Common Mandarin Chinese Revisited:
Focusing on Initials

Chihkai Lin
Tatung University

Three major studies (Chao 1983, Norman 2006, and Simmons and Gu 2014) have thoroughly discussed Common Mandarin Chinese. The reconstruction of Common Mandarin Chinese in the three studies all exhibits different initials that do not fit in any rime book system, and the possible time depth of their Common Mandarin Chinese is not indicated to which consonantal system it might bear the most similarity. In this paper, I argue that the initials of Common Mandarin Chinese mostly resemble the phonological inventory in the late 13th century or the early 14th century.

0. Introduction

Common Mandarin Chinese (henceforth CMC) or Common Dialectal Chinese refers to the reconstruction of Mandarin Chinese based on modern Chinese dialects by using the comparative method. This reconstruction methodologically differs from the conventional method used by most Chinese historical linguists, who rely on philological data, rime books in particular. The comparative method, which does not specially look into philological data, is a central method in historical linguistics mainly utilizing modern languages/dialects to reconstruct proto-forms and trace the possible origin. However, philological data also plays a crucial role in reconstruction, reflecting linguistic information in a specific period or sound changes in the past. The philological data sometimes significantly contribute to the causes of sound changes, the reconstruction of a proto-language or the linguistic information of an extinct language (Campbell 2014: 392).

While it is a leading and central method in historical linguistics, the comparative method is not applied pervasively in Chinese historical linguistics. Instead, the major sources of reconstructing proto-forms in Chinese historical linguistics are philological data, especially rime books. The comparative method and philological data are not mutually exclusive. The two approaches can work together to reach a reconstruction essentially closer to historical facts. As most Chinese historical linguistics from East Asia rely on philological data, several scholars outside East Asia have paid more attention to how the comparative method is applied in Chinese historical linguistics. Karlgren (1915-1926) applied the comparative method to reconstruct the phonological inventory in *Qiēyùn* (切韻) by using sources from modern Chinese dialects and Sino-Xenic languages, namely, the Chinese loans in Japanese, Korean and Vietnamese. With the success of

applying the comparative method to the reconstruction of Middle Chinese, other scholars attempt to reconstruct a specific proto-language by applying the comparative method, such as Proto Min by Norman (1973, 1974). Although Norman tries to be faithful to the comparative method, there are some crucial problems. Geng (2004) points out that Norman did not notice the clear distinction between different readings in Min and that some phenomena do not come from internal sound changes but from language contact.

Despite the fact that it is pervasively used, the comparative method is not yet completely rejected in Chinese historical linguistics. A better way is to integrate the comparative method with philological data which function as a reference point to assist the reconstruction. So far, three studies have touched upon the reconstruction of Mandarin Chinese by applying the comparative method and referring to *Qiēyùn* (切韻, 601 AD), one of the most important references in Chinese historical phonology. Chao (1983: 12) proposed *tōngyǔ* 通語 'General Chinese', a system that accounts for classical Chinese and the modern Chinese dialects. The second work is by Norman (2006), who named such reconstruction as Common Dialectal Chinese. The third work is proposed by Simmons and Gu (2014), who sought the common phonology of the Chinese dialects. Although the three works have all exhibited different initials and rimes, no time depth is explicitly indicated.

In this paper, I aim to seek a general picture that can maximally include the initials in the three reconstructions by exploring initials in the three works. Although I try to trace the possible time depth, I do not intend to reconstruct a new system. Instead, I will present a general picture that maximally covers the three phonological systems based on the comparative method with philological data in different eras. Then I will compare the general picture with the previous works. The comparison does not necessarily lead to a definite time depth that faithfully accounts for all of the data, but it can suggest a possible system to which phonological inventory it might bear the most similarity in history. I argue that the initials in CMC mostly resemble the phonological inventory in the late 13th century or the early 14th century, corresponding to Late Song Dynasty and Early Yuan Dynasty. To gain a full understanding of CMC, the reconstruction according to modern Mandarin Chinese, I review in section 1 the initials proposed by Chao (1983), Norman (2006), and Simmons and Gu (2014). In section 2, I discuss philological data. Initials from different rime books after *Guǎngyùn* (廣韻) are firstly elaborated and then compared with the initials in Chao (1983), Norman (2006), and Simmons and Gu (2014). According to the comparison, I propose in section 3 that the initials in CMC are not earlier than *Wǔyīnjíyùn* (五音集韻) in the early 13th century and not later than *Zhōngyuányīnyùn* (中原音韻) in the 14th century. Section 4 concludes this paper.

1. Studies by Chao (1983), Norman (2006), and Simmons and Gu (2014)

The three major studies dealing with the reconstruction of Common Mandarin Chinese or Common Dialectal Chinese are Chao (1983), Norman (2006), Simmons and

Gu (2014). The first work is Chao's (1983) General Chinese. In his system, there are 40 initials, as shown in (1).

(1) Chao's (1983) initials

幫 b	端 d	見 c		精 z	知 dy	照莊 dr	照章 j	曉 x
滂 p	透 t	溪 k		清 ts	徹 ty	穿初 tr	穿昌 ch	匣 h
並 bh	定 dh	群 g		從 dz	澄 dhy	牀崇 jr	牀船 dj	影 ø
明 m	泥娘 n	疑 q	日 r			審生 sr	審書 sh	喻云以 y, w
						禪士 zr	禪時 zh	
非敷 f	來 l			心 s				
奉 fv				邪 sz				
微 v								

According to Chao (1983: 12), the major dialects in his study are Mandarin, Cantonese, Wu, and some features from Min. Chao proposes 12 stops: 幫 b, 滂 p, 並 bh, 端 d, 透 t, 定 dh, 見 c, 溪 k, 群 g, 知 dy, 徹 ty, and 澄 dhy. In his system, there is no voiceless aspirated stop [p^h, t^h, k^h] for 滂, 透 and 溪, but there are voiced aspirated stops [bh, dh] for 並 and 定. Besides, Chao uses c for [k] (見), which is paired with g (群), for the reason that there is a high frequency of palatalization. The three words, 知 dy, 徹 ty, 澄 dhy, are reconstructed with y. Chao proposes 9 affricates: 精 z, 清 ts, 從 dz, 照莊 dr, 穿初 tr, 牀崇 jr, 照章 j, 穿昌 ch, and 牀船 dj, and 10 fricatives: 非 ~ 敷 f, 奉 fv, 心 s, 邪 sz, 審生 sr, 禪士 zr, 審書 sh, 禪時 zh, 曉 x, and 匣 h. With regard to nasals, lateral and laryngeals, there are five nasals, 明 m, 微 v, 泥 ~ 娘 n, 疑 q and 日 r, one lateral 來 l, and three laryngeals 影 ø, 喻以 y ~ w and 喻云 y ~ w + h (雄熊).

The second work is Norman's (2006) Common Dialectal Chinese. The dataset includes ten dialects: Beijing, Yangzhou, Suzhou, Wenzhou, Changsha, Shuangfeng, Nanchang, Lichuan, Meixian, and Guangzhou. It should be noted that Min is not included in the dataset (Norman 2006: 234). In total, there are 32 initials, as shown in (2) below.

There are seven labial initials: 幫 *p, 滂 *ph, 並 *b, 明 *m, 非 ~ 敷 *f, 奉 *v, and 微 *mv, in which 非 and 敷 have merged. There are five dental initials in (2), 端 *t, 透 *th, 定 *d, 泥 *n, and 來 *l. As for dental sibilants, there are 精 *ts, 清 *tsh, 從 *dz, 心 *s, and 邪 *z. In alveolopalatals, the three series of words *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 have merged. According to Norman (2006: 235), the first two series have completely merged, while the third series has been attributed to the difference in finals. Thus, Norman reconstructed *c for 知/章, *ch for 徹/昌, and *j for 澄/船. As for alveolopalatals, 日, 書 and 禪 are reconstructed as *nh, *sh and *zh, respectively.

Norman's velars include 見 *k, 溪 *kh, 群 *g, 疑 *ng, 曉 *x, and 匣 *h. Norman also reconstructs zero initial for 影, and two semi-vowels *y and *w.[1]

(2) Norman's (2006) initials

Labials	Dentals	Dental sibilants	Alveolo-palatals	Velars	Others
幫 *p	端 *t	精 *ts	知/章 *c	見 *k	
滂 *ph	透 *th	清 *tsh	徹/昌 *ch	溪 *kh	
並 *b	定 *d	從 *dz	澄/船 *j	群 *g	影 *ø
明 *m	泥 *n		日 *nh	疑 *ng	
	來 *l				
非敷 *f		心 *s	書 *sh	曉 *x	
				匣 *h	
奉 *v		邪 *z	禪 *zh		
微 *mv					*y, *w

The third work is by Simmons and Gu (2014). Sixteen Chinese dialects are collected for the common phonology of the Chinese dialects. The sixteen dialects are Beijing, Xi'an, Taiyuan, Yangzhou, and Taixing (Northern Mandarin), Suzhou, Huzhou, and Wenzhou (Wu), Changsha and Shuangfeng (Xiang), Nanchang and Lizhou (Gan), Meixian (Kejia), Guangzhou and Yangjiang (Yue), and Xiamen (Min). In Simmons and Gu (2014), Min is not specifically distinguished in the dataset. The initials, 39 in total, proposed by Simmons and Gu (2014) are shown in (3) below.

There are seven labials, 幫 p, 滂 p', 並 b, 明 m, 非 ~ 敷 f, 奉 v, and 微 mv, and five dentals, 端 t, 透 t', 定 d, 泥 ~ 娘 n, and 來 l. Five dental sibilants are proposed: 精 ts, 清 ts', 從 dz, 心 s, and 邪 z. With regard to velars, there are 見 k, 溪 k', 群 g, 疑 ŋ, 曉 x, and 匣 ɣ. There are one zero initial 影 ø, and two semi-vowels j and w. In Simmons and Gu (2014), the three series of words *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 are distinguished. In *zhīzǔ* 知組, there are 知 tj, 徹 tj', and 澄 dj; in *zhāngzǔ* 章組, there are 章 th, 昌 th', 船 dh, 書 sh, and 禪 zh. In *zhuāngzǔ* 莊組, there are 庄 tr, 初 tr', 崇 dr, and 生 sr.[2] The 日 is reconstructed as nr.

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[1] In Norman's system, h in stops and affricates refers to aspiration. In *sh and *zh, the phonetic value is [ʃ] and [ʒ].

[2] It should be clarified that in Simmons and Gu (2014), aspiration is marked by ', not by h. If j and r represent palatal and retroflex in (3), it becomes vague that what feature h in *zhāngzǔ* 章組 represents. According to personal communication with Prof. Simmons at the NACCL 29, the notation of h does not represent any phonetic value. It is only a symbol to distinguish *zhāngzǔ* 章組 from the other two series.

(3) Simmons and Gu's (2014) initials

幫 p	端 t	精 ts	知 tj	庄 tr	章 th	見 k	曉 x
滂 p'	透 t'	清 ts'	徹 tj'	初 tr'	昌 th'	溪 k'	匣 ɣ
並 b	定 d	從 dz	澄 dj	崇 dr	船 dh	群 g	影 ø
明 m	泥娘 n	心 s		生 sr	書 sh	疑 ŋ	云以
非敷 f	來 l	邪 z			禪 zh		j, w
奉 v					日 nr		
微 mv							

       The three studies are compared in (4). I divide the initials into two parts. The first part includes labials, dentals, dental sibilants, and velars; the second part consists of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組. The initials that are identical in the three studies are shadowed in (4).

(4) A comparison of Chao (1983), Norman (2006), and Simmons and Gu (2014)

a.		1.	2.	3.		1.	2.	3.		1.	2.	3.
	幫	p	p	b	端	t	t	d	精	ts	ts	z
	滂	p'	ph	p	透	t'	th	t	清	ts'	tsh	ts
	並	b	b	bh	定	d	d	dh	從	dz	dz	dz
	明	m	m	m	泥娘	n	n	n	心	s	s	s
	非敷	f	f	f	來	l	l	l	邪	z	z	sz
	奉	v	v	fv								
	微	mv	mv	v	日	nr	nh	r				
	見	k	k	c	曉	x	x	x				
	溪	k'	kh	k	匣	ɣ	h	h				
	群	g	g	g	影	ø	ø	ø				
	疑	ŋ	ng	q	云以	j, w	y, w	j, w				
b.	知	tj	c	dy	庄	tr	--	dr	章	th	(c)	j
	徹	tj'	ch	ty	初	tr'	--	tr	昌	th'	(ch)	ch
	澄	dj	j	dhy	崇	dr	--	jr	船	dh	(j)	dj
					生	sr	--	sr	書	sh	sh	sh
									禪	zh	zh	禪時 zh (禪士 zr)

 * 1. Simmons and Gu (2014); 2. Norman (2006); 3. Chao (1983)

In the first part, the most noticeable difference between the three studies is how stops are interpreted. Simmons and Gu (2014) and Norman (2006) share similar interpretation of the following eight initials: 幫, 滂, 並, 端, 透, 定, 見, and 溪. The three initials 幫, 端 and 見 are voiceless unaspirated stops [p, t, k] in Simmons and Gu (2014) and Norman (2006), while Chao (1983) reconstructed 幫 and 端 as voiced unaspirated stops [b, d] and 見 as palatalized [c]. As for 滂, 透, and 溪, they are interpreted as voiceless aspirated stops [pʰ, tʰ, kʰ] in Simmons and Gu (2014) and Norman (2006), whereas they are unaspirated in Chao's (1983) system. The two initials 並 and 定 in Simmons and Gu (2014) and Norman (2006) are voiced without aspiration, but the two initials in Chao (1983) are not only voiced but also aspirated.

In addition to stops, Simmons and Gu (2014) and Norman (2006) are different from Chao (1983) in labial 奉, dental sibilants 精, 清, and 邪, and velar 匣. In labial 奉, Simmons and Gu (2014) and Norman (2006) treat it as a simple fricative f, and Chao (1983) treats it as a compound of f and v. Simmons and Gu (2014) and Norman (2006) regard dental sibilants 精 and 清 as affricates [ts, tsʰ], and 邪 as voiced alveolar fricative [z]. On the other hand, Chao (1983) regards 精 as z [z], 清 as ts [ts], and 邪 as sz, which phonetically might be [ʒ]. As for velar 匣, Simmons and Gu (2014) assumes it as a voiced velar fricative [ɣ], while Norman (2006) and Chao (1983) reach a consensus on the phonetic value of 匣, which is a voiceless glottal fricative [h]. The last difference between the three systems is the initial 日. It is certain that 日 is characterized as a nasal with a minor feature that can be retroflex (Simmons and Gu 2014, Chao 1983) or palatal (Norman 2006).

The second part in (4) is the three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組. The phonetic value in *zhīzǔ* 知組 would be palatalized, and the phonetic value in *zhuāngzǔ* 莊組 would be retroflex. In *zhāngzǔ* 章組, the phonetic value would be like postalveolar. With regard to whether the three series merge in CMC, there are different interpretations in the three studies. Chao considers the three series distinct, and Simmons and Gu (2014: 3) follows Chao's suggestion, assuming the three series unmerged. Norman (2006), on the other hand, proposes that the three series have merged, *zhīzǔ* 知組 and *zhāngzǔ* 章組 as one type attributed to initials, and *zhuāngzǔ* 莊組 as the other type attributed to finals.

The comparison of the three studies suggests that Simmons and Gu (2014) and Norman (2006) share more similarity in the reconstruction of CMC, whereas Chao's results deviate more from the other two studies in the interpretation of the voicing and aspiration of stops. Besides, the three studies have viewed *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 differently. The merger of the three series is recognized by Norman (2006), while Simmons and Gu (2014) and Chao (1983) make a clear distinction between the three series.

2. Rime book systems: initials

This section is concerned with the comparison of the reconstruction of CMC in rime book systems. The three studies in section 2 reveal two characteristics. The first characteristic is that there are labiodentals. Reconstructing them in CMC suggests that CMC would not be earlier than *Guǎngyùn* (1008 AD), which systematically lacks labiodentals. The second characteristic is the status of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組. In *Guǎngyùn*, the three series are clearly differentiated. Nevertheless, the three series in the three studies of CMC are no longer distinct from one another.

According to two characteristics, I review rime books after *Guǎngyùn*. The criteria for selecting proper rime books as reference points are based on Ning's (2009: 8) relation of rime books after *Qiēyùn*. The direct descendants of *Guǎngyùn* are *Jíyùn* (集韻) and *Wǔyīnjíyùn* (五音集韻). Other related representative rime books in the following dynasties are *Ménggǔzìyùn* (蒙古字韻) and *Zhōngyuányīnyùn* (中原音韻) in Yuan Dynasty, *Hóngwǔzhèngyùn* (洪武正韻) and *Yùnlüèyìtōng* (韻略易通) in Ming Dynasty.

The first rime book is *Jíyùn*, completed in 1039 AD, Song Dynasty. Shao (2011: 70) reconstructs the initials of *Jíyùn* in (5).

(5) Initials in *Jíyùn* by Shao (2011)

幫 p	端 t	精 ts	知 ȶ	庄 tʃ	章 tɕ	見 k	曉 x
滂 pʻ	透 tʻ	清 tsʻ	徹 ȶʻ	初 tʃʻ	昌 tɕʻ	溪 kʻ	匣 ɣ
並 b	定 d	從 dz	澄 ȡ	崇 dʒ	常 dʑ	群 g	影 ʔ
明 m	泥 n	心 s	娘 ɳ	生 ʃ	書 ɕ	疑 ŋ	以 ø
非 pf	來 l	邪 z			船 ʑ		
敷 pfʻ					日 nʑ		
奉 bv							
微 ɱ							

There are 40 initials in (5).[3] In the 40 initials, bilabials and labiodentals are separated. Besides, the three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 are also distinguished in Shao's reconstruction.

The second rime book is *Wǔyīnjíyùn*, completed in 1212 AD. The initials in this rime book are shown in (6), reconstructed by Guo (2008: 45) and Dong (2004: 32).[4]

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[3] Chiu (1974) also reconstructs the initials of *Jíyùn*. Chiu's system resembles Shao's system in most initials, except for the interpretation of voiced initials. Chiu gave aspiration to the voiced initials. For example, 並 is bʻ and 定 is dʻ. The other minor difference is 日. It is nʑ in Shao's system; it is ŋʑ in Chiu's system. In Chiu's system, the three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 are also distinguished.

(6) Initials in *Wǔyīnjíyùn* by Guo (2008) and Dong (2004)

幫 p	端 t	精 ts	知 tɭ	庄 tʃ	章 tɕ	見 k	曉 x
滂 p'	透 t'	清 ts'	徹 t̢'	初 tʃ'	昌 tɕ'	溪 k'	匣 ɣ
並 b	定 d	從 dz	澄 ḍ	崇 dʒ	常 dz'	群 g	影 ʔ
明 m	泥 n	心 s	娘 ɳ̩	生 ʂ	書 ɕ	疑 ŋ	喻 j
非 pf	來 l	邪 z			船 ʑ		
敷 pf'					日 nʑ		
奉 bv							
微 ɱ							

There are 40 initials in (6), where bilabials and labiodentals are classified into two categories. Also, the three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 are not merged.

Not only *Jíyùn* and *Wǔyīnjíyùn* but also other representative rime books in later dynasties are discussed. The first rime book in Yuan Dynasty is *Ménggǔzìyùn* (1269 AD). The reconstruction in (7) below is based on Li (2002). There are 30 initials in *Ménggǔzìyùn*. Labials and labiodentals are not differentiated, as 非 and 敷 alternate with their corresponding labials 幫 and 滂, while 奉 and 微 split from labials 並 and 明. Alveolar nasals 泥 and 娘 are also differentiated. The complete merger of the three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 is observed in (7). Li (2002) proposes that there are two readings for velars, 見, 溪, and 曉. When the three initials are followed by a plain rime (without a front rounded glide [y]), the phonetic value is [k, kʰ, x]. The capital K, Kʰ, G and X are used when the three initials are followed by a rime with a front rounded glide [y].

(7) Initials in *Ménggǔzìyùn* by Li (2002)

幫 p	端 t	精 ts	知 tʂ	庄	章	見 k ~ K	曉 x ~ X
滂 pʰ	透 tʰ	清 tsʰ	徹 tʂʰ	初	昌	溪 kʰ ~ Kʰ	影 ʔ ~ ʔj
並 b	定 d	從 dz	澄 dʐ	崇	船	群 G	匣 ɣ ~ ɣj
明 m	泥 n	心 s	娘 nj	生	書	疑 ng	云以
非 p ~ f	來 l	邪 z		襌	襌		ø ~ øj
敷 pʰ ~ f							
奉 v		審 ʂ		日 r			
微 w		襌 ʐ					

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[4] The initials in (6) are based on Guo's system, which has only difference from Dong's system in 日. Guo (2008) reconstructs 日 as nʑ, while Dong reconstructed as ŋʑ.

The second representative rime book in Yuan Dynasty is *Zhōngyuányīnyùn* (1324 AD). The reconstruction is based on Tung (1956), as shown in (8).

(8) Initials in *Zhōngyuányīnyùn* by Tung (1956)

幫 p	端 t	精 ts	知 tʃ	庄	章	見 k	曉匣 x
滂 p'	透 t'	清 ts'	徹 tʃˤ	初	昌	溪 k'	影 ø
並	定	從	澄	崇	船	群	
明 m	泥娘 n	心 s		生	書	疑 (ŋ)	云以
非敷 f	來 l	邪	ʃ	禪	禪		
奉					日 ʒ		
微 v							

In (8), the number of initials has dramatically reduced to 20 initials, losing at least seven voiced initials. The three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 have merged into one group. In addition, there is no distinction between initials 曉 and 匣, and between initials 非 and 敷. Initial 微 is denasalized. Initial 日 is reconstructed as [ʒ]. As suggested by Tung (1956: 62), velar nasal has not clearly specified in (8) because it should have disappeared in Yuan Dynasty.

Two representative rime books in early Ming Dynasty are *Hóngwǔzhèngyùn* (1375 AD) and *Yùnlüèyìtōng* (1442 AD). The phonological inventory of *Hóngwǔzhèngyùn* is based on Liu (1931), as shown in (9). Liu (1931) reconstructs 29 initials with voiced initials, such as 並 b and 定 d. Initials 非 and 敷 have merged. In (9), there is no distinction between the three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組.[5] Besides, 微 is still a nasal.

(9) Initials in *Hóngwǔzhèngyùn* by Liu (1931)

幫 p	端 t	精 ts	知 tʃ	庄	章	見 k	曉 x
滂 p'	透 t'	清 ts'	徹 tʃˤ	初	昌	溪 k'	匣 ɣ
並 b	定 d	從 dz	澄 dʒ	崇	船	群 g	影 ø
明 m	泥娘 n	心 s		生	書	疑 ŋ	云以 j
非敷 f	來 l	邪 z		禪	禪		
奉 v				日 ʐ			
微 ɱ							

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[5] The initials of *Hóngwǔzhèngyùn* significantly differ from those of *Zhōngyuányīnyùn*, which is based on northern dialects at that time. *Hóngwǔzhèngyùn* is compiled according to a southern dialect that retains voiced initials, probably related to Wu.

The other rime book in Ming Dynasty is *Yùnlüèyìtōng*. Zhang (1999) proposes the following initials for this rime book, as in (10).

(10) Initials in *Yùnlüèyìtōng* by Zhang (1999)

幫/並 仄 p	端/定 仄 t	精/從 仄 ts	知/澄 仄 tʃ/tʂ	庄	章	見/群 仄 k	曉匣 x
滂/並 平 p'	透/定 平 t'	清/從 平 ts'	徹/澄 平 tʃʰ/tʂʰ	初	昌	溪/群 平 k'	
				崇	船		影喻疑 ø
明 m	泥娘 n	心邪 s		生	書		
非敷奉 f	來 l		ʃ/ʂ	禪	禪		
微 v					日 ʒ/ʐ		

The initials in (10) are distinguished by voiced initials when they are assigned to different tones. The contour tone 仄 is aligned with unaspirated initials, and the level tone 平 is aligned with aspirated initials. In *Yùnlüèyìtōng*, there are more mergers as in (a) 非, 敷, and 奉 into f, (b) 心 and 邪 into s, (c) 曉 and 匣 into x, and (d) 影, 喻, and 疑 into ø. The three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 also merged.[6]

Thus far, I have reviewed six representative rime books after *Guǎngyùn*. Until early Ming Dynasty, it is certain that two tendencies in the historical development. Labials and labiodentals have spilt, and *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 have merged. After early Ming, the phonological inventories gradually become stable, as the rime books in late Ming Dynasty and Qing Dynasty show less and less changes.

3. Possible time depth of CMC from a philological perspective

In sections 2 and 3, I have reviewed the reconstructions based on two different methods. In this section, I attempt to trace the possible time depth of CMC by comparing CMC with the rime book systems. The comparison is based on the following five phonological conditions in (11).

(11) a. Voiced initials
      b. Labials: 非 vs. 敷
      c. Merger of the three series: *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組
      d. 曉 vs. 匣
      e. 影 vs. 喻 vs. 疑

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[6] Zhang (1999) has two interpretations for *zhīzǔ* 知組, which can be alveolopalatal or retroflex.

The first condition is concerned with voiced initials. As a crucial sound change in the history of Chinese phonology after Middle Chinese (Chu 2002: 449), devoicing of the voiced initials helps determine how far the CMC can be traced. The second condition is the distinction of labiodental initials between 非 and 敷. Scholars interpreted differently the two initials, which can remain two separate initials or merge into a single one. The third condition deals with whether the three series *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 merge into a single group. The fourth condition involves initials 曉 and 匣, and the fifth condition touches upon the distinction between 影, 喻, and 疑.

The results of comparing the reconstruction of CMC and the six representative rime books under the five phonological conditions are shown in Table 1 below. Before I discuss the five phonological conditions in (11), I first compare the number of initials in CMC with those in the rimes books. The number of initials in CMC ranges from 32 to 40, while the number of initials in the rime books ranges from 21 to 40. It is apparent that CMC is close to *Jíyùn* and *Wǔyīnjíyùn* regarding the number of initials.

Table 1. Comparison of CMC and rime books

CMC	Number of initials	Five phonological conditions				
		a	b	c	d	e
Chao (1983)	40	Yes	Merged	Three-way	Yes	Three-way
Norman (2006)	32	Yes	Merged	Two-way	Yes	Three-way
Simmons and Gu (2014)	39	Yes	Merged	Three-way	Yes	Three-way
Rime books						
Jíyùn	40	Yes	Yes	Three-way	Yes	Three-way
Wǔyīnjíyùn	40	Yes	Yes	Three-way	Yes	Three-way
Ménggǔzìyùn	30	Yes	Yes	Merged	Yes	Three-way
Zhōngyuányīnyùn	21	No	Merged	Merged	Merged	-----
Hóngwǔzhèngyùn	29	Yes	Merged	Merged	Yes	Three-way
Yùnlüèyìtōng	24	No	Merged	Merged	Merged	Merged

* a. Voiced initials;

   b. Labials: 非 vs. 敷;

   c. Merger of the three series: *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組;

   d. 曉 vs. 匣;

   e. 影 vs. 喻 vs. 疑

In the first phonological condition, there are voiced initials in CMC and three rime books, *Jíyùn*, *Wǔyīnjíyùn*, *Ménggǔzìyùn*, and *Hóngwǔzhèngyùn*. Secondly, initials 非 and 敷 have merged in CMC, but they are still differentiated in the rime books before Yuan Dynasty. The three series of *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組 are interpreted differently in the three reconstructions of CMC. Chao (1983) and Simmons and Gu (2014) assume that there is no merger, while there are only two series in Norman (2006). In the rime books, only *Jíyùn* and *Wǔyīnjíyùn* distinguish the three series. Initials 曉 and 匣 are distinguished in CMC, but they are not differentiated in *Hóngwǔzhèngyùn* and *Yùnlüèyìtōng*. Initials 影, 喻, and 疑 are distinct in CMC and five rime books, but they have merged in *Yùnlüèyìtōng*.

The number of initials suggests a close relationship between CMC and the earlier rime books before Yuan Dynasty, such as *Jíyùn* and *Wǔyīnjíyùn*. A comparison in the five phonological conditions also suggests a different relationship between the initials of CMC and those in rime books. In the first condition, the voiced initials are in a relationship that the CMC initials are close to those before Ming Dynasty, given that voiced initials start to devoice in Ming Dynasty. Labials 非 and 敷 in CMC are close to those after Yuan Dynasty, as the two initials merge in *Zhōngyuányīnyùn*. As for *zhīzǔ* 知組, *zhāngzǔ* 章組, and *zhuāngzǔ* 莊組, there are three patterns of changes. The three series could be clearly distinguished from one another or all merge into a single unit. No complete merger is found in the CMC initials. After Song Dynasty, the fact that the three series in rime books are no longer distinguished suggests that the CMC initials are not associated with the phonological systems earlier than Song Dynasty. Initials 曉 and 匣 are differentiated in CMC and in the rime books before *Zhōngyuányīnyùn*. This indicates that the CMC initials are closer to the systems before *Zhōngyuányīnyùn*. The comparison shows that the three initials 影, 喻 and 疑 might reflect a system before *Yùnlüèyìtōng*.

Figure 1 below summarizes the comparison of CMC and rime books.
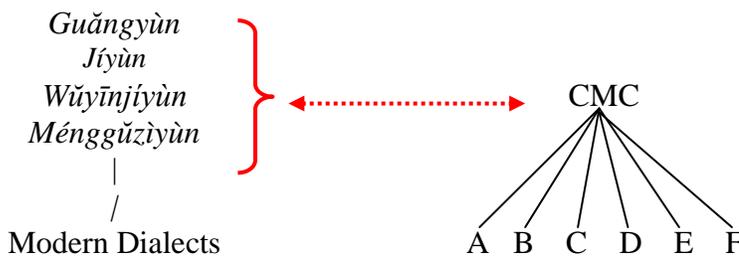
Figure 1: Comparison of CMC and philological data

According to the comparison in Table 1, there is no exact time depth for the CMC initials, but it is possible to show a rough correspondence between the CMC initials and those in rime books. I propose that the CMC initials are maximally close to the phonological inventory of *Wǔyīnjíyùn* or that before *Zhōngyuányīnyùn*. In other words,

the CMC initials could be traced back to as early as sometime between the 13th and 14th centuries. Although the number of initials and the five conditions do not differentiate *Jíyùn* from *Wǔyīnjíyùn* in Table 1, I do not attribute to a wider range that treats *Jíyùn* as the upper limit because the merger of labials 非 and 敷 shows a tendency that the CMC initials should be closer to *Zhōngyuányīnyùn*.

4. Conclusion

In this paper, I have reviewed three reconstructions by Chao (1983), Norman (2006), and Simmons and Gu (2014), and discussed six representative rime books after *Guǎngyùn*. The comparison of the CMC initials and rime books suggests that CMC could be mostly close to the late 13th century or early 14th century. The reconstruction of CMC based on modern Chinese dialects probably reflects Late Middle Chinese, but it is not beyond 1,000 years, later than *Jíyùn* (1039 A.D.).

The result has a significant implication for Chinese historical phonology as well as historical linguistics. Reconstruction based on the comparative method by utilizing modern Chinese dialects does not necessarily lead to an ultimate system that can be traced back to the earliest form of Chinese, namely, Old Chinese or even to Proto-Chinese. There is a ceiling effect in the comparative method that one thousand years or at most one thousand and five hundred years might be the earliest date we can trace by applying the comparative method.

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A Research on the Error Types in Four Editions of Bǎijiā xìng in hP'ags-pa Script[*]

Sicheng Wang
University of Massachusetts, Amherst

The hP'ags-pa script was created in the late 13th century which was intended to transliterate all the languages of the Mongol empire such as Tibetan, Uyghur and Chinese into a single writing system. Among all the Chinese hP'ags-pa materials, the primer Bǎijiā xìng (BJX) offered us extensive hP'ags-pa syllables and their corresponding Chinese characters. The BJX in hP'ags-pa script has four editions that are currently known to scholars. In my research, I found three types of errors in those hP'ags-pa syllables: (1) Misuse of similar-looking letters; (2) Pure clerical errors; (3) Errors in the transliteration of variant pronunciations. Among the three types, the third kind is rare. Most of the errors are graphic mistakes reflecting a lack of knowledge of the nature of the writing system. Hence, people's cognition of writing systems influenced the effectiveness of script promulgation.

1. The hP'ags-pa Script

The hP'ags-pa script was created by hP'ags-pa Lama (1235–1280), a Tibetan scholar in the late 13th century who assisted Qubilai Khan (1215–1294) in the early Yuan dynasty. The script was completed and issued in 1269 (Coblin 2007, Shen 2008) and was originally called *Ménggǔ xīn zì* 蒙古新字, "new Mongol characters," or simply *guó zì* 國字, "national script," as opposed to the old Uighur script. The Mongols called it *dörbeljin üsüg*, or "square script" (Leonard 1996). It was intended to transliterate all the languages of the Mongol empire[1] (Coblin 2007). However, its use during the Yuan dynasty was sporadic (Leonard 1996). Documents surviving in it include epigraphic material, official tablets, official or private seals, and some printed texts. The script was used throughout the Yuan period for about a hundred years and abandoned with the collapse of Yuan. It only remains in use in the Tibetan culture as an ornamental script and on seals of ranking dignitaries and religious hierarchs (Leonard 1996).

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[*] The research reported here was part of my M.A. thesis at University of Massachusetts Amherst. I would like to thank Professor Zhongwei Shen for his help and guidance.
[1] In Chinese: 譯寫一切文字.

As an alpha-syllabic writing system, the hP'ags-pa script combines the orthographic principals of both an alphabet and of syllabary writings (Shen 2008). In syllabary writing, the initial letter represents an entire syllable. Even if there is no initial consonant, a "dummy" letter for zero initial must be shown. Similarly, in hP'ags-pa script, an initial letter represents a CV (consonant + vowel) syllable with a default vowel [ɑ]. The single vowel syllable [ɑ] is spelled with a zero initial. But the other vowels [i] [u] [e] [o] must be presented by vowel letters. Those letters cannot stand for a whole syllable and must be used with a dummy initial letter. The syllabic features of the hP'ags-pa script were inherited from the Tibetan script (Shen 2008). The hP'ags-pa script is written vertically (top to bottom) in columns from right to left, similar to the Uighur script.

The Chinese hP'ags-pa script materials can be found in various resources, such as official or private seals, coins, bank notes, and edicts in the Yuan dynasty (Coblin 2007). Extensive hP'ags-pa scripts can be also found in the primer Bǎijiā xìng 百家姓, [Surnames of the Hundred Families] (BJX). The value of this material is still not fully explored. BJX in hP'ags-pa script not only offers us ample information about Chinese phonology, but also it can provide more insight into the history and movement of Chinese Romanization.

2. Bǎijiā xìng 百家姓

The BJX in hP'ags-pa script was issued in Yuan dynasty. The purpose of this document was to promulgate this new script. As seen in the preface of two BJX editions[2] in hP'ags-pa script, "if you can become proficient in this text at an early stage, you will find it to be a shortcut to a career as an official."[3]

The primer BJX in hP'ags-pa script is preserved in a popular encyclopedia Shilin Guangji 事林廣記 [Comprehensive Record of Affairs] (SLGJ). The BJX in hP'ags-pa script has four editions that are currently known to scholars (Luo and Cai 1959, Junast 1981, Junast 2003, Coblin 2007, Chen 2014).

(A). A Yuan edition, published by the Chunzhuang Shuyuan 椿莊書院 during the Zhishun 至順 period (1330–1333).

(B). A Yuan edition, published by Ji Cheng Tang 積誠堂 in the sixth year of the reign of Zhiyuan 至元 (1340).

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[2] The two editions refer to the Yuan edition published by Chunzhuang Shuyuan 椿莊書院 during the Zhishun 至順 period (1330–1333) and the Yuan edition published by Ji Cheng Tang 積誠堂 in the sixth year of Zhiyuan 至元 (1340).

[3] In Chinese: 初孝能復熟此篇，亦可以爲入仕之捷徑云.

(C). A Japanese edition, published in the twelfth year of Genroku 元禄 (1699), which is a reprint of a Yuan Taiding 泰定 (1325)[4] edition.

(D). An edition that was provided by the Hungarian scholar Louis Ligeti.

As a variety of scholars cannot be sure of the publishing house of the edition provided by Ligeti, these four editions are usually labeled A, B, C, and D. I will refer to them as the A, B, C, and D editions hereafter, according to the convention of the scholars in this field (Junast 1981, Junast 2003, Chen 2014).

Like the BJX Chinese version, the BJX in hP'ags-pa script also lists those common single-character and double-character Chinese family names, and the double-character surnames occur after single-character surnames. The difference is that the primer BJX in hP'ags-pa script provides both hP'ags-pa syllables and their Chinese equivalents. I show some examples below. In terms of single-character surnames, I use the first four surnames "趙、錢、孫、李" as examples. For the double-character surnames, I use "万俟、司馬" as examples.

(1) Single-character surnames

趙: 錢: 孫: 李:

(2) Double-character surnames

万俟: 司馬:
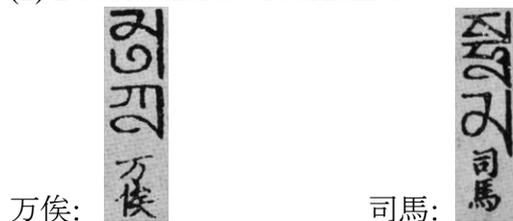
As we can see from above, (1) lists the first four single-character surnames 趙 zhào、錢 qián、孫 sūn、李 lǐ[5], and (2) lists two double-character surnames 万俟 mò qí and 司馬 sī mǎ[6]. For either single-character surname or double-character surname, the

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[4] Taiding (泰定) is the name of a Yuan emperor, his reign started from the year of 1324 and ended in the year of 1328. Yuan Taiding edition was produced in the third year 1325.

[5] The pictures of 趙 zhào、錢 qián、孫 sūn、李 lǐ are from the Yuan edition published by Ji Cheng Tang 積誠堂 in the year of 1340.

[6] The pictures of 万俟 mò qí and 司馬 sī mǎ are from the Yuan edition published by Ji Cheng Tang 積誠堂 in the year of 1340.

top part is the hP'ags-pa syllable, and the bottom part is the corresponding Chinese surname.

3. Brief Review of the BJX in hP'ags-pa Script Studies

Luo and Cai (1959) published their book 八思巴字與元代漢語（資料彙編）[The hP'ags-pa Script and Chinese in the Yuan Dynasty: Compilation of Materials]. In the second chapter of this book, they discuss various versions of SLGJ, in which different editions of the BJX in hP'ags-pa script text are recorded. Luo and Cai (1959) give a detailed comparison to the B edition preserved in the Peking University Library and the Japanese C edition. The comparison of those two editions focuses on their volume numbers, titles, prefaces, format, and errors. Based on their analysis of the errors in those two editions, Luo and Cai (1959) consider the B edition to be much more reliable than the Japanese C edition, which was compiled much later than when the hP'ags-pa script was created. Although its editors lacked knowledge of this writing system and made numerous errors, the Japanese C edition can still offer some useful information for scholars. Photographic reproductions of two editions are provided in the book 八思巴字與元代漢語（資料彙編）, and Luo and Cai's (1959) work offers a useful collection of materials. They meticulously compare and collocate two editions of the BJX in hP'ags-pa script, forming a foundation for later work.

Junast (1981, 2003) is another important scholar who has made recent significant contributions to the study of the BJX in hP'ags-pa script. In his article 八思巴字百家姓校勘 [The Collation of the BJX Text in hP'ags-pa Script], Junast (1981) compares and comments on the quality of the four available editions of the BJX in hP'ags-pa script. He considers the A edition and B edition to be the two best editions because they have fewer errors and almost the same errors. The D edition has better quality than the Japanese C edition which has relatively poor quality and more than 110 errors. Junast (1981) points out all writing errors and makes critical corrections to the B and D editions. He provides an index of all the surnames by initials, which facilitates retrieval. Photocopies of those two editions are attached as appendices. This work is a milestone in the study of the BJX in hP'ags-pa script because it compares all four known editions and identifies and corrects graphic errors in two editions, consulting the hP'ags-pa writings in *Menggu ziyun* 蒙古字韻 [*A Mongolian Script Rhyme Dictionary*] (MGZY)[7]. Junast (1981) also gives the Latin transliterations of all the family names which appear in the four editions. Junast (2003) published a updated work 新編元代八思巴字百家姓 [*A New Critical Edition of hP'ags-pa Script BJX*], which could supplant his older critical version of 八思巴字百家姓校勘 [*The Collation of BJX Text in hP'ags-pa script*]. This newest book

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[7] MGZY is a rhyme book. The Yuan court attempted to develop an orthography for Chinese in the newly invented v hP'ags-pa script. This book can be used to learn the hP'ags-pa spellings of Chinese characters and possibly conversely to understand the Chinese characters represented in hP'ags-pa spellings.

includes the research results of his earlier work in 1981 and supplements it the standard hP'ags-pa scripts for each surname. In short, Junast's (1981, 2003) work is the most thorough research on the BJX in hP'ags-pa script. His work (1981, 2003) is an index for further studies.

In addition to those studies which treat the BJX in hP'ags-pa script as a whole, Chen (2014) focuses on a single character and a small question in his article. In the Japanese C edition, the surname Miu 繆 is spelled as muw, which is usually regarded as a variant pronunciation. However, after applying the voice corresponding rules and conducting a comparative literature study, he (2014) categorizes the spelling of the surname Miu 繆 in hP'ags-pa script in the Japanese C edition as a clerical error instead of a variant pronunciation.

As we can see, scholars have gradually recognized the value of the BJX in hP'ags-pa script. They have done excellent work, providing facsimiles for four editions, comparing the quality of these editions, correcting their graphic errors, and standardizing the writing of those hP'ags-pa syllables. These research results can facilitate further studies. However, except for Chen's (2014) analysis of the error type of a single surname, these scholars have not categorized the error types in this material.

4. The Error Types

There are three, main types of errors[8] in the transliteration of Chinese in hP'ags-pa spellings. This includes the misuse of similar-looking letters; although some hP'ags-pa letters look very similar, they represent different phonological units in the BJX text, many graphic errors were made due to the ignorance of subtle differences. In addition, there are errors that can be classified as pure clerical errors; these errors involve the unintentional addition or omission of a hP'ags-pa letter. Finally, there are errors in the transliteration of variant pronunciations.

4.1 Misuse of similar-looking letters

Within the category "misuse of similar-looking letters," there are eleven error subtypes involving initials (Wang 2017). Due to the limitation of space, we only list some typical examples here. For example, the confusion of the alveolar affricate ꡐ and the velar ꡂ, the confusion of the bilabial initial ꡎ and the retroflex initial ꡒ, and the confusion of the retroflex initial ꡒ and the velar nasal ꡼ .

The letter ꡐ represents a voiceless unaspirated alveolar affricate, while the letter ꡂ represents a voiceless unaspirated velar stop. Their places of articulation are totally different, although their graphic appearances have some similarities. Such errors can be observed in the writing of surnames 昝 in the D edition.

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[8] We only summarize common error types and give some typical examples in this article. As for the detailed errors, please refer to my thesis (Wang 2017).

Correct: A149　B149　C165　Wrong: D149

The letter ᠊ represents the voiceless unaspirated bilabial initial, while the letter ᠊ represents the retroflex initial. Such errors can be observed in the writing of the surname 邴 in the C edition.

Correct: A198　B198　Wrong: C214

The letter ᠊ represents a voiced retroflex stop, while the letter ᠊ represents a velar nasal. Such errors can be observed in the writing of surname 仲 in the C edition.

Correct: A222　B222　D222　Wrong: C238
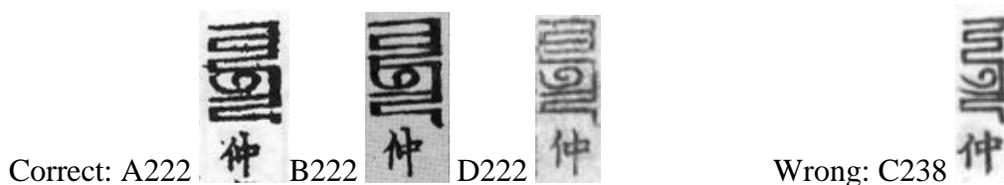
4.2 Pure clerical errors

In the category "clerical errors," there are many mistakes in both initials and finals (Wang 2017). These errors involve the unintentional addition or omission of a hP'ags-pa letter. For example, the initial ᠊, ᠊, and the final ᠊.

Correct: A204　B204　D204　Wrong: C220

Correct: A303   B303   D303   Wrong: C319

Correct: A378   B378   D379   Wrong: C395
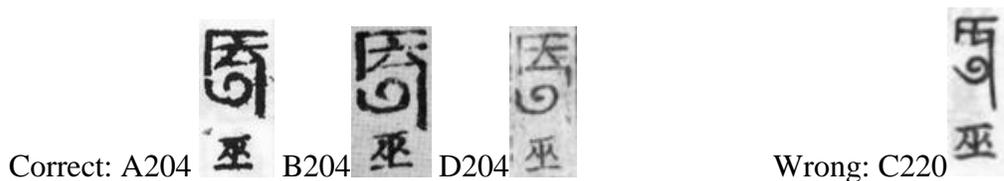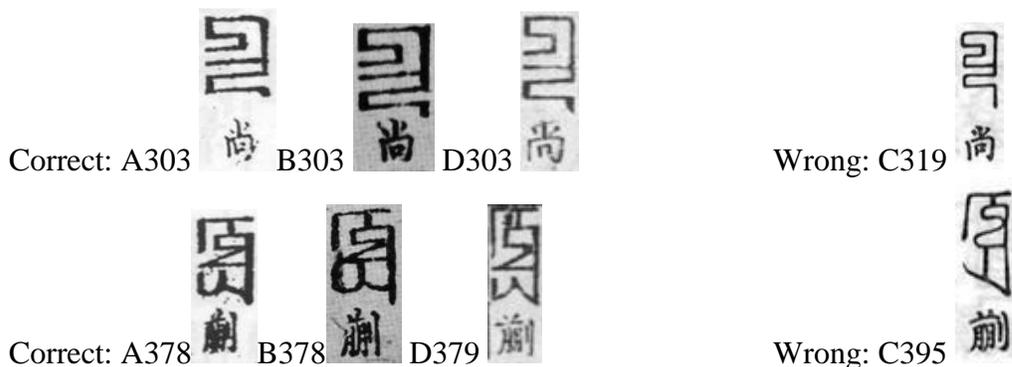
It is worth noting that the criteria for judging mistakes are not absolute. In many finals, whether or not an error exists may be debatable. For example, the surnames 戚, 李, 支, 畢 and 嵇 in the C edition. The writings of 〽 are not unified in the C edition.

Correct: A33   B33   D33   ?[9]: C33

Correct: A4   B4   D4   ?: C4

Correct: A147   B147   D147   ?: C163

Correct: A76   B76   D76   ?: C76

Correct: A178   B178   D178   ?: C194

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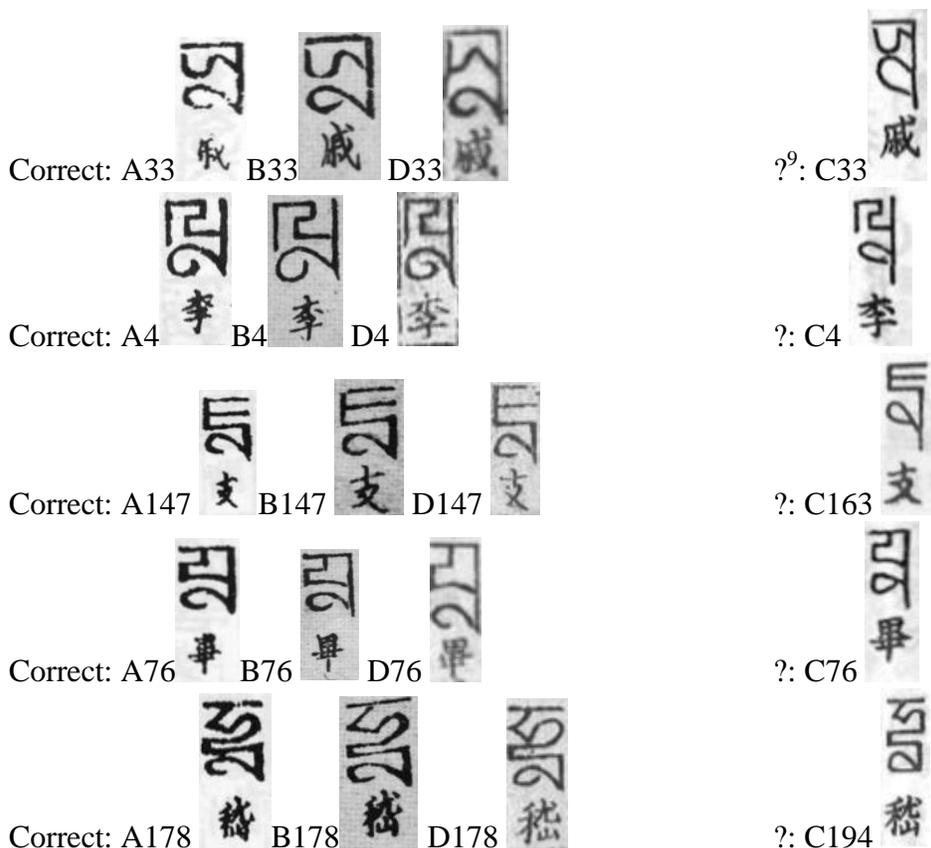
[9] The mark "?" means whether the writings are correct or incorrect is debatable.

4.3 Errors in the transliteration of variant pronunciations

The third type of error, errors in the transliteration of variant pronunciations, needs further examination. A total of 46 surnames with variant pronunciations appear in all four editions, but the distribution of these surnames across editions is not balanced. Forty-one surnames with variant pronunciations appear in the C edition, and only five surnames (于, 霍, 向, 蔚, 於) with different transliteration appears in the A, B and D edition. The different transliterations could offer us some useful phonetic information[10]. For example, 松: A, B, D edition transliterate the initial as the voiced ⊒ ; C edition transliterates as the voiceless ⧗ . 瞿: A, B, D edition transliterate the initial as the voiced ㎜; C edition transliterates as the voiceless 句. 麴: A, B, D edition transliterate the initial as the aspirated 占; C edition transliterates as the unaspirated 句.

A200   B200   D200   Variant pronunciation: C216

A318   B318   D318   Variant pronunciation: C326

A190   B190   D190   Variant pronunciation: C206
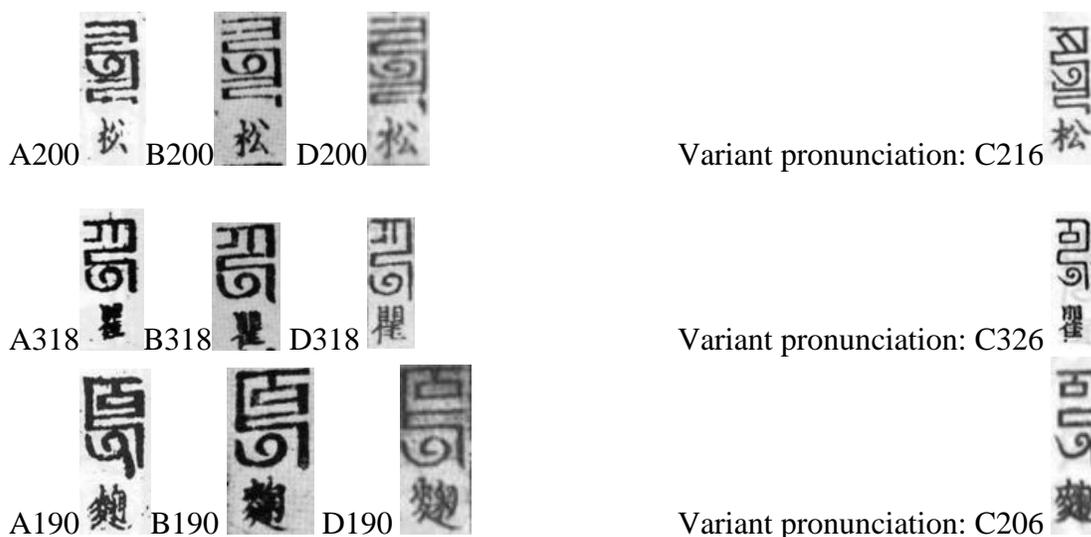
Some variant transliterations do not only involve an initial or a final; the entire syllable varies in the C edition from the other editions. This kind of transliteration variation occurs in the surnames 繆, 母, 伏, 宓, 邰, 鄧, 宰, 蔡, 郗, 藉, 藍, 常, 水, 束, 岑, 葉, 蓋, and 谷. These surnames are transliterated differently in the C edition than in the A, B and D editions.

5. Conclusion

The limitation of space prevents us from listing all the errors here. We only summarize common error types and give some typical examples in this article. As for the detailed error types, including the transliteration of Chinese initial consonants and Chinese finals, please refer to my thesis (Wang 2017).

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[10] Detailed examination and analysis are included in my thesis (Wang 2017).

Among the three main types of errors, errors in the transliteration of variant pronunciations are the rarest. The majority of errors involve either the misuse of similar-looking letters or pure clerical errors, which together can be categorized as "graphic errors." Although many hP'ags-pa letters look very similar, they can represent totally different phonological units. Han Chinese people tend to only regard hP'ags-pa scripts in BJX text as a special or representative example of calligraphy, such as is the case with Chinese characters. However, the nature of hP'ags-pa script and Chinese are totally different. As a result, many graphic errors have been made to the BJX text. This misunderstanding was a fatal error that prevented the spread of the script.

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