- and -o-; for instance, *kag* or *skag* ("unlucky") is also written *keg* or *skeg*, and *cag* (a plural marker) is also written *cog*. He gave twelve pairs of words showing -a- \sim -e- alternation and thirty-four pairs of words showing -a- \sim -o- alternation, and interpreted the change of -a- into -e- as *Schwächung* and

-a- into -o- as *Trübung*. According to him, it was originally nothing but a natural phonetic change. Later, as it became necessary to distinguish the tenses of verbs, these coexisting forms were differentiated, with the "weakened" and "muddy" forms designating the present, and "unweakened" and "unmuddy" forms designating the perfect.

Shafer (1951), who was not satisfied with this interpretation, sought an answer in modern Tibetan dialects. Basing his arguments on the imperative suffix in Murmi, Magari, and Bahing, he reconstructed an imperative suffix *-o for Old Tibetan and explained the phonetic change *-a- > -o- as due to assimilation. For the same sound shift in the present, he assumed either an infix *-o- or a suffix *-o (for instance, he posited *g-o-san > gson, *slab-o > slob). As for the sound shift *-a- > -e- in the present, he explained it either through prefix *ind- (e)- or through suffix *-se/*-es.

Nishida (1957) reconstructed a present suffix *-ed, on the strength of the suffix of the same function in Purik (-ët) and in Balti (-ed), and explained the *-a- > -e- sound shift in the present as through assimilation. So far as the sound shift *-a- > -o- in the present is concerned, Nishida made extensive use of the infix *-o- in explaining both cases (for example, *g-o-san > gson and *ɣ-o-slab > slob), and kept the suffix *-o exclusive for the imperative, citing the imperative suffix -o in Rong (Lepcha) as additional evidence.

Coblin (1976) revised Nishida's *-ed into *-d and *g-o-/*ɣ-o- into *g-, and systematized the whole process of sound change in a set of rules. On the basis of comparative evidence that shows Tibetan -o- corresponding to Chinese labio-velar *gw + V (see *infra* B), I would like to suggest that Coblin's *g- be revised to *gw-; and on the ground that Tibetan -o in the open syllable partially goes back to ST *-u (see *infra* C), I propose to reconstruct the imperative suffix as *-u, instead of *-o.

B. Tibetan -o- and Its Correspondences in Chinese

It will be shown in the following examples that Tibetan -o- corresponds to Old Chinese *-wə-, *-wa-, and *-ua- (*w here being a sign for labio-velar). The correspondences clearly show that Tibetan -o- has three different sources,

for if we take Tibetan -o- as the original, we cannot explain why it has three reflexes in Old Chinese. From examples Nos. 165-176, I infer that labio-velar initials caused the contiguous vowels *-ə- and *-a- to change into Tibetan -o-.

In Li's reconstruction, the vocalic cluster *-ua- occurs only in the *chi* 祭, *ko* 歌, and *yüan* 元 categories. However, Li conjectured that it might have had a wider distribution in Proto-Chinese.

1. OC *wə : WT o

165. OC	gwjəd	C	胃	a stomach (523, a)
	W1		grođ	belly, stomach
166. OC	gwjəg	B	友	friend, associate (995, e)
	WT		grogs	friend, companion
167. OC	gwjəd	A	違	go against, oppose, deviate from, err (571, d)
	WT		'gol	to part, to deviate, err
168. OC	gwjət		掘	dig out (496, s)
	WT		rkod, rko	to dig, dig-out
169. OC	kwjəd	A	歸	return (570, a)
	gwəd	A	回	revolve (542, a)
	gwjəd	A, C	圍	encircle (571, g)
	WT		'khor	circle, circumference
			'khor-ba	to turn round, to go round in a circle
			skor	circle, repetition
			skor-ba	to surround, encircle, to return
			sgor-mo	round, a circle, a globe
			skyor-ba	to repeat, enclosure, fence
170. OC	gwjəm	A	熊	a bear (674, a)
	WT		dom	the brown bear
	WB		wam A	a bear

2. OC *wa : WT o

171. OC	kwjak		攫	seize (778, b)
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	WT	'gog	to take away forcibly, to snatch
172.	OC	gwjag A 于	go to (97, a)
		gwjang B 往	go to (739, k)
	WT	'gro	to walk, to go
	WB	krwa B	to proceed, whether going or coming
173.	OC	gwjag C 芋	taro (97, o)
	WT	gro-ma	potato
174.	OC	gwjag B, C 羽	a feather (98, a)
	WT	sgro	a large feather
175.	OC	ngwjar C 僞	false, cheat (27, k)
	WT	rngod	to deceive
176.	OC	gwag B 戶	door (53, a). The character is the phonetic in 廩, which is a <i>ho-k'ou</i> word.
	WT	sgo	door

3. OC *ua : WT o

177.	OC	dzuar B, C 坐	sit, seat (12, a)
	WT	sdod	to sit, to stay
178.	OC	djuar A 垂	hang down, fall (31, a)
	WT	'jol < *'dyol	to hang down
179.	OC	dzjuat 絕	cut off, break off (296, a)
		tsjuat 勢	cut off (transitive)
	WT	chod < *tshjod	the cutting off, to be cut off
		gcod-pa	to cut, to cut asunder
180.	OC	thuat, duat 脫	take off, escape, careless (324, m)
	WT	lhod, lod, glod	loose, relaxed
	WB	lwat	to be at liberty, free
		hlwat	to free, release, to emancipate
		kjwat < klwat	to be loosed from its proper place
		khjwat < *khlwat	to release, free, emancipate
181.	OC	ruat 悅	pleased, glad (324, o)

WT	brod	joy, joyfulness
182. OC	thuar 睡	spit (31, m)
WT	to-le	to spit

C. Tibetan -e- and -o- Compared in Tibetan and Burmese

1. Tibetane -e and -o in Open Syllables

Miller (1956) reconstructed six vowels (*a, *i, *u, *e, *o, *bl) for Tibeto-Burman, basing on the following correspondences in open syllables:

WT	i	:	WB	e	TB	< *i
	e			i		< *e
	a			a		< *a
	u			o		< *u
	o			u		< *o
	u			bl		< *bl

However, for the correspondence WT -u:WB -o there is only one example:

WT	'bu	to open, to unfold, of flowers
WB	pho	to be swelled

Pulleyblank (1963:219) arranged the correspondences in the following schema:

WT	a	:	WB	a
	e			i
	i			e
	u			ui (=Miller's bl)
	o			u

According to the analysis in this study, the table can be rearranged as:

WT	a	:	WB	a	TB	< *a
	e			i		< *i
	i			iy		< *iy
	u			uī		< *uī
	o			u		< *u

As already mentioned, TB *-iy goes back to ST *-id, whereas TB *-uĩ goes back to ST *-ug or *-əgw. Accordingly, TB *-y and *-ĩ can be regarded as traces of ST *-d and *-g(w), respectively.

In addition to these correspondences, there are examples of Tibetan -o. in open syllables corresponding to Burmese -wa.

WT		WB	
motho	'a span'	thwa A	'to measure with a span'
so	'tooth'	swa C	'a tooth'

2. Tibetan -o- in Closed Syllables

Tibetan -o- in closed syllables often corresponds to Burmese -wa-. Following are a few examples:

WT		WB	
nor	'cattle'	nwa C	'a bull, ox, or cow'
dong	'pit'	twang C	'pit'
sbom	'thick, stout'	phwam B	'fat, plump'
dpon	'master, lord'	wan A	'government officer'
rkon	'net'	kwan A	'a casting net'
spobs	'to dare'	wam B	'to dare'

The circumstances here are the same as in the Tibetan and Chinese comparison, both pointing to a secondary origin for the Tibetan vowel -o-.

V. CONCLUSION

According to the present study, the shift of vowels in Old Chinese, Written Tibetan, and Written Burmese can be summarized as follows:

ST *-a- > -a-	in all three languages
ST *-i- > -i-	in all three languages, except before labial finals in OC, where it yielded *-ə-
ST *-u- > -u-	in all three languages, except before dental and labial finals in OC, where it yielded *-ə-

ST *-ə- > OC -ə-, WT and WB -u- before labio-velar finals and
-a- elsewhere

Tibetan has -e- and -o-, which are not found in Chinese or Burmese; they are treated here as Tibetan innovations. In addition to the four vowels *-a-, *-i-, *-u-, and *-ə-, there were in ST two vocalic clusters, *-ua- and *-ia-; the former yielded WT -o- and WB -wa-. The development of the latter is not clear, however, in the examples cited above (Nos. 18 and 35), ST*-ria- yielded WT -rgya- and WB -rya-. In OC there was *-iə-, but the two comparisons (Nos. 116 and 117) cited in this study show it is a Chinese innovation. The vowel system of ST is then:

Vowels:	i	u	Vocalic clusters:	ia	ua
	ə				
	a				

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漢、藏、緬語元音的比較研究

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摘 要

漢藏語的比較研究以漢、藏、緬語的歷史研究爲基礎。本文將李方桂先生四個元音的漢語上古音系統與五個元音的古藏語元音系統及作者分析古緬甸語所得三個元音的系統加以比較，獲得的結論是：漢藏語和上古漢語一樣，具有四個元音。這四個元音在漢、藏、緬語裏的對應情形如下：

1. 漢藏語的 *a 在漢、藏、緬語裏都保存。
2. 漢藏語的 *i 在藏、緬語裏都保存，在漢語裏只有在唇音韻尾前變成 *ə。在其餘的位置則仍然保存。
3. 漢藏語的 *u 在藏、緬語裏都保存，在漢語裏則在舌尖音韻尾及唇音韻尾前變成 ə*，而只有在舌根音韻尾前保存。
4. 漢藏語的 *ə 只有漢語保存，在藏、緬語裏都變成 *a，而只有在圓唇舌根音韻尾前變成 *u。

藏語的 e 與 o 爲漢、緬語所沒有，作者從藏語的動詞變化及藏、漢，藏、緬語比較，論述其爲後起者。

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