

2 The Old Chinese phonology

2.1 Manuscripts as new sources of data for Old Chinese

The sources of data for phonological studies in early manuscripts consist in so-called *tongjia* 通假 or phonetic loan characters. The phonological relation between the word that a *tongjia* character normally stands for in the received early Chinese literature (which constitutes the standard received orthography) and the word intended by the loan character is accounted for by phonetic compatibility in the initial consonants and rhymes similarly to the relation between characters that belong to the same *xiesheng* 諧聲 phonophoric series. Whether a manuscript character is a loan character, i.e., whether it stands for some other word than the one it regularly stands for in the standard orthography and which word it then actually stands for are judged on the basis of comparisons with received texts that have comparable contexts and wordings. In the case where a manuscript text has a matching transmitted version, words in the latter serve as the point of reference for the interpretation of the former. Thus a *tongjia* character and its standard received character counterpart also constitute phonologically related textual variants. It is to be noted that the term *tongjia* in phonological or textual studies does not necessarily mean that the character is literally ‘borrowed for’ its received counterpart; it refers to the differences in character usages and the phonological relations that link the two words involved. What matters is identifying words behind those character variants and that has to be provided by the normal characters by which the words are written.

A phonological study of *tongjia* characters concerns in particular the alternations of initials and rhymes between the two corresponding words in comparison with Middle Chinese and Old Chinese phonological systems; the outcome of the study is thus also to be stated in some relation to MC and OC. To illustrate the procedure I will present the first hexagram chapter of the Mawangdui silk manuscript “Zhouyi 周易” (ca. 168 BCE) and its received version. Characters with phonologically related variants are bold-faced.

Phonologically related textual variants from the perspective of phonetic loans

Mawangdui silk manuscript (ca. 168 BCE)

Received

鍵 元亨利貞

乾 元亨利貞

初九 浸龍勿用

初九 潛龍勿用

九二 見龍在田利見大人

九二 見龍在田利見大人

九三 君子終日鍵鍵夕泥若厲无咎

九三 君子終日乾乾夕惕若厲无咎

九四 或鱗在淵无咎

九四 或躍在淵无咎

九五 翬龍在天利見大人

九五 飛龍在天利見大人

尚九 抗龍有悔

上九 亢龍有悔

迴九 見羣龍无首吉

用九 見羣龍无首吉

tongjia pairs (MWD :: Received)鍵 *jiàn* < *gjonX* (*-an) ‘door-bolt’ :: 乾 *qián* < *gjen* (*-an) ‘Qian, hexagram name’浸 *jìn* < *tsimH* (*-əm) ‘soak’ :: 潛 *qián* < *dzjem* (*-əm) ‘submerge’鱗 is unknown; Cf. 龠 *yuè* < *yak* (*-awk) ‘flute’ :: 躍 *yuè* < *yak* (*-awk) ‘jump’翬 *fěi* [irregular tone] < *bjwǐjH* (*-əj) ‘sparrow’ :: 飛 *fēi* < *pjwǐj* (*-əj) ‘fly’尚 *shàng* < *dzyangH* (*-an) ‘loft’ :: 上 *shàng* < *dzyangH* (*-an) ‘up’抗 *kàng* < *khangH* (*-an) ‘resist; raise; high’ :: 亢 *kàng* < *khangH* (*-an) ‘high’迴 *dòng* < *duwngH* (*-oŋ) ‘thorough’ :: 用 *yòng* < *yowngH* (*-oŋ) ‘use’

The words *jiàn* 鍵 and *qián* 乾 in the first pair share the MC initial *g-*, and this makes in a quantitative study one technical count of alternation or a case of contact between two words with the same initial *g-*; their MC rhymes are different as *-jon* and *-jen*, but they both belong to the OC rhyme group **-an*. Since the OC source of *g-* is **g-*, the phonetic compatibility of these two words is accounted for by their individual relation to an OC syllable in the phonetic form of **gan*. It is not necessary to assume that the 鍵 is borrowed for 乾, or vice versa; there always exists the possibility that the word originally intended is neither *jiàn* nor *qián*, but a third one of the same syllable type **gan*. The second pair *jìn* 浸/ *qián* 潛 shows an alternation between *ts-* and *dz-* which coincides with that between **ts-* and **dz-*; their MC rhymes are incompatible as *-im* vs. *-jem*, but again, their OC rhymes agree as **-əm*. Continuing this way a system of initial consonants and rhymes behind these *tongjia* alternations can be obtained.

Zhou Zumo in his classic article “Handai zhushu yu boshu zhong de tongjiazi yu guyin de kaoding 漢代竹書與帛書中的通假字與古音的考訂” (1984) has shown that the phonological phenomena reflected in Early Han manuscript *tongjia* characters are basically the same as those in *xiesheng* alternations. He presents a system of phonemic distinctions derived from the *tongjia* characters as an Old Chinese initial consonant system (古聲類的一個系統). Zhou’s study is made in response to the Yinqueshan 銀雀山 (Shandong Linyi 臨沂, 1972) and Mawangdui 馬王堆 (Hunan Changsha 長沙, 1973) Early Han manuscript discoveries.²⁷ Similar results are obtained by Zhang Ru (1988) who combines the Shuihudi Qin manuscripts with the two Han manuscript corpora, which is about half a century earlier than the latter. Zhao Liwei (2002) who exclusively deals with the Shuihudi manuscripts also confirms the phonological system of the *xiesheng* series and the *Shijing* rhymes.

Zhou Zumo begins the article pointing out the presence in these early manuscripts of non-transmitted old character forms and of early *tongjia* characters known from the Zhou bronze script. In concluding remarks he comments on similarities between *tongjia* characters in the manuscripts and textual variants among received early Chinese literature. Zhou implies by this presentation that the agreement between the *xiesheng* and *tongjia* phonology on the overall phonological system is due to (at least partially) the orthography of the early script preserved in the early manuscripts.

Given that the phonological system reflected in the phonologically related textual variants in the early manuscripts agrees with the Old Chinese, we can expect to find in those textual variants information about individual OC word pronunciations. Note for instance the alternation between *dōng* 同 and *yòng* 用 in the last line of the hexagram chapter cited above. Words with the phonetic component 同 from received early literature as collected in Karlgren’s *Grammata Serica Recensa* (1957, no. 1176) only include the two MC initials *d-* and *th-*, and so the OC initial of the words in this phonophoric series would be indeterminate between *L- (laterals) and *T- (dental stops) if the received orthography was our only available source. The manuscript character *dōng* 同 corresponding to the received *yòng* 用 links the phonophoric series 同 to that of 用: the 用/甬 series (GSR #1185) contains words with MC *d-*, *th-*, *y-* and *z-*, and this combination clearly indicates an OC *l- initial. This *tongjia* alternation thus suggests that both the graphs 同 and 用 are used to write words in the syllable type *lŋ, i.e., words with an initial of the *l- type and the rhyme *-ŋ.

²⁷ See Liu Baojun (1986) for a study exclusively of the Mawangdui manuscripts and Zhao Cheng (1986) for the Yinqueshan manuscripts.

If we examine words in the series 同 and 用 with their relatedness in mind, we might find a word-family whose members come from either the 同 or the 用 series. But first note that the graph 用 (頌簋) is in origin derived from 甬 (毛公鼎). It turns out that the latter regularly appears as a phonetic component, but the former is rarely used other than for the lexical item *yòng* 用 ‘use’ in the received orthography. We identify a series of cognate words written with either 同 or 甬, whose root meaning is √ PENETRATE.

Alternating phonophorics 同 ~用(甬) and the word family *lɔŋ √penetrate

湧, 涌 *yǒng* < *yowngX* < *lɔŋʔ ‘gush forth (as a spring)’²⁸

箛, 筒 *tóng* < *duwng* < *llɔŋ ‘(bamboo) tube’

通 *tōng* < *thuwing* < *hllɔŋ ‘pass through’

洞 *dòng* < *duwngH* < *llɔŋ-s ‘fast current, penetrate, cave’²⁹

迴 *dòng* < *duwngH* < *llɔŋ-s ‘thorough’

Thus the manuscripts afford us with supplementary or decisive information about previously uncertain cases, especially for those words whose Middle Chinese initials have two or more OC origins. Revised reconstructions based on such new evidence have further implications on word-family relations and text interpretations.³⁰

2.2 A reconstruction system of Old Chinese phonology

How the Old Chinese phonology is reconstructed bears directly on how we interpret graphic evolution and variations observed in the early Chinese writing system. In this section, I explain the Old Chinese phonological system which is employed throughout this study.

The Old Chinese phonology is reconstructed as a direct ancestor of the Middle Chinese which represents the phonological system underlying the *Qieyun* 切韻 (CE 601) rhyme dictionary. In the latter, the MC phonology is manifested in a kind

²⁸ This lexical item is taken from Karlgren’s GSR #1185.

²⁹ The meaning ‘cave’ for the character 洞 is not attested in early texts, but it seems to be etymologically the same as the early Chinese word associated with the character.

³⁰ See Li Yu (1994) for a comprehensive phonological study of manuscripts from the Qin and Han dynasties. See also Zhao Tong (2006) for an attempt at reconstructing a W.S. period Chu dialect phonology through Chu manuscripts. See Park (2009: 44-62) and 2011 for critical reviews of Li and Zhao respectively.

of syllable-structure analysis, which divides a syllable into two parts, initial consonant and rhyme, with the latter being realized in the four distinct tones, *ping* ‘level’, *shang* ‘rising’, *qu* ‘departing’, and *ru* ‘entering’ tones. The first three tones occur in syllables with voiced endings and the last in voiceless stop endings. The initial consonants thereof is presented somewhat indirectly: the dictionary gives groups of homophonous words under each rhyme category, and the pronunciation of each group is provided in a sound-gloss method called *fanqie* 反切 ‘turning and cutting’. This method indicates the pronunciation of one word by those of two other words which have the same initial and rhyme respectively with the sound being glossed. For example, 熏 MC *xjun* ‘to cure (meat or fish) by exposure to smoke’ is glossed as “許云”, i.e., MC *xjoX* ‘allow’ + *hjun* ‘say’, and the pronunciation *xjun* is reached by combining the initial *x-* of the first word and the *-jun* in *ping* tone of the second. The initial consonants can then be deduced by obtaining groups of the initial ‘spellers’. The original *Qieyun* only survives as manuscript fragments found in Dunhuang in the early-to-mid 20th century, but the *Guangyun* 廣韻 (CE 1008), an expanded redaction of the *Qieyun* which preserves the MC system of the latter intact remains today as our primary source (Zhou Zumo 1983).

While the *Qieyun* dictionary gives so many clues to the sound system, the reconstruction of the Middle Chinese is also crucially aided by the phonological analysis in the *yuntu* 韻圖 ‘rhyme tables’ from the Tang and Song periods. These rhyme tables further analyze both initials and rhymes: each of the MC initial phonemes is given a name and assigned to a place of articulation, and all the rhymes are divided in four grades, namely, Division I through IV. The features defining these four grades, as expressed in the reconstruction by Karlgren (1954) consist in both vowel height and color. The reconstruction of MC phonology is quite unproblematic, especially after a general agreement on a few modifications to Karlgren’s system has been established by the time of F. K. Li (1971). Chinese historical linguists generally treat MC as a textually attested language, rather than a reconstructed language, so that MC syllables are conventionally not marked by an asterisk. Baxter 1992 proposed a “transcription” system based on the previously established MC. I use Baxter’s MC transcription system in this study.

The OC is a system which underlies both the rhymes of the *Shijing* ‘Book of Odes’ and the phonophoric system in the early Chinese writing system: the former provides rhyming words which suggest rhyme categories³¹, the latter provides groups of words written with the same phonetic graphic component (i.e.,

³¹ OC rhyme categories are conventionally called “rhyme groups” as opposed to MC “rhymes”; in Chinese, the former is called *yunbu* 韻部 and the latter simply *yun* 韻.

phonophoric), traditionally called *xiesheng* 諧聲 series. The latter reveals the initial categories, because it requires compatibility in both in the initial and rhyme between two words to be written with the same phonophoric.

While there is one coherent system which these two major written sources of OC converge on, as one can expect, there is evidence for dialect variation in all above mentioned sources. Baxter sometimes refers to the former ‘mainstream phonology’ as opposed to Old Chinese dialects. One may relate this ‘mainstream phonology’ to the “*yayan* 雅言” ‘Elegant Speech’ which refers to the *lingua franca* around the S.A. period.³² A standard spoken Chinese should have existed before and after that time, so we may think of the *yayan* roughly overlapping with the entire Old Chinese phonological period, although we do not know the precise times for its rise and fall.

As with any *lingua franca*, the *yayan* should have had some loan words from other dialects and languages; as a common language spoken by people(s) with different native dialects and languages, there could have been some frequently heard non-native “accents” as well. Thus at least part of the dialect mixture phenomenon observed in these sources could be attributed to the *yayan* itself as a realistic *lingua franca*, rather than to mixed origins of the written sources themselves.

In the following discussion of Old Chinese, *xiesheng* phonophoric series are presented in the standard received orthography. As discussed earlier, the received orthography in its essence represents the standard of the Qin regional script. For our purposes, this means that unless a character is proven to be of late origin, it is assumed to be consistent with the received orthography as of the late Warring States period (W.S. hereafter). It is important to bear this point in mind in order to anticipate comparisons of the latter with Chu manuscript phonophorics in later chapters.

2.2.1 Overview

The reconstruction system used in this study purports to reflect the phonemic distinctions that are generally acknowledged by historical phonologists of Old Chinese. Some characteristics of this system, which will be elaborated below are as follows.

³² The *Lunyu* has the line: 子所雅言, 詩書執禮皆雅言也 (“Shuer 述而” chapter) “These are the occasions for which Confucius speaks *yayan*: when he quotes the Book of Odes and the Book of Documents, and when he holds ceremonies, he always uses *yayan*”.

It notates the distinction between MC Division III (corresponding to OC Type B syllable) vs. I, II, IV (OC Type A syllable) as orthographic single vs. double consonants following the “Baxter-Sagart system version 0.97” (Sagart 2007).³³

It reconstructs the coda *-r as proposed by Starostin (1989 [2010]), and as further developed in current “Baxter-Sagart system” (“version 0.98” [2008]- “version 1.0” [2011]).

It has a set of uvular initials that accounts for the MC laryngeal initials (*houyin* 喉音 ‘throat sounds’); Baxter and Sagart accepted the reconstruction of uvulars originally proposed by Pan Wuyun (1997) with some modifications (Sagart and Baxter 2009). The system presented in this study follows Pan Wuyun’s 1997 original proposal rather than Baxter and Sagart’s modified version.

It is different from Baxter 1992/ “Baxter-Sagart 0.97-1.0” in the treatment of the rhymes that are covered by the ‘Rounded vowel hypothesis’.

2.2.1.1 The third vs. non-third division syllables and the second division medial *-r-

The distinction between the third vs. non-third division syllables, featured in MC as the presence and absence of medial -j- or palatal initials respectively, is assumed to lie in the initial segment in the Old Chinese stage. While the precise phonetic nature of this distinction is still underdetermined, the former is written with a single letter and the latter with a double letter. Medial *-r- is reconstructed exactly like that in Baxter 1992, mainly for the second division syllables and retroflex initials, and also for some MC rhyme distinctions (for the second and third division rhyme couplets that come from the same OC rhyme group) and the *chongniu* syllables.

For example, the three series of MC initials, the dental stops {*t-*, *th-*, *d-*}, retroflex stops {*tr-*, *dr-*, *thr-*}, and palatal affricates {*tsy-*, *tsyh-*, *dzy-*} which go back to a single stop series, (unless they have different origins such as the *-l- type initial) are reconstructed as follows.

³³ Baxter and Sagart since their “Baxter-Sagart 0.98” version (2008) have adopted in their reconstruction system ‘pharyngealization’ as the phonetic feature in OC that conditioned the separation of MC D-I, II, IV from MC D-III syllables, following Jerry Norman’s 1994 original proposal with some modifications. In this new interpretation, for e.g., the previous **tt*-> *t*- corresponds to **tʰ*-> *t*- (D-I, II, IV) and **ttr*-> *tr*- to **tʰr*-> *tr*- (retroflex in D-II); the notation for D-III syllables appears unchanged after the new interpretation, for e.g., **tr*-> *trj*- (retroflex in D-III), and **t*-> *tsy*- (D-III) in both systems, but, it is used with a different meaning now, i.e. absence of pharyngealization.

*t- > tsy-	*t ^h - > tsyh-	*d- > dzy-	p alatal affricates (only in D-III)
*tt- > t-	*tt ^h - > th-	*dd- > d-	dental stops (only in D-I, II, IV)
*tr- > trj-	*t ^h r- > trhj-	*dr- > drj-	retroflex stops in D-III
*ttr- > tr-	*tt ^h r- > thr-	*ddr- > dr-	retroflex stops in II

2.2.1.2 The initial *r-

The OC source of MC *l*- is reconstructed as *r-. It has been shown by Schuessler (1974) and Yakhontov (1976 [1986]) among many others that the MC *l*- corresponds to /r/ in Tibeto-Burman cognate words and Tai and Vietnamese loan words. More importantly, the MC *l*- is closely related to the medial *r-: Yakhontov (1960 [1986]) observes that (a) the *l*- initial words rarely occur in D-II (i.e., the medial *r- and MC *l*- are in complementary distribution) and (b) words with velar or labial initials that have *xiesheng* contact with *l*-, which were reconstructed by Karlgren as *Kl or *Pl type clusters, are often in D-II. F.K. Li (1971 [1982]) gives *r- when the of K/P- ~ *l*- alternation overlaps with D-II. For example, *gè* < *kæk* < ***krak** 格 ‘frame’ (D-II) :: *luò* < *lak* < ***lak** 洛 ‘name of a river’ and *mái* < *mēj* < ***mræg** 埋 (葬) ‘bury’ (D-II) : *lǐ* < *li* < ***ljæg** 狸 ‘kind of wild cat’ (p. 24). Yakhontov suggests to reconstruct a single source for both the D-II vocalism and *l*-, viz., *l and he later (1976 [1986]) revised it to *r.

Words that have the MC aspirated dental or retroflex stop *th*- (*tou* 透) or *trh*- (*che* 徹) and have *xiesheng* contact with *l*- are given *hr-, the voiceless counterpart of *r-. At present we do not have an explanation for the distinction in OC between *th*- and *trh*- words that are both in D-II. The word *tǎ* < *that* < ***hrrat** 獺 in contact with *lài* < *lajH* < ***rrat-s** 賴 ‘rely on’ is in D-II; the word *chài* < *trhæjH* < ***hrrat-s** 蠆 ‘scorpion’ in contact with *lì* < *ljejH* < ***rat-s** 厲 ‘grindstone’ is also in D-II.

*r- > lj-	*rr- > l-
*hr- > trhj- (D-III)	*hrr- > th- (D-I, II, IV) ~ trh- (D-II)

2.2.1.3 The initials *l- and *[g]-

The OC origin of MC *y*- (*yusi* 喻四) is reconstructed as *l- (D-III) (except for a small number of cases that are related to the velar and uvular series) and MC *d*- initial words in *xiesheng* contact with the latter makes its non-D-III counterpart. Thus the OC system has *r- and *l- contrasting with each other.

Pulleyblank (1962) discovered the now generally acknowledged *l- type *xiesheng* series which include members from the MC set of initials {*th*-, *d*-, *trh*-,

dr-, *y-*, *sy-*, *zy-*, *s-*, *z-*}. This set is characterized by the lack of the voiceless unaspirated obstruents such as *t-*, and *tr-* and *tsy-* and the inclusion of alveolar and palatal fricatives. The *y-* and *d-* are almost always present in a series that lacks *t-*, and *tr-* and *tsy-* and thus their presence alone can be reasonably taken as an indication of the **l-* series in the absence of the other less frequently occurring items such as *dr-*, *trh-* and *zy-* etc. So we will not assume another dental origin of *y-*. The developments of the **l-* series initials are as follows. The reconstructions for *zy-* (*chuan* 船) and *z(j)-* (*xie* 邪) are more tentative than the others in the series.

* <i>l-</i> > <i>y-</i>	* <i>ll-</i> > <i>d-</i>
* <i>hl-</i> > <i>sy-</i>	* <i>hll-</i> > <i>th-</i>
* <i>lr-</i> > <i>drj-</i>	* <i>llr-</i> > <i>dr-</i>
* <i>hlr-</i> > <i>trhj-</i>	* <i>hllr-</i> > <i>trh-</i>
* <i>sl-</i> > <i>sj-</i>	* <i>sll-</i> > <i>s-</i>
* <i>zl-</i> > <i>zy-</i>	* <i>zll-</i> > <i>zj-</i> ³⁴

Some of *y-* initial words have contact with MC velar and laryngeal initials which are reconstructed with velar and uvular initials in OC. This phenomenon may be interpreted as an effect of velar/uvular palatalization. But we do not know the conditioning factor. Note the pairs,

yǔ < *yoX* 與 ‘join’ :: *jǔ* < *kjoX* (**k-*) 舉 ‘raise’ (both characters contain the phonophoric *yá* < *ɲæ* 牙 ‘fang’);
yáng < *yang* 羊 ‘sheep’ :: *yǒng* < *hɥwæŋX* (**Gw-*) 永 (variant of 永) ‘eternal’;
yǐ < *yiX* 已 ‘already’ :: *gǎi* < *kojX* (**k-*) 改 ‘change’.³⁵

I will write *[*g*]- (> *y-*) which stands for some sort of voiced guttural stop with its point of articulation underdetermined.

Baxter-Sagart system reconstructs **G-* for *y-* with velar/uvular contacts. This **G-* is posited as the non-labialized counterpart to **G^w-*, the origin of *hj-* which is almost always with medial *-w-*. However, it is still not satisfactory to assume that such cases of *y-* come only from uvulars rather than velars when there is no independent evidence that supports the reconstruction of uvular origins on the whole. Because Baxter-Sagart assumes that a *xiesheng* series with both uvular and velar initials must be reconstructed with uvular root initials (see section

³⁴ (Cf. Baxter and Sagart **m-l-* > *zy-* and **s-m-l-* > *sy-*. For example (Baxter 2010: 173), 食 *shí* < *zyik* < **m-lək* ‘eat’ :: 飤 *sì* < *ziH* < **s-m-lək-s* ‘feed’ :: 飾 *shì* < *syik* < **lək* ‘decorate’ :: 飭 *chì* < *trhik* < **lɾək* ‘firm’)

³⁵ The two characters *yǐ* 已 and *sì* 巳 developed from a single early script form, 𠄎 (孟鼎)

2.2.1.5 for more detail), this *G- > y- leads to many instances of the velarizing *Cə-. I think that MC velar initials in contact with y- can simply be reconstructed as OC velars as usual. An example of a *xiesheng* series with interchanges between y and velar stops in Baxter-Sagart system (example from Sagart and Baxter 2009:231) is:

羊 yáng < yang < *G(r)ang ‘sheep’ :: 羌 qiāng < khjang < *Cə.qʰaŋ ‘Western tribes’ :: 姜 jiāng < kjang < *Cə.qaŋ ‘a family name’.

In a simpler alternative reconstruction that I suggest here: 羊 *[g]ang, 羌 *khaŋ, 姜 *kaŋ.

2.2.1.4 The initials *z-, *s-g- and *s-d-

The MC z- has a few distinct sources including *z- itself. The z- occurs only with D-III finals and it conspicuously makes *xiesheng* contact with initials in all points of articulation but the labials i.e., with the *l- series, plain dental stop, alveolar sibilant, as well as velars series. F.K. Li reconstructed *rj- for z- (in non-velar connections), which is then in a sort of complementary distribution with his *r- for y- (*yusi* 喻四). Li assumed this *r- to have phonetic quality like an alveolar flap so that it can have *xiesheng* contact widely with all acute initials. The *r- is now generally reconstructed for MC l- as discussed above. In addition, there is no compelling reason to combine y- and z- as a single phoneme. A *xiesheng* series such as the 司 series (GSR #972) which consists of words with s- and z- makes the existence of a distinct phoneme like *z- quite plausible: *sī* < *si* 司 ‘superintend’ :: *sì* < *siH* 伺 ‘spy’ :: *cí* < *zi* 祠 ‘spring sacrifice’ :: *sì* < *ziH* 嗣 ‘continue, inherit’. Given the alternation of *s- and *z-, the two words *xiàng* < *sjangH* < ***saŋ-s** 相 ‘observe, appearance’ and *xiàng* < *zjangX* < ***zaŋʔ** (or ***N-saŋʔ**) 像 ‘appearance, image’ make a good pair of cognate words.

The z- in contact with velar initials may not be accounted for by *z-. Some examples of z- ~ k- (or ng-) alternations are:

xié < *zjæ* 邪 ‘skewed’ :: *yá* < *ngæ* 牙 ‘fang’;
sòng < *zjowngH* 訟 ‘litigate’ :: *gōng* < *kuwng* 公 ‘lord’;
sì < *ziX* 巳 ‘sixth of the Earthly Branch’ :: *gǎi* < *kojX* 改 ‘change’.³⁶

We will follow F.K. Li’s suggestion to reconstruct *s-g- > z- (1982: 88-91). Thus ***s-ga** for *xié* 邪, ***s-gon-s** for *sòng* 訟 and ***s-gəʔ** for *sì* 巳.

³⁶ The character 改 is written with the phonetic 巳 (var. 已), not with 己 in the early script (the Chu bamboo script and Qin Seal script).

Another probable source of *z- is *s-d-. The word *xí* < *zjek* 席 is written with 石 *shí* < *dzyek* < ***dak** 石 ‘stone’ in Chu manuscripts, which suggests ***s-dak** for MC *zjek* ‘mat’. In fact, the received character 席 seems to have had the same component 石 in origin, but it became unrecognizable through graphic evolution. (See Section 4.3.1).

2.2.1.5 Uvular initials

The reconstruction of the uvular series *q-, *q^h- and *G- as the respective origins of the MC ʔ- (*ying* 影), x- (*xiao* 曉), and hj- (*yusan* 喻三) follows Pan Wuyun (1997). The OC thus has a stop series in the uvular point of articulation with the regular three-way distinction contrasting with the velar stop series {*k-, *k^h-, *g-} in the system. MC *hekou* (syllables with medial -w-) and *kaikou* (without -w-) syllables are strictly divided in *xiesheng* series, i.e., a given phonophoric series consists entirely of either *hekou* or *kaikou* syllables, thus the -w- is treated as a feature of initial in OC stage: a labio-velar series is reconstructed separately from the velar series as {*k^w-, *k^{wh}-, *g^w-} and so is the labio-uvular series {*q^w-, *q^{wh}-, *G^w-} from its plain uvular counterpart. The rules of the developments of the velar/uvular initials are as follows:

*k- > kj-	*kk- > k-	*k ^w - > kjw-	*kk ^w - > kw-
*k ^h - > khj-	*kk ^h - > kh-	*k ^{wh} - > khjw-	*kk ^{wh} - > khw-
*g- > gj-	*gg- > h-	*g ^w - > gjw-	*gg ^w - > hw-
*[g]- > y-			
*G- > hj-	*GG- > h-	*G ^w - > hjw-	*GG ^w - > hw-
*q- > ʔj-	*qq- > ʔ-	*q ^w - > ʔjw-	*qq ^w - > ʔw-
*q ^h - > xj-	*qq ^h - > x-	*q ^{wh} - > xjw-	*qq ^{wh} - > xw-

2.2.1.6 The diphthongs -wa- and -wə-

Baxter’s rounded vowels *o and *u before the dental codas, *-n, *-t, *-j and *-r are replaced by *-wa- and *-wə- respectively in this study.

Baxter 1992/ Baxter-Sagart 0.97-1.0

The system in this study

*-on	*-wan
*-ot	*-wat
*-oj	*-waj
*-or	*-war
*-un	*-wən

*-ut	*-wət
*-uj	*-wəj
*-ur	*-wər

The -w-, though labeled ‘medial’, has rounding effect on the main vowel when the vowel is followed by a dental coda so it does affect rhyming. Let us explain the *-wan/*-on case as a representative of all the eight pairs in question. Words in the syllable type *Kwan (K: velar or uvular) still have some contact with those in type *Kan or *Tan (T: acute initials), but those in *Twan (equivalent of Baxter’s *Ton) have almost no contact with the latter. So it seems that the rounding effect of *-w- is the greatest when both the initial and coda are dental. The -w- in *-wan after a velar or uvular initial simultaneously has rounding effect on the initial. In other words the -w- is as much part of the labio-velar/uvular initials as it is part of vocalism, so that *Kwan and *Kan type syllables do not appear in the same *xisheng* series.

F.K. Li gave the diphthong *-ua- for the dental *hekou* syllables in the *-an group to account for the fact that they do not rhyme with *Tan or *Kan but they do rhyme with *Kwan. See for example the word reconstructions *duàn* < *dwanH* < **duanh* 段 ‘cut’ and *zhuǎn* < *trjwenX* < *trjuanx* 轉 ‘turn’ (1971 [1982]: 55). Since the complete segregation in rhyming between *kaikou* and *hekou* syllables is restricted to dental initials, the distinction between *-ua- and *-wa- can be dispensed with. We will discuss the ‘Rounded vowel hypothesis’ in some detail in Section 2.2.2.2.

Except for the rounded vowels before dental codas, I follow Baxter’s assignment of phonetic values to the traditional OC rhyme categories; Baxter’s ‘Front vowel hypothesis’ is also followed. In this hypothesis, Division IV syllables are reconstructed with the front vowels *e and *i, separately from the groups they traditionally belong to, which have non-front vowels. F.K Li’s system has the diphthongs *-iə- and *-ia- in such cases. For example, Baxter’s *-en by the Front vowel hypothesis generally corresponds to Li’s *-ian and Baxter’s *-iw to *-iəgw (See Baxter 1992: 240-47 for details).

2.2.1.7 Nasal initials, *N- prefix, *s- prefix

The nasal initials, both the voiced and voiceless, are analogous with their oral stop initial counterparts in the status of the *kaikou*/ *hekou* distinction:

- (a) The *m- and *hm- do not have labialized counterparts. E.g., there is no contrast such as *man vs. *mwan or *hman vs. *hmwan.

- (b) The -w- is rare after *n-; no case of -w- after *hn- has been known. This is parallel with the fact that the distribution of -w- is limited after dental stop and sibilant initials.
- (c) The *ŋ- and *hŋ- contrast with the labio-velar-nasals *ŋ^w- and *hŋ^w- respectively.

The MC -w- is non-phonemic after the labials {*p*-, *ph*-, *b*-} (P- hereafter) and their OC sources {**p*-, **p*^h-, **b*-} (*P-) do not require a phonemically distinctive -w-. Thus for example, an OC syllable *Pan has no *hekou* counterpart such as *Pwan that contrasts with it, and it rhymes freely with either *Kwan/*Twan or *Kan/*Tan. The same is true of the nasals in the same point of articulation *m- and *hm-. The *hm- is reconstructed for MC *x*- initial words that have *xiesheng* contact with *m*-. The words with *x*- in these cases are usually in *hekou* syllables, but some are in *kaikou* (F.K. Li 1982: 100). It is reasonable to assume that the former is the regular reflex of the *hm-, which preserves the -w- as a trace of the early labial nasal initial and the latter is a result of irregular loss of this feature: *hm- > *xw*- (regular) ~ *x*- (irregular). Note the following examples:

hū < *xwot* < ***hmmət** 忽 ‘neglect’ :: *wù* < *mjut* < ***mət** 勿 ‘should not’
hūn < *xwon* < ***hmmən** 昏 (昏) ‘dusk’ :: *mín* < *mjin* < ***m[i/ə]n** 民 ‘citizen’
huáng < *xwang* < ***hmmaŋ** 荒 ‘barren’ :: *wáng* < *mjang* < ***maŋ** 亡 ‘be gone’
hēi < *xok* < ***hmmək** 黑 ‘black’ :: *mò* < *mok* < ***mmək** 墨 ‘ink’

Note that when *x*- goes back to the uvular **q*^h-, the -w- that follows it is phonemic, projected as a feature of the labio-uvular initial **q*^{wh}-.

The -w- is limited after acute initials in general, and so it rarely occurs after *n*-. One phonophoric series that may be reconstructed with **nw*- is: *nuǎn* < *nwanX* < ***nnwanʔ** 湊, 燠 ‘warm’, id. 餽 ‘nuptial gift good’. The **hn*- is reconstructed for the alternations between *th*- or *trh*- (*che* 徹 initial) and *n*- as well as between *sy*- (*shu* 書) and *n*-. For example:

tàn < *thanH* < ***hnnar-s** 歎 ‘sigh’ :: *nán* < *nan* < ***nnar** 難 ‘difficult’³⁷
chǐ < *trhjiX* < ***hnraʔ** 恥 ‘shame’ :: *ěr* < *nyiX* < ***nəʔ** 耳 ‘ear’
shù < *syoH* < ***hna-s** 恕 ‘forgive’ :: *nǚ* < *njoX* < ***nraʔ** 女 ‘woman’.

The **hnw*- would have to be based on these dental or palatal initials in *hekou* finals that also have *xiesheng* contact with *n*-, but such a case is not found.

³⁷ Baxter and Sagart (2008 [revised 2010]), Baxter (2010), Sagart and Baxter (2012: 42) propose that **hnn*- (in Type A) in a “Western dialect”, goes to *x*- as in 漢 hàn < *xanH* < ***hnnar-s**.

MC *ng-* (= *ŋ*) words with and without *-w-* are separated with each other in *xiesheng* series. Thus we reconstruct **ŋ^w-* contrasting with **ŋ-*. Compare for example, the series 月 with the 𠂔 series: *yuè* < *ngjwot* < **ŋ^wat* 月 ‘moon’, id. 削 ‘cut off feet’, *wài* < *ngwajH* < **ŋŋ^wat-s* 外 ‘outer’ vs. *ài* < *ngajH* < **ŋŋat-s* 艾 ‘plant name’, *yì* < *ngjojH* < **ŋat-s* 刈 var. 刈 ‘mow’. The **ŋŋ-* is reconstructed for *x-* alternating with *ng-*. The distinction between *xw-* and *x-* in this case is reasonably assumed to reflect that between **hŋ^w-* and **hŋ-*. For example,

xǔ < *xwjoX* < **hŋ^wraʔ* 許 ‘allow’ :: *wǔ* < *nguX* < **ŋŋ^waʔ* 午 ‘afternoon’
xī < *xje* < **hŋ(r)aj* ‘sacrificial animal’ 犧 :: *yì* < *ngjeH* < **ŋ(r)aj-s* 義 ‘proper’.

Mei Tsu-lin (2012) suggests to reconstruct **sm-* > *x(w)-*, **sn-* > *th-*, and **sŋ-* > *x-* with prefix **s-* instead of the voiceless nasal series {**hm-*, **hn-*, **hŋ-*}.³⁸ Mei argues that the prefix **s-* can account for cognate pairs with initial voicing alternation in general, that is, for obstruent and sonorant initials alike.³⁹

The Baxter-Sagart system reconstructs a nasal prefix **N-* for pairs with obstruent initials. For example, 敗 **N-p^srat-s* > *bæjH* > *bài* ‘suffer defeat’ :: same character **p^srat-s* > *pæjH* > *bài* ‘defeat (transitive)’; 別 **N-pret* > *bjet* > *bié* ‘be separated’ (intransitive) :: same character **pret* > *pjet* > *bié* ‘separate’ (transitive) (Sagart and Baxter 2012).⁴⁰ In contrast, Mei’s reconstruction for these are: 敗 **brads* > *bæjH* :: **s-brads* > *pæjH*, and 別 **brjat* > *bjet* :: **s-brjat* > *pjet*.

Mei’s **s-* and Baxter-Sagart’s **N-* have opposite effects, both phonetically and morphosyntactically: the **s-* devoices the following root initial, and it is valency-increasing (associated with such syntactic and semantic features as transitive, causative, denominative, active, directive, outer-directed, intensive); **N-* voices the following initial and it is valency-decreasing (intransitive, anticausative, stative, inactive, inner-directed). With **s-*, the voiced variant is the simplex, from which the voiceless one derives; with **N-*, the direction of derivation is the opposite.

The given syntactic and semantic relation may be explained equally well either by **s-* or **N-*. In Tibeto-Burman languages, parallels of both the prefixes **N-* (nasal, voiced, and voicing) and **s-* (sibilant, voiceless, and devoicing) are widely

³⁸ The first member of this set was first proposed by Dong Tonghe (1944). F.K. Li subsequently completed the series by adding the last two, and this is followed in Baxter/Baxter-Sagart’s system.

³⁹ See Karlgren (1956: 9-11) for a long list of such pairs.

⁴⁰ Sagart and Baxter (2012) is written in response to Mei (2012) to defend **N-* against **s-*. See Zev Handel (2012) for a review of Mei Tsu-lin (2012) versus Sagart and Baxter (2012).

distributed (see Matisoff 2003: 87-104).⁴¹ They are sometimes found within the same language, even in one and the same etymon such as Written Tibetan mnam ‘have an odor’ (intransitive) and snam ‘sniff something’ (transitive). Old Chinese cannot be compared with any TB language at face value to confirm or deny either *N- or *s-. This is because, on the one hand, parallels of either prefix are readily encountered, and on the other hand, the difficulty of determining the origin of voicing alternation exists commonly in TB languages as well, e.g., in Tibetan (Jacques 2012), since *s- sometimes leaves as its trace devoicing. Sagart’s (2003, 2006) proposal that the prenasalization in Old Chinese loanwords to Hmong-Mien reflects OC *N- is quite convincing.

As Sagart and Baxter (2012) explain, a strong advantage of reconstructing *hm- etc., voiceless nasals at OC stage, against *sm- etc., is that it leaves a space for *s- prefixed sonorant initials which can explain MC s- that appears in sonorant series. The contrast between a voiceless sonorant and a *s- prefixed one is illustrated in the following *xiesheng* series:

人 *rén* < *nyin* < ***niŋ** ‘(other) person’:: 信 *xìn* < *sinH* < ***s-niŋ-s** ‘truthful’:: 身 {人+心 in Chu manuscripts} *shēn* < *syin* < ***niŋ** ‘body, oneself’ (Cf. Tibetan snying ‘heart’):: 仁 *rén* < *nyin* < ***niŋ** ‘kindness’:: 千 *qiān* < *tshen* < ***s.ŋ^hiŋ** ‘thousand’:: 年 {人+禾 in bronze inscriptions} *nían* < *nēn* < ***C.n^hiŋ** ‘harvest, year’ (Cf. TB *niŋ, *s-niŋ ‘year’) (*ibid.*: 40-42) (Baxter-Sagart system writes a prefix of known functions with a hyphen, of unknown functions with a dot as stated in Sagart and Baxter 2012: 43).

Though rejected for the voicing alternation, the *s- prefix with its valency-increasing functions is well recognized in Baxter-Sagart system otherwise. For example:

食 *shí* < *zyik* < ***m-lək** ‘eat’:: 飮 *sì* < *ziH* < ***s-m-lək-s** ‘feed’ (Baxter 2010: 173);
當 *dāng* < *taŋ* < ***t^haŋ** ‘have the value of, rank with’:: 商 *shāng* < *syang* < ***s-taŋ** (“to estimate is to give a value”, Sagart and Baxter 2012: 45).

⁴¹ In fact, the best attested affixes in Tibeto-Burman derivational morphology are *s-, *m-, *a- (the last in Benedict 1972: 121-123, but reconstructed differently as *ʔa etc., with several proto-level variants in Matisoff 2003: 104-117). The *s- and *m- make a clear opposition of valency-decreasing vs. valency-increasing functions. The *a-/ *ʔV(C) has many distinct functions, including nominalization, marking kinship terms third person possessive or verb agreement, verb aspectual prefix (Matisoff 2003: 104-117).

2.2.1.8 Sources of MC sy-

MC sy- has multiple OC sources which include voiceless sonorants and clusters with *s- prefix: *hl- in Type B, (mentioned in 2.2.1.3 above, *hl- [in Type A] goes to th-), *hŋ- through palatalization, *s-K- also through palatalization (see 2.2.1.9 below) and the cluster *s-t-. The last is reconstructed when sy- appears in a series together with t- < *tt- (Type A) and tsy- < *t- (Type B). The *s-prefixation is neat when the alternation between sy- and t- or tsy- is concomitant with semantic relation, such as in:

識 *shí* < *syik* < *s-tək ‘to be aware’:: same character 識 < *tsyi* < *tək-s ‘remember’

Some examples of *s-t- > sy- in Baxter-Sagart (Baxter 2010: 170) are:

拊, 撻, 拯 *zhěng* < *tsyingX* < *təŋʔ ‘raise, rescue’:: 升 *shēng* < *syng* < *s-təŋ ‘rise’:: 登 *dēng* < *tong* < *t’əŋ ‘rise’:: 蒸 *zhēng* < *tsyng* < *təŋ ‘(for steam) to rise’
書 *shū* < *syo* < *s-ta (“*Shuowen*: 箸也从聿者聲 ‘書 *shū* means ‘to write’, the graph is composed of 聿 ‘brush’ and 者, of which the latter is the phonetic”):: 都 *dū* < *tu* < *t’a ‘capital city’:: 煮 *zhǔ* < *tsyoX* < *taʔ ‘boil’:: 猪 *zhū* < *trjo* < *tra ‘pig’.

2.2.1.9 Palatalization of velar and uvular initials

It is generally agreed that when MC velar or nasal stops {*k*-, *kh*-, *g*-, *ng*-} and palatal sibilants {*tsy*-, *tsyh*-, *dzy*-, *sy*-, *zy*-, *ny*-} are found in the same *xiesheng* series, the latter originated from OC velar stops, viz., through velar palatalization. As will be illustrated below, no completely satisfying proposals on the conditioning factor for this sound change have been put forth thus far. I will notate such OC velar (and also uvular, [to be discussed below]) initials by writing “palatalizing” in parenthesis next to the OC word forms. The sound changes assumed are:

*k- > tsy-	*k ^h - > tsyh-	*g- > dzy-	MC palatal affricates,
*ŋ- > ny-			MC voiced palatal nasal,
*hŋ- > sy-			MC voiceless palatal fricative

The developments of OC velar nasals *ŋ- and *hŋ- are asymmetrical: the voiced one becomes palatal nasal ny-, while the voiceless one loses its nasality and becomes sy-. Baxter (2010) suggests that *hŋ- (*ŋ- in his notation) first becomes x-, the regular MC reflex of *hŋ-, which then palatalizes to become sy-. An example of this is (175):

熱 *rè* < *nyet* < *ŋet ‘heat’:: 勢 *shì* < *syejH* < *xet-s < *ŋet-s ‘authority’:: 執 *yì* < *nghjiejH* < *ŋet-s (!) ‘establish’ (with Baxter’s own notation (!) meaning ‘irregular’, indicating a velar initial in D-III word with a front vowel which should have become palatalized but remained a velar.)

Velar stops have occasional contacts with fricatives *sy-* and *zy-* as well as with affricates. Sagart and Baxter (2012: 46-50) recently proposed that ***s-k-** and ***s-g-** may be reconstructed respectively in such cases: presumably ***s-k-** first changed to ***s-tsy-** then became *sy-* (*ibid.*: 48):

翬 *chì* < *syeh* < ***s.k^he-s** ‘wing’ :: 支 *zhī* < *tsye* < ***ke** ‘branch’
 收 *shōu* < *syuw* < ***s-kiw** ‘collect, harvest’ :: 糾 *jiū* < *kjuw* < ***k(r)iw** ‘unite’
 示 *shì* < *zyijH* < ***s-gijʔ-s** ‘show’ :: 視 *shì* < *dzyijX* < ***gijʔ** ‘look, see’ :: 祁 *qí* < *gij* < ***grij** ‘place name’. For the last two series, the causative/transitive function of ***s-** is evident.

Velar palatalization from OC to MC is rather marginal, compared to the regular palatalization of dental stop initials ***t-**, ***t^h-**, ***d-** etc. to palatal sibilants in Type B syllables (see 2.2.1.1 above); its conditioning factor is not entirely clear except that since MC palatal initials occur only in D-III syllables, it is given that the palatalizing velars are in OC Type B. Baxter (1992: 210-214) agreed with Pulleyblank (1962: 98-107) who proposed that front nuclear vowels such as ***i**, and ***e** caused palatalization. Some examples with front vowels are:

支 *zhī* < *tsye* < ***ke** ‘branch’ :: 技 *jì* < *gjeX* (chongniu III) < ***greʔ** ‘skill’
 旨 *zhǐ* < *tsyjX* < ***kijʔ** ‘fine-tasting’ :: 稽 *qǐ* < *khejX* < ***khijʔ** ‘bow the head to the ground’
 臣 *chén* < *dzyin* < ***gin** ‘servant’ :: 堅 *jiān* < *ken* < ***kin** ‘solid’

Front vowels as conditioning factors may seem natural, but this can hardly be established as a rule for OC because there are so many exceptions: cases of both a front vowel failing to cause palatalization and palatalization occurring before a non-front vowel. Baxter 1992 addressed both types of exceptions. Some examples of palatalization before a non-front vowel are:

赤 *chì* < *tsyhek* < ***k^hak** ‘red’ :: 赫 *hè* < *xæk* < ***qqrak** or ***hḡḡrak** ‘flame, outstanding’
 車 *chē* < *tsyhæ* < ***k^ha** ‘chariot’ :: 車 *jū* < *kjo* < ***k(r)a** ‘chariot’
 順 *shùn* < *dzywinH* < ***gwən-s** ‘obedient’ :: 川, 𣶒 *chuān* < *tsyhwen* < ***k^{wh}[ə/a]n** ‘stream, river’ :: 𤱔 (坤) *kūn* < *khwon* < ***k^{wh}ən** ‘hexagram name, Kun’⁴²

Baxter and Sagart now seem to suggest that front vowels are not the only possible explanation. They still consider velar initials before a front vowel that did not palatalize exceptions. For example 吉, *jí* < *kjit* < ***kit** ‘auspicious’ (I!), 輕 *qīng* <

⁴² Baxter-Sagart Version 1.0 has ***ḷun-s** for 訓 *xùn* < *xjunH*, with *x-* being considered a case of a dialect development of the voiceless lateral; 川, 𣶒 *chuān* < *tsyhwen* is reconstructed ***t_ḷjun** with ***t_ḷ-** accounting for the palatalization. But as illustrated above there are two words written with 川, 𣶒 which point to a velar-uvular series (GSR #422). See Park 2008 for a discussion of the 川 series.

khjieng < ***ken** ‘light’ (I!), 𤇗 *yì* < *ngjiejH* < ***ŋet-s** ‘to plant’ (I!) (2010: 168). For velars palatalizing before non-front vowels, however, they have introduced a *t- prefix which apparently causes palatalization. We find the following examples in the Baxter-Sagart version 1.0 lexicon.

出 *chui* < *tsyhwijH* < ***t.k^hut-s** ‘bring, take out’ :: 屈 *qū* < *khjut* < ***k^hut** ‘subdue’
 什, 十 *shí* < *dzyip* < ***t.gəp** ‘troop of ten men (什), ten (十)’ :: 計 *jì* < *kejH* < ***k^hij-s** ‘calculate’⁴³
 The *t- prefix is also used for palatalizing uvulars. See below.

Uvular stops have close contact with velar stops in *xiesheng* and word-family relations, so palatalization of uvular stops should also be expected. It is reasonable to assume that if a MC palatal is found in an unambiguous uvular *xiesheng* series then the palatal comes from a uvular. Analogously with palatalization of velar stops illustrated above, we may assume the following sound changes:

*q- > *tsy-* *q^h- > *tsyh-* *G- > *dzy-*

For palatals in mixed velar-uvular series, their OC origins are indeterminate between the two, velars and uvulars. For example, either ***q^{wh}ən** or ***k^{wh}ən** is possible for the above mentioned 川, 𪛗 *chuān* < *tsyhwən* and likewise, either ***G^wən-s** or ***g^wən-s** is possible for 順 *shùn* < *dzywinH*, because of the 川, 𪛗 series has a uvular initial word 訓 *xùn* < *xjunH* < ***q^{wh}ən-s** ‘instruct’ as well as a velar one 𪛗 (坤) *kūn* < *khwon* < ***k^{wh}ən** ‘hexagram name, Kun’. This problem does not arise in Baxter-Sagart system, because in the latter all words in mixed series are reconstructed with uvular root initials. As with velar palatalization, we find in their lexicon the prefix *t- before a uvular that goes to a palatal affricate. Examples are:

處 *chǔ* < *tsyhoX* (H) < ***t.q^haʔ(-s)** ‘be at, (place, n.)’ :: 虎 *hǔ* < *xuX* < ***q^{sh}raʔ** ‘tiger’
 餽 *qiān* < *tsyen* < ***t-qan** ‘gruel’ (*t with a hyphen in the original) :: 衍 *yǎn* < *yenX* < ***N-qanʔ** ‘overflow’.

For palatal fricatives, the part of y- (palatal glide) descending from *G- (discussed above in 2.2.1.3) counts as a case of palatalization (Sagart and Baxter 2009: 229–230), and *q^h- as a possible source of sy- through palatalization before front vowels is uncertain (*ibid.*: 226, 229).

⁴³ Baxter-Sagart reconstructs this word as a Zhi 脂 group word. Wang Li (2000: 1260) assigns this word to the Zhi 質 (*-it) group. Given the latter, since the MC has the *qu* tone, the coda can be reconstructed *-t-s, thus *kejH* < ***kkit-s**. If 十 is the phonophoric, this *-t-s should have come from *-p-s, i.e., ***kkit-s** < ***kkip-s**. See below 2.2.1.11 for *-p-s > *-t-s.

2.2.1.10 The coda *-r

The coda *-r is reconstructed as proposed by Starostin (1989 [2010]) and further developed in Baxter-Sagart system Version 0.98-1.0 (since 2008).⁴⁴ The *-r has been reconstructed in various systems in order to explain contacts between MC finals ending in -n and a vowel (-ø) or -j. Such contacts appear as split in *xiesheng* series and inter-rhyming between the traditional rhyme groups Yuan 元 (Baxter's [1992] *-an, *-un, *-en) and Ge 歌 (*-aj, *-oj); and also between Wen 文 (*-in [now *-ən], *-un) and Wei 微 (*-ij [now *-əj], *-uj) or Zhi 脂 (*-ij). For example, 觶 *zhì* < *tsyeh* 'a kind of ritual vessel', a vowel-ending syllable occurs in the same *xiesheng* series with 單 *dān* < *tan* 'single', 彈 *dàn* < *danH* 'pellet' and 戰 *zhàn* < *tsyenH* 'battle' etc.; 播 *bō* < *paH* 'to sow' is in the same series with 番 *fān* < *phjon* 'a turn', 藩 *fān* < *pjon* 'fence', 燔 *fán* < *bjon* 'burn' etc.; 輝輝 *huī* < *xjwij* 'bright' with 渾 *hún* < *hwon* 'chaotic', 軍 *jūn* < *kjun* 'troop' etc.; 爾 *ěr* < *nyeX* 'you' and 璽 *xǐ* < *sje* 'seal' with 獮 *xǎn* < *sjenX* 'autumnal hunt'. Some characters have double readings without any difference in meaning, for e.g., 驪 is read *tuó* < *da* as well as *diān* < *ten*, and *tán* < *dan*, all of which mean 'bluish-black horse with white spots' in the *Shijing* (GSR #147); some words in the -n ~ -ø /-j alternation are semantically linked, in which cases, etymological relations are suspected.

Karlgren (1954) reconstructed *-r for MC open ending syllables that have *xiesheng* contacts with *-n > -n, assuming that these two codas were phonetically similar enough for *xiesheng* alternation and inter-rhyming: the *-r in his system was reconstructed for part of Ge, Wei, Zhi rhyme group words alternating with words ending in *-n; the codas for the former three groups otherwise were reconstructed *-ø (Ge) or *-d (Wei, Zhi) in his system. F.K. Li (1971) followed Karlgren except that he reconstructed the entire Ge group words as *-ar. Karlgren (1956: 18) gave the following pairs as examples of cognate words with alternation of *-n (> -n) and *-r (> -j/-ø).

- 牝 *b'jən > pìn 'female' :: id. *b'jər > bì 'female'
 洗 *siən > xiǎn 'to wash' :: id. *siər > xǐ 'wash'
 烜 *xiwǎn > xuǎn 'to sun, to dry in the sun' :: id. *xiuǎr > huǐ 'sunlight'
 難 *nân > nàn 'difficulty, disaster' :: 讎 *nār > nuó 'to expel malign influences'.

Starostin (2010 [1989]: 224-226) disagreed with Karlgren's assumption that the traditional rhymes ending in *-n could have *xiesheng* and rhyme contact with *-r > -j/ø. He proposed that a traditional rhyme group with *-n in fact contained two distinct rhymes, one with *-n, and another with *-r: *-r mainly goes to -n, but in

⁴⁴ I am grateful to Bill Baxter for explaining to me the methodological principle for reconstructing *-r, and bringing my attention to the recent Chinese translation of Starostin's 1989 book (2010).

dialects it goes to -j or -ø. Among words in the Yuan (*-an) group, he illustrates, 干 kân, 安 ?ân, 顏 ɲan belong to the *-an type; 單 tân 歎 thân 原 ɲwan to the *-ar type. He argues that these two rhymes do not contact each other in *Shijing* rhyming, and that the words ending in *-r often find Tibeto-Burman cognate words in *-r.⁴⁵ In Karlgren's reconstruction, the MC -n alternating with -ø /-j still comes from *-n, but in Starostin's, it comes from *-r.⁴⁶

The Baxter-Sagart system (since “ver. 0.98” [2008]), follows Starostin, and further suggests that the change *-r > -j/ø occurred in a dialect spoken in Shandong peninsula, namely, the “Eastern dialect”. This supposition is based on Han commentaries on W.S. classics. They cite for instance a line from Zheng Xuan 鄭玄 commentary to the *Liji*, “中庸 Zhongyong” chapter: “壹戎衣而有天下” ‘[King Wu] once and for all defeated Yi[n] and took possession of all under heaven’, to which Zheng Xuan notes “衣讀如殷聲之誤也齊人言殷聲如衣” ‘yī [ʔəj] should be read as yīn [ʔər]. This is an error of pronunciation. The people of Qi prononunce yīn [ʔər] like yī [ʔəj] (2008 [2010]: 49). The following table summarizes the difference between Karlgren/F.K. Li and Starostin/Baxter-Sagart in the reconstruction of *-r:

Karlgren (1954), F.K. Li (1971)	Starostin (1989), Baxter-Sagart ver. 0.98-1.0
*-n > -n	*-r > -n (some dialects/ main development)
*-r > -j or -ø	*-r > -j or -ø (some dialects/ Eastern dialect)

⁴⁵ Matisoff (2003: 401-403) presents a Chinese comparanda to Tibeto-Burman etyma reconstructed with *-r, containing about 30 words chosen from about 60 originally proposed in Benedict (1972). As illustrated in the table below, there is significant overlap between Matisoff's suggested cognate words and those reconstructed with *-r in Baxter-Sagart version 1.0.

Chinese-Proto Tibeto-Burman cognates (Matisoff 2003)	Baxter-Sagart ver. 1.0 (2011)
鳩 yàn	*ʔa:r *ʔ<r>ar-s ‘a kind of quail’
燔 fán	*pwa(:)r *bar ‘burn, roast’
輝 hūi	*hwa:r *q ^{wh} ər ‘bright, brilliant’
飡 fēn	*pur ~ *pir *pər ‘fly (v.), soar’
鮮 xiǎn	*sar *serʔ ‘rare, few’
酸 suān *su:r ~	*swa:r *s<or> ‘sour’
演 yǎn	*ya:r *lerʔ ‘flow out, extend’

⁴⁶ Starostin also noted that the *-r subgroup lacked Division II words, and this may be because the D-II medial *-r- and coda *-r were not compatible in an OC syllable. This observation is apparently denied in Baxter and Sagart's reconstruction; after going through the entire GSR lexicon and more using the given criteria for distinguishing *-r and *-n, they reconstruct many words in the “System 1.0” lexicon with both medial *-r- and coda *-r.

An example of -n ~ -j/ø dialect variation originating from *-r in the Baxter-Sagart system is: 獻 *xiàn* < *xjonH* ‘offer sacrifice’, which has another reading as *suō* < *sa* (素何切) ‘libation’ recorded in the *Guangyun*: these reflect *-r developing into *-n and *-j (> ø) in different OC dialects, thus ***ɲar-s** > *xjonH* > *xiàn* and ***s-ɲ^har** > ***saj** > *sa*. Accordingly, two other words in the same series are reconstructed with *-r: 虜 *yàn* < *ngjonH* < ***ɲar-s** ‘boiler’ and 戲 *xì* < *xjeH* < ***ɲ(r)ar-s** ‘entertain’ (Baxter 2010: 175).

Baxter and Sagart uncover cases of *-r through word-family relations when graphic connections are absent. Baxter (2010) proposes that 水 *shuǐ* < *sywijX* < ***s.tur?** ‘water’ and 準 *zhǔn* < *tsywinX* < ***tur?** ‘level’ are etymologically related. Baxter identifies the root with 浬 *zhui* < *tsywijX* < ***tur?** ‘water’, recorded in the *Jiyun* 集韻, glossed “閩人謂水曰浬” ‘People in Min region pronounce 水(*sywijX*) as 浬(*tsywijX*)’. The latter is compared to Amoy /tsui3/ for ‘water’ (171-172).

2.2.1.11 The post-codas *-ʔ and *-s, and *-s as a suffix

The OC sources of MC *shang* and *qu* tones are reconstructed as *-ʔ and *-s respectively. MC *qu* tone words that have *xiesheng* and word-family relation with *shang* tone words are reconstructed with *-ʔ-s as in Baxter-Sagart system version 1.0. In such cases the *-ʔ is assumed to be part of the root final, and *-s to be suffixal. See below the *-s suffix for examples. The *ping* tone is unmarked and the ‘*ru* tone’ endings, i.e., the voiceless stop endings *-p, *-t, and *-k remained unchanged from OC to MC, except when they are followed by the post-coda *-s.

The post coda *-s is also a suffix which carries multiple functions such as: deriving verbs out of nouns (viz., denominal), deriving nouns out of verbs (viz., deverbal), transitivizing, intransitivizing and semantically intensifying. As a verb suffix, it generally appears to be valency-increasing, that is, cases of *-s with transitive/causative, intensified and outer-directed meanings are much more frequently encountered than those with intransitive or stative and inner-directed meanings. As illustrated below, it is possible to delineate these various functions of *-s through the cognate pairs presented in Karlgren (1956) with his original glosses.⁴⁷

⁴⁷ Karlgren did not distinguish in his OC reconstruction system the conditions which gave rise to MC tones, although it is clear that he recognized the morphophonemic role of the OC origin of the *qu* tone.

Denominal *-s

旬 *xún* < *zwin* < ***s-g^win** ‘all around, a round, a decade (of days)’ :: 徇 *xùn* < *zwinH* < ***s-g^win-s** ‘go everywhere, all around’ (p. 6)

府 *fǔ* < *pjuX* < ***poʔ** ‘the delivery place, repository’ :: 付 *fù* < *pjuH* < ***poʔ-s** ‘deliver’ (p. 6)

種 *zhǒng* < *tsyowngX* < ***tonʔ** ‘seed, different kinds of grain’ :: 種 *zhòng* < *tsyowngH* < ***tonʔ-s** ‘to sow’ (p. 9)

Deverbal or nominalizing *-s

奉 *fèng* < *phjowngX* < ***p^honʔ** ‘to receive’ :: 俸 *fèng* < *phjowngH* < ***p^honʔ-s** ‘(what is received), salary’ (p. 9)

陳 *chén* < *drin* < ***lrin** ‘set forth, arrange’ :: 陳 *zhèn* < *drinH* < ***lrin-s** ‘battle array’ (p. 6)

傳 *chuán* < *drjwen* < ***drawn** ‘to transmit’ :: 傳 *zhuàn* < *drjwenH* < ***drawn-s** ‘a record’⁴⁸ (p. 6)

契 *qiè* < *khet* < ***kk^het** ‘to cut’ :: 契 *qì* < *khej* < ***kk^het-s** ‘script notches’ (p. 11)

Transitivizing or causative *-s

遠 *yuǎn* < *hjwonX* < ***G^wanʔ** ‘far, distant’ :: 遠 *yuàn* < *hjwonH* < ***G^wanʔ-s** ‘to keep far from, leave’ (p. 6)

近 *jìn* < *gjinX* < ***garʔ** ‘near’ :: 近 *jìn* < *gjinH* < ***garʔ-s** ‘to be near to’ (p. 6)

先 *xiān* < *sen* < ***ssar** ‘before’ :: 先 *xiàn* < *senH* < ***ssar-s** ‘to go before, precede’ (p. 6)

Intransitivizing *-s-

盛 *chéng* < *dzyeng* < ***denj** ‘to load’ :: 盛 *shèng* < *dzyengH* < ***denj-s** ‘ample, abundant’ (p. 8)

Intensifying *-s- in the following examples there seems to be no change in syntactic valency, but the derived variant is semantically more intensive or outer-directed.

質 *zhì* < *tsyit* < ***tit** ‘substance, substantial matter’ :: 質 *zhì* < *trijH* < ***trit-s** ‘a pledge, a security given, a hostage’ (p. 16)

受 *shòu* < *dzyuwX* < ***duʔ** ‘to receive’ :: 授 *shòu* < *dzyuwH* < ***duʔ-s** ‘hand over, give’ (p. 8)

說 *shuō* < *sywet* < ***hlwat** ‘to speak’ :: 說 *shuì* < *sywejH* < ***hlwat-s** ‘to exhort’ (p. 11)

發 *fā* < *pjot* < ***pat** ‘to throw out’ :: 廢 *fèi* < *pjojH* < ***pat-s** ‘cast aside’ (p. 11)

出 *chū* < *tsyhwit* < ***k^hwət** (palatalizing, Baxter-Sagart 1.0 ***t.k^hut**) ‘to go out, bring out’ :: 出 *chuì* < *tsyhwijH* < ***k^hwət-s** (palatalizing, *ibid.*, ***t.k^hut-s**) ‘bring out, take out’ (p. 12)

⁴⁸ Baxter-Sagart Version 1.0 has 傳 *chuán* < ***Cə-m-tron** :: 傳 *zhuàn* < ***m-tron-s** with a voiceless root initial ***t-**. The root is identified with 專 *zhuān* < ***ton** ‘exclusively’. The prefix ***m-** in their system has a ‘volitional’ meaning, and it causes voicing of the following initial.

聞 *wén* < *mjun* < ***mən** ‘to hear’ :: 問 *wèn* < *mjunH* < ***mən-s** ‘inquire, fame’ (p. 6)

MC *qu* tone words that have *xiesheng* and etymological connections with ‘*ru* tone’ words are reconstructed with their corresponding voiceless stop endings accompanied by the post-coda *-s. Note the following examples for the *-ts ~ *-t alternation:

至 *zhì* < *tsyijH* < ***tit-s** ‘arrive, ultimate point’ :: 窒 *zhì* < *trjt* < ***trit** ‘block’
外 *wài* < *ngwajH* < ***ŋŋ^wat-s** ‘outside’ :: 月 *yuè* < *ngjwot* < ***ŋ^wat** ‘moon’

Examples for the *-ks ~ *-k alternation are:

復 *fù* < *bjuwH* < ***buk-s** ‘repeatedly’ :: 復 *fù* < *bjuwk* < ***buk** ‘return’
賜 *cì* (< *sì*) < *sjeH* < ***slek-s** ‘grant’ :: 易 *yì* < *yek* < ***lek** ‘exchange’

MC *qu* tone words that ought to be reconstructed with *-ps by their *xiesheng* connections with words with *-p behave like words with *-ts in the *Shijing* rhyming; they rhyme with *-t or *-ts, and not with *-p. This suggests that the *-ps merged with *-ts in the *Shijing* phonology. (See Baxter 1992: 309-11 and F.K. Li 1971 [1982]: 43-44, 56-57. F.K. Li reconstructs *-ps as *-bh and *-ts as *-dh, so the change *-ps > *-ts corresponds to Li’s *-bh > *-dh.) For example, the word *nèi* 內 ‘inner’ which is clearly related to 納 *nà* < *nop* < ***nnəp** ‘take in, enter’ rhymes with *-ət, thus we reconstruct 內 *nèi* < *nwojH* < ***nnət-s** < ***nnəp-s**. The word *xiè* 泄 ‘scatter’ is graphically connected with 葉 *yè* < *yep* < ***lap** ‘leaf’, but it rhymes with *-at and it also has -t in MC. It is probable that the post-coda *-s was lost before MC. Thus: 泄 *xiè* < *sjet* < ***slat** < ***slat-s** < ***slap-s**. Based on this observed pattern we can restore the OC *-p for MC *qu* tone words. As F.K. Li (*ibid.*: 57) noted *gài* < *kajH* 蓋 ‘cover, cap’ seems to be related to 盍 *hé* < *hap* < ***ggap** ‘close (a box)’, so we can give the former the two stages of OC ***kkat-s** < ***kkap-s**. (The character 盍 is registered in the *Shuowen* as 盍, thus the graphic relation between the two words in question is uncertain.)

The character 灋, the old form of 法 which normally stands for *fǎ* ‘law, rule’ is used in a repeated line in several inscriptions from mid-to-late Western Zhou period (W. Zhou hereafter) for the meaning ‘reject, abandon’.

苟 (敬) 夙 (夙) 夜勿灋朕令 (mid-W. Zhou, MWX 1.240, also, late W. Zhou, MWX 1.386)
Be respectful morning and night and do not reject (i.e., neglect) my (the king’s) charge.

In fact, our interpretation of this otherwise puzzling character usage is based on the correspondence of this line to the following lines from the *Shangshu* and *Shijing* in which *fǎ* 灋 corresponds to *fèi* 廢 ‘abolish, abdicate’ (Chen Chusheng 2004: 897):

予不敢廢乃命 *Shangshu*, “Luogao 洛誥”

I dare not neglect your charge.

無廢朕命，夙夜匪解 *Shijing*, “Daya 大雅”, ‘Han yi 韓奕’ (Mao 261)

Do not neglect the king’s charge; morning and night never slacken.

The relation between these two words is conventionally stated in terms of phonetic loan, viz., *fǎ* 灋 is ‘loaned (or interchangeable) for’ *fèi* 廢. The same usage of the character is 灋 found in the Shuihudi late W.S. manuscripts. It is not reasonable to designate an early W. Zhou character usage such as this as a ‘loan’ for its corresponding character in received early texts. As the ‘proper’ usage implies historical legitimacy, the direction of loan may be the opposite. If the expression ‘loan’ or ‘interchangeability’ is simply a loose term that refers to the (probable) phonological relation itself of the two words involved, the precise nature of the relation has to be further explained. Compare the MC and OC of *fǎ* 灋 and *fèi* 廢:

灋 *fǎ* < *pjwop* < ***pap** ‘law, rule’

廢 *fèi* < *pjwojH* < ***pat-s** ‘abolish, abdicate, abandon’ (Cf. 發 *fā* < *pjwot* < ***pat** ‘put forth’)

The *-p of *fǎ* and *-t(-s) of *fèi* make these two words phonologically incompatible. One possibility is that the former simply had the meaning ‘abandon, abolish etc.’ which no longer survives in received literature. In other words, the two alternating words have no phonological relation but are just synonyms. Another possibility, which is more interesting than the first and which seems quite plausible is that the *fǎ* < ***pap** ‘law, rule’ had a morphological derivative ***pap-s** meaning ‘rule out, outlaw > abandon’. This word with *-ps would have become homophonous with the synonymous word 廢 *fèi* < ***pat-s** at some point. And thus the latter came to be used interchangeably with the former eventually displacing it in the received standard orthography. This is another case where excavated manuscripts (viz., the Shuihudi) preserve the old character usage lost in the received standard; we ought to first examine how a manuscript character usage fits with other OC sources in the phonological pattern of alternation rather than just assume it to be an invention at the time and place of the manuscript production.

2.2.1.12 Inventories of simple initials and rhymes

The following is the inventories of simple initials and rhymes in our OC reconstruction system.

Initials (with orthographic single vs. double consonants corresponding to MC Division-III vs. Division I, II, IV)

<i>labials</i>	*p-	*p ^h -	*b-	*m-	*hm-
<i>dentals</i>	*t-	*t ^h -	*d-	*n-	*hn-
<i>liquids</i>	*l-	*hl-	*r-	*hr-	
<i>sibilants</i>	*ts-	*ts ^h -	*dz-	*s-	*z-
<i>velars</i>	*k-	*k ^h -	*g-	*ŋ-	*hŋ-
<i>labio-velars</i>	*k ^w -	*k ^{wh} -	*g ^w -	*ŋ ^w -	*hŋ ^w -
<i>uvulars</i>	*q-	*q ^h -	*G-		
<i>labio-uvulars</i>	*q ^w -	*q ^{wh} -	*G ^w -		

Rhymes

*-ə		*-əŋ		*-ək
Zhi 之		Zheng 蒸		Zhi 職
*-əj	*-ər	*-ən		*-ət
*-wəj	*-wər	*-wən		*-wət
Wei 微 微/文		Wen 文		Wu 物
		*-əm		*-əp
		*-im		*-ip
		Qin 侵		Qi 緝
*-a		*-aŋ		*-ak
Yu 魚		Yang 陽		Duo 鐸
*-aj	*-ar	*-an		*-at
*-waj	*-war	*-wan		*-wat
		*-en		*-et
Ge 歌 歌/元		Yuan 元		Yue 月, Ji 祭
		*-am		*-ap
		*-em		*-ep
		Tan 談		Ye 葉
*-aw				*-awk
*-ew				*-ewk
Xiao 宵				Yao 藥
*-u		*-uŋ		*-uk
*-iw		Dong 冬		*-iwk
You 幽				Jue 覺
*-o		*-oŋ		*-ok
Hou 侯		Dong 東		Wu 屋
*-ij		*-in		*-it
Zhi 脂		Zhen 真		Zhi 質
*-e		*-eŋ		*-ek
Zhi 支		Geng 耕		Xi 錫

2.2.2 Two notes

2.2.2.1 The uvulars

The reconstruction of the uvulars *q-, *q^h- and *G- neatly accounts for the following distributional facts, *xiesheng* phenomena and the MC phonetics surrounding the velar and laryngeal initials.

- (a) The *hj*- (*yusan* 喻三, also called *yun* 云), a voiced palatal glide has *xiesheng* contact with the velar/laryngeal initials; therefore it ought to be a voiced guttural of some sort in OC.
- (b) The *hj*- occurs only in D-III.
- (c) The *g*- (*qun* 群) also occurs only in D-III. (So MC *g*- always implies *gj*-; we do not need the latter notation when we refer to it as an initial category.)
- (d) The *h*- (*xia* 匣) occurs only in D-I, II, IV. This initial is apparently involved in a complementary distribution with either *hj*- or *g*-, or somehow with both.
- (e) The MC rhyme table phonology defines the {*k*-, *kh*-, *g*-} as *yayin* 牙音 ‘velar sound’ and the {ʔ-, *x*-, *h*-} as *houyin* 喉音 ‘throat sound’. The latter is further back in the point of articulation than the former and the OC system should account for this distinction in some way.
- (f) The *yayin* and *houyin* sets make *xiesheng* contact with each other. Note that words with velar initials are far more numerous than those with laryngeal initials; so the *xiesheng* contact across the two sets usually appear as frequent or not infrequent (depending on one’s perception) inclusion of a relatively small number of words with the {ʔ-, *x*-, *h*-, *hj*-} initials in an overall velar series. The precise relation among the last four or that between these and the velar series is hard to measure by *xiesheng* contact alone.

To understand the significance of Pan Wuyun’s uvulars we have to discuss how these facts (a)–(f) have been dealt with in earlier reconstruction systems.

F.K Li’s (1971 [1982]) treatment for the (e)–(f) is to project the ʔ- and *x*- back as OC *•- and *h- respectively; these two do not present the problem of skewed distribution like some others. He assumes that they can have *xiesheng* contact with velar stop series despite the phonetic differences such as velar vs. further back and stop vs. fricative. This is followed in Baxter 1992 using different notations.

Li attempted to account for the distribution among *hj*-, *g*-, *h*- and their *xiesheng* contact (a–d) by reconstructing one voiced stop *g- for all the three: the *g- split into the three MC initials by the combination of two conditioning factors, the *g-/gw- (i.e., g^w) and the D-III/ non-D-III distinction. He noted the fact that *hj*- occurs predominantly in *hekou* finals, so the distinction between MC *g*- and *hj*-

which are both exclusively in D-III can be reconstructed basically as that between *g(j)- and *gw(j)-. The origin for the MC *g-* in *hekou* syllables is then distinguished from the latter by the notation -ji- (contrasting with simple -j-). Li gives the rules of the developments as follows (p. 18). The MC initials are converted to Baxter's notation.

- *gj- > gj- (*qun* 群, *kaikou*, D-III)
- *g- > h- (*xia* 匣, *kaikou*, D-I, II, IV)
- *gwj- > hjw- (*yusan* 喻三, *hekou*, D-III)
- *gwji- > gjw- (*qun* 群, *hekou*, D-III)
- *gw- > hw- (*xia* 匣, *hekou*, D-I, II, IV)

Li explains that the *yusan kaikou* syllables are due to irregular loss of the *-w-, appearing in grammatical function word such as *yǐ* < *hjiX* 矣 ‘perfective aspect marker’ and *yān* < *hjen* 焉 ‘wherein, therein’ or in words with labial or rounded ending by dissimilation such as *xiāo* < *hjew* (*-aw) 鴞 ‘bird name’ (p.18).

Ting Pang-hsin (1977) points out that Li's *-j-/ *-ji- distinction for *hj-* and *g-* initials in *hekou* syllables is not only artificial but it also conflicts with the rhyme distinctions that the same notation is used to account for within Li's reconstruction system. One of Ting's examples is the following set of three words in OC D-III of Yang 陽 rhyme group (*-jang in Li's system): *kuáng* < *gjang* 狂 ‘crazy’ :: *yǒng* < *hwæng* 永 ‘eternal’ :: *wáng* < *hwang* 王 ‘king’. The word *kuáng* 狂 has MC *gjw-* (*qun* 群, *hekou*) so it has to be reconstructed as ***gwjiang** with -ji- to be distinguished from *wáng* 王 which has MC *hwj-* (*yun* 云) and is reconstructed with simple -j- as ***gwjang** in Li's system. But *-jiang is at the same time reconstructed in Li's system for MC *-jæng* (*geng* 庚 rhyme, D-III) contrasting with *-jang which gives MC *-jang* (*yang* 陽 rhyme, D-III). This results in the same OC form ***gwjiang** splitting into two completely different MC syllables *gjang* (*kuáng* 狂) and *hwæng* (*yǒng* 永) (p. 174).

Ting also points out that words in the same *xiesheng* series as *yǐ* 矣 and *yān* 焉 such as *xī* < *xī* 歔 ‘sigh’ and *yān* < *hjen* 焉 ‘river name’ that are non-grammatical function words are all in *kaikou*, implying that the *yusan kaikou* words cannot really be treated as exceptional or marginal, however small in number (p. 173). Ting's proposal for resolving these problems is to set up another phoneme *ɣ-, a voiced laryngeal fricative which pairs up *hj-* and *h-* as the D-III/non D-III counterparts. The *ɣ- contrasts with *g- which is reserved for *g-*. Thus the *g- in Ting's scheme is left to occur only in D-III. Ting gives the following rules (p. 176).

- *gj- > gj- (*qun* 群, *kaikou*, D-III)

- *gwj- > gjw- (*qun* 群, *hekou*, D-III)
- *γj- > hj- (*yusan* 喻三, *kaikou*, D-III)
- *γwj- > hjw- (*yusan* 喻三, *hekou*, D-III)
- *γ- > h- (*xia* 匣, *kaikou*, D-I, II, IV)
- *γw- > hw- (*xia* 匣, *hekou*, D-I, II, IV)

This reconstruction implies that the initials *hj-* < *γ(j)- and *h-* < *γ- originating from the same phoneme should make more frequent *xiesheng* contact with each other than they do with the velar stop series. But it does not turn out quite that way. It is not arguable that *h-*, besides contacting itself, commonly contacts the velar series, especially with **k-* as words with the latter is more numerous than the others, *g-* and *kh-* in the same stop series. Instead of examining OC *xiesheng* series Ting draws on Nicolas Bodman's estimation of the number of contacts among the initials in question in the sound glosses in the Eastern Han lexicographical work *Shiming* 釋名. Ting says “[a]s Nicolas Bodman (1954: 24) pointed out there are twelve contacts in the sound glosses between Anc. *g-* 群 and *kj-* 見三, but none between Anc. *g-* and *γ-* 匣 (i.e., *h-* in our notation) (p. 176)”. The point Ting makes here is that while *g-* and *kj-* go back to the same series in OC, viz., the velar stop, the *g-* and *h-* cannot go back to the same phoneme: the data would make sense if *g-* was a stop but *h-* a fricative in OC.

But what about the fact that *h-* makes ten contacts with *k-* as shown in the table (p. 177) which Ting gathered from Bodman's data? This shows on the contrary that *h-* is actually closely related to the velar stop series, and the absence of the *h-* ~ *g-* alternation in this particular source is due to the fact that there are fewer words with *g-* than those with *k-* in general.

Ting adds as a support to tracing the *hj-* and *h-* to a single origin that Southern Min dialects have some words with /h/ corresponding to these two contrasting with /k/ or /k'/ corresponding to *g-*: /hun/ (:: *hj-*) 雲 ‘cloud’, /hng/ (:: *hj-*) 園 ‘garden’; /huĩ ~ huã ~ huaĩ/ (:: *h-*) 橫 ‘horizontal’, /he/ (:: *h-*) 夏 ‘summer’ versus /kio/ (:: *g-*) 橋 ‘bridge’, /ku/ (:: *g-*) 舅 ‘maternal uncle’, /ki'am/ (:: *g-*) 儉 ‘thrifty’. Ting also notes that Min dialects have some words with /k/ that correspond to MC *h-* such as /kiã/ 行 ‘walk’ and /kwã/ 寒 ‘cold’. Ting says “[t]his is a noteworthy phenomenon that reveals that Arc. *γ- might have had an occlusive origin (p. 178).” It is not clear what exactly he means by this: does he mean an earlier stage of *γ- or a second origin of MC *h-*? The latter possibility, which Li Rong (1965) also suggested earlier, is what Shao Rongfen (1991) was later going to pursue. Shao's idea on the relation among *hj-*, *h-* and *g-* was then going to be adopted in Pan Wuyun's uvulars.

Meanwhile Baxter 1992 reconstructed a single source *g- for g- and h-: the *g- remained a stop in D-III while it became a fricative in D-I, II, IV. Baxter gives *w- for hj- for the fact that the latter is mostly in *hekou* syllables. He gives *fi- for its *kaikou* counterpart while considering it marginal and of questionable status (p. 210). Thus Baxter's *w- occurs only in D-III.

- *gj- > gj- (*qun* 群, *kaikou*, D-III)
- *g- > h- (*xia* 匣, *kaikou*, D-I, II, IV)
- *gwj- > gw- (*qun* 群, *hekou*, D-III)
- *gw- > hw- (*xia* 匣 *hekou*, D-I, II, IV)
- *wj- > hjw- (*yusan* 喻三, *hekou*, D-III)
- *fi- > hj- (*yusan* 喻三, *kaikou*, D-III)

Baxter also suggests to reconstruct a second source of MC *h-*, viz., a voiced laryngeal fricative *fi- based on southern Min dialects which have zero initial in some words contrasting with the velar stop. He cites the following example from Li Rong 1965 (p. 210).⁴⁹

	<i>hòu</i> 厚 'thick'	<i>hòu</i> 後 'later'
Baxter's OC	*g(r)oʔ	*fi(r)oʔ
MC	<i>huwX</i>	<i>huwX</i>
Fuzhou, Amoy	/kau6/	/au6/
Chaozhou	/kau4/	/au4/

So the MC *h-* has two sources, according to Baxter, *g- and *fi-, but precisely how are individual *h-* words to be sorted out between the two origins when the Min data do not show the k/zero distinction? Cases of the Min zero initial are very few and in fact even cases of the velar correspondence to the MC *h-*, (i.e., cases considered to reflect OC *g-) are relatively few compared to cases of the fricative correspondence, viz., /h/ in Min dialects which represents the literary pronunciation

⁴⁹ MC *h-* corresponds to a fricative /h/ in the majority of cases (Shao Rongfen 1991: 125). Some words have /k/ in lower register tones which suggests an earlier *g-. Li Rong's (1965) focus is on the latter. Li's point of argument is that the distributional gap of MC *g-* (< *g-) (only in D-III) is to be filled in by part of MC *h-* words (D-I, II, IV) which by the Min dialect evidence go back to a voiced velar stop *g-. For Baxter the velar stop correspondence is taken for granted.

layer (i.e., the pronunciation of the northern standard dialect varieties which directly reflects MC *h*-). The Min dialect correspondences /k/ ~ /ø/ to MC *h*- do suggest the probability of a non-velar stop origin of *h*-, but in order to actually posit it in a reconstruction system of OC we must have a way of using genuine OC sources such as the *xiesheng* series.

Shao Rongfen (1991) supports, as he explains, F.K. Li's earlier unpublished proposal which was later supported by Luo Changpei (1939) that MC *h*- has two origins, one *g- and the other *γ- shared by MC *g*- and *hj*- respectively: the former splits into *g*- and *h*- conditioned by the D-III vs. non-D-III distinction and the latter likewise into *hj*- and *h*-.

*gj- > gj- (*qun* 群, D-III)

*g- > h- (*xia* 匣, D-I, II, IV)

*γj- > hj- (*yusan* 喻三, D-III)

*γ- > h- (*xia* 匣, D-I, II, IV)

(The *kaikou*/ *hekou* distinction is out of the question. The -w- can simply be added for the *hekou* counterparts.)

Shao explains that this reconstruction accounts for the infrequency of *xiesheng* contact between the *hj*- and the velar stop series and at the same time for the frequency of that between *h*- and the latter, i.e., the phonetic differences between *g- and *γ- as the sources of *g*- and *hj*- would explain the distance of the *hj*- from the velar series; the *g- as the velar side origin of *h*- would explain the latter's frequent contact with the velar series.

Shao Rongfen's contribution is his proposal for how to distinguish between the two OC sources for a given MC *h*- initial word. He suggests to assign either *g- or *γ- to a given *h*- word based on the *xiesheng* evidence, in particular, the presence or absence of an attestation of *xiesheng* contact with a velar stop series. Shao states this principle as follows (p. 119):

- (a) One that has *xiesheng* relation with the velar stop series, i.e., {*k*-, *kh*-, *g*-} is assumed to go back to the *g- type together with the *g*-.
- (b) One that does not have *xiesheng* relation with the stop series is assume to go back to the *γ- type together with *hj*-.
- (c) One that has *xiesheng* relation with both the velar stop series and *hj*- follows the case that yields fewer exceptions.

Item (b) covers the cases of *h*- that are only found contacting *h*- itself and those that are found contacting any one of the members in the set {*x*-, ʔ-, *hj*-}. Item (c) assumes that an *h*- word in contact with *hj*- tends to have few or no contact with

the *k*- series and vice versa. It is significant that the choice of **γ*- is based mainly on the absence of velar contact (negative, indirect evidence) rather than actual contact with *hj*- (positive, direct evidence). The underlying reasoning is that a **g*- word is most likely to find an attestation of *xiesheng* contact with a velar series while a **γ*- word (the shared origin of *hj*- and *h*-) may not always find an actual *xiesheng* contact with the *hj*- because words with a velar stop initial are far more numerous than those with *hj*-.⁵⁰

Pan Wuyun (1997) takes issue with the phonetic value of the OC **γ*- by the thesis of ‘the two OC origins of *h*-’ as well as that of the **x*- (as in Baxter 1992 or its equivalents such as **χ*- as in Karlgren’s and **h*- as in F.K. Li’s systems), the source of MC *x*- (*xiao* 曉). Pan says that the phonemes **x*- and **γ*- should not make *xiesheng* contact with the **K*- type initials to such a significant extent if they had the velar or laryngeal *fricative* values. He says that the phonetic relation between *h*- and *k*- is analogous with that between *s*- and *t*-; the latter pair does not have *xiesheng* relation and so the same should be true for the former (p. 21). The **ʔ*- for *ʔ*- (*ying* 影) is also problematic, he says, because the glottal stop is a phonation type consonant (as opposed to articulation) dissimilar to velar stops, which can be treated as the zero initial; Sino-Japanese, Sino-Korean phonological systems and Chinese loan words in Vietnamese in all cases use the zero initial, not a velar stop to render the MC *ʔ*- (p. 10).

Pan Wuyun’s proposal is to reconstruct **q*- for *ʔ*-, **q^h*- for *x*- and **G*- for *hj*- and part of *h*- (i.e., the equivalent of Shao Rongfen’s **γ*-). Pan provides the revised rules of development of the three initials *g*-, *h*-, *hj*- as follows (p. 21).

- *g*- in D-III > *gj*- (*qun* 群)
- *g*- in D-I, II, IV > *h*- (*xia* 匣)
- *G*- in D-I, II, IV > *h*- (*xia* 匣)
- *G*- in D-III > *hj*- (*yusan* 喻三)

Pan Wuyun’s reconstruction of the uvular set {**q*-, **q^h*-, **G*-} implicates that the not-so-free but still significant contact among the two groups of initials {*ʔ*-, *x*-, *hj*-} and {*k*-, *kh*-, *g*-} is because of the phonetic similarity between the uvular and velar stops.

Pan Wuyun explains the development of these uvular stops into their corresponding MC initials as natural sound changes: the change from /qh/ to /h/

⁵⁰ Shao estimates that there are about 499 words with *h*- among the words registered in the *Shuowen*, about 354 of which belong to the **g*- type and about 145 to the **γ*- type (p. 124).

(Pan's supposed phonetic value of the *x-* *xiao* 曉 initial), /G/ to /h/ (Pan's supposed value of *h-* *xia* 匣 initial) and /q/ to /ʔ/ (i.e., zero) are all likely sound changes, viz., fricativization of the 'weak' stops and the general tendency for sounds that are 'difficult to pronounce' such as uvular stops to be lost by further backing or fronting (backing in the case of OC > MC).

Pan believes that the predominance of the *hekou* syllables with the *hj-* is due to the tendency for a consonant with a back (presumably he means uvular or further back) point of articulation to become labialized. He speculates that the reason why the same thing did not happen with the other uvulars *q^h- and *q- is perhaps because these had already lost the uvular stop articulation becoming like their MC counterparts at the time the sound change *G- > *Gw- was taking place (p. 21). He supports his uvular reconstructions with plenty of Sino Tibeto-Burman cognate words that preserve the uvular stops in some cases as well as modern Chinese dialects and early Chinese loan words that preserve the trace of the uvular stops in the form of velar stops.

Baxter and Sagart in their system 0.97-1.0 adopt Pan Wuyun's uvulars, but with three significant modifications. One of these, viz., *G- > y- in part, was already discussed above in 2.2.1.3. The other two modifications are as follows: (i) they reconstruct uvular root initials for both MC {*k*, *kh*, *g*-} and {ʔ-, *x*-, *hj*-, *h*-} in cases where they are found in the same *xiesheng* series or seem to have word-family relations. The velar initials in such cases are preceded by a prefix *Cə- which changes the following uvular root initial to a velar; (ii) they reconstruct *ʔ- as a second source of MC ʔ- (Ying 影), in addition to *q- when a MC ʔ- has no known *xiesheng* contact with other initials that are reconstructed as uvulars.

Baxter and Sagart believe that velar and uvular stops were not interchangeable in *xiesheng* phonophoric selections: the co-occurrence of MC velar initials and those of uvular origins within a *xiesheng* series is due to a "minor syllable" *Cə- preceding the uvular root initial. This *Cə- is a minor syllable loosely attached to the root syllable, which disappears after it changes its following uvular root initial to a velar one. Sagart and Baxter (2009: 236-237) provide some cognate pairs such as the following:

歇 *xiē* < *xjot* < *q^hat 'cease, rest' :: 惕 *qì* < *khjet* < *Cə.k^hrat < *Cə.q^hrat 'to rest'
 翁 *wēng* < *ʔuwng* < *q^honj 'old man' :: 公 *gōng* < *kuwng* < *Cə.k^honj < *Cə.q^honj 'father, prince'
 影 *yǐng* < *ʔjæng* < *qranʔ 'shadow' :: 景 *jǐng* < *kjængX* < *Cə.kranX < Cə.qranʔ 'bright, image'

Examples such as these strongly suggest that the velar-laryngeal contacts, at least in part, are based on cognate relations, i.e, shared roots rather than on phonetic similarity alone. This velarizing prefix *Cə- is both phonetically and se-

mentally underdetermined, while its phonetic effect is clearly defined as changing a uvular stop into a velar stop. Since it targets specifically a uvular initial to change it into a velar, it appears to be little more than an unidentified phonetic conditioning factor for the sound change. I do not see the merit of reconstructing a both phonetically and semantically underdetermined prefix. Further, semantically related pairs such as these are only part of the cases of velar-uvular alternations and they could be regarded just as well as dialect cognate words if we take into account the inclination of uvulars to merge with velars as Pan Wuyun explained.

Sagart and Baxter (2009: 226-227) explain their $*ʔ$ - contrasting with $*q$ - : “As for MC ‘- [ʔ/ (Ying 影)], when it shows no contacts with other Middle Chinese initials of possible uvular origin, we reconstruct it as $*ʔ$ - rather than $*q$ -. For example, we reconstruct 安 ān < ‘an < $*ʔ^s a[n]$, because it seems to be used as a phonetic element only for words with MC ‘-. Moreover, while some words with MC initial ‘- are used to represent foreign words with stop initials, as early as the Western Han, 安 ān represents a zero initial in 安息 Ānxī...MC ‘an-sik < $*ʔ^s a[n]$ -sək, a transcription of the name of the Arsacid dynasty of Parthia (ca. 247 BCE – 224 CE)...”.

In this proposal, the method for distinguishing two origins of MC $ʔ$ -, $*ʔ$ - and $*q$ - is essentially to see whether a *xiesheng* series contains only $ʔ$ -, or it has $ʔ$ - together with other MC initials pointing to uvulars such as x -, h -, $h(w)$ -. The former, i.e., cases of ‘unmixed’ MC $ʔ$ - are reconstructed as $*ʔ$ -; those of MC $ʔ$ - alternating with x - < $*q^h$, h - < $*G^s$ -, $h(w)$ - < G^w - are reconstructed as $*q$ -. This may seem to be analogous with the above explained method for distinguishing the two origins of MC h -, $*g$ - and $*G$ -, by the presence or absence of the MC initial’s *xiesheng* contacts with velar series. But there is a very significant difference between them which, in my opinion, makes the use of *xiesheng* contact as the decisive factor justified for the case of h -, but not for Baxter-Sagart’s $ʔ$ -.

Divisions among MC initials in *xiesheng* series in general do not always indicate distinctions of the MC initials at OC stage. In order for the divisions to be confirmed as representing certain phonemic or phonetic distinctions, they have to be complemented primarily by distributional or phonetic facts that suggest separate origins of the MC initials involved. Relying on *xiesheng* contact alone can lead to spurious distinctions. Suppose there are three uvular stops $*q$ -, $*q^h$ -, $*G$ - in OC. Given the principle of homorganicity as the criterion for *xiesheng* interchange, words with any of the three initials can be written with the same phonophorics to form a *xiesheng* series. For a given word with $*q$ -, for instance, it is not predictable a phonophoric of which variant, $*q$ - itself, or the other qualified ones

*q^h- and *G- will be chosen to write it; it differs case by case, hence ‘mixed’ *xiesheng* series. At the same time, there would be some tendency for a graph of one initial (word) to be chosen for another word with the same initial, hence ‘unmixed’ *xiesheng* series. The association between a graph and its ‘proper’ pronunciation would not remain constant even during the same phonological period, because of interchanges among etymological and morphological variants. Thus an unmixed series may turn into a mixed one and vice versa. Overall, co-existence of mixed and unmixed series is well expected given the assumption of homorganicity as the *xiesheng* criterion, and unmixed series do not always represent separate phonemes. A word with *q- can appear either in a series mixed with *q^h- or *G-, or in a series in which all the other members are *q- as well. I am suggesting that Baxter-Sagart’s *ʔ- may actually be *q- which happens to be in unmixed MC ʔ- series. In the case of MC *h*-, by contrast, whether or not a word with *h*- occurs in a velar series is reasonably taken to reveal its distinct OC origins; because *h*-, occurring in D-I, II, IV, is in complementary distribution with two initials, *g*- < *g- in D-III, and *hj*- < *G- in D-III; the former is described to belong to the *yayin* ‘velar sound’ category and the latter *houyin* ‘throat sound’ in the rhyme table and thus are reconstructed in OC as a velar and a uvular stop respectively. When there are sufficient distributional and phonetic facts supporting the two origins of *h*- like this, whether or not a *h*- initial word has contacts with velar stop initials should tell which class, *g- or *G-, it belongs to. In the case of the supposed two origins of ʔ- in Baxter-Sagart system, the supporting evidence for postulating a separate phoneme for unmixed ʔ- *xiesheng* series - a transcription of a foreign place name from the Western Han period - is not very convincing. If MC does not preserve any trace of the putative distinction between *ʔ- and *q-, one might then see if it is reflected in any systematic way in loan word phonological systems or modern Chinese dialects.

I will follow Pan Wuyun’s assumption that velar and uvular stops do have occasional *xiesheng* contact with each other because of their phonetic similarity. The selection between *g- and *G- for a MC *h*- initial word will be made based on the *xiesheng* method established by Shao Rongfen (1991). Some examples of velar/uvular word reconstructions are as follows.

huáng < *hwang* < ***gg^wan** 黃 ‘yellow’ :: *héng* < *hwæng* < ***gg^wran** 橫 ‘horizontal’

The reconstruction of the velar stop for these two *h*- words are due to the following velar initial words in the same phonophoric series:

guǎng < *kwangX* < ***kk^wanʔ** 廣 ‘broad’ :: *kuò* < *khwak* < ***kk^{wh}ak** 擴 ‘widen, extend’ :: *kuàng* < *khwangH* < ***kk^{wh}an-s** 曠 ‘waste land’

Likewise the uvular for *huǎn* 緩 is due to the latter's graphic connection with *hj*- and *x*-:

huǎn < *hwanX* < ***GG**^w**ar?** 緩 'slack' :: *yuán* < *hjwon* < ***G**^w**ar** 援 'draw' :: *xuān* < *xjwon* < ***q**^{wh}**ar** 諛 'deceive'

The uvular for *hū* 乎 is due to the connection with *x*-:

hū < *hu* < ***GGra** 乎 'sentence final particle' :: *hū* < *xu* < ***qq**^h**ra** 呼 var. 嘯 'call out' :: *hǔ* < *xuX* < ***qq**^h**ra?** 虎 'tiger'

2.2.2.2 A reconsideration of the 'Rounded vowel hypothesis'

The *-on in Baxter's system, now Baxter-Sagart system concerns part of *hekou* words in the traditional *-an (Yuan 元) group and likewise *-un concerns part of *hekou* words in the *-ən (Wen 文). The relation between *-ot and *-at (Yue 月), *-oj and *-aj (Ge 歌), *-or and *-ar (Ge 歌/Yuan 元), *-ut and *-ət (Wu 物), *-uj and *-əj (Wei 微), *-ur and *-ər (Wen 文/Wei 微) are parallel.

The MC *hekou* medial -w- in general occurs with velar/laryngeal initials. Apart from labial initials after which the -w- is non-distinctive, in most MC rhymes that have *kaikou*/ *hekou* counterparts, the contrast is found either exclusively or predominantly after velar/laryngeal initials. The following MC rhymes (represented by the *ping* tone rhymes) in particular have *hekou* syllables only with velar/laryngeal initials: -(w)ang (*tang* 唐), -(j(w)ang (*yang* 陽), -(w)ong (*deng* 登), -(w)əng (*geng* 耕), -(j(w)əng (*geng* 庚), -(j(w) eng (*qing* 清), -(w)eng (*qing* 青), -(w)ing (*zheng* 蒸) (F.K. Li 1971 [1982]: 17, Baxter 1992: 236-37). These rhymes come from OC *-aŋ, *-əŋ and *-eŋ and their voiceless stop ending counterparts *-ak, *-ək, *-ek which in all cases have a velar ending and an unrounded vowel or coda. Words with and without the -w- are separated in *xiesheng* phonophoric series. This together with the dominant distribution of -w- after velar/laryngeal in MC system is accounted for by the reconstruction of labio-velar/uvular initials in Old Chinese.

But there are some MC rhymes that have the *kai*/*he* distinction after dental initials as well as velar/laryngeals. These rhymes go back to OC rhymes with dental codas such as *-an, *-at, *-aj, *-ar, *-ən, *-ət, *-əj, and *-ər: -a (*ge* 歌)/ -(j)wa (*ge* 戈), -an (*han* 寒) / -wan (*huan* 桓), -oj (*tai* 哈) / -woj (*hui* 灰), -(w)aj (*tai* 泰), -(j(w)ej (*ji* 祭), -(w)en (*shan* 山), -(w)ən (*shan* 刪), -(w)en (*xian* 仙), -on (*hen* 痕)/ -won (*hun* 魂) (F.K. Li 1971 [1982]: 17, Baxter 1992: 236-37).

Whereas words with velar endings rhyme with one another regardless of the -w-, (e.g., *Kwan (=K^wan) rhymes with *Kan. The K represents velar/uvular initials), the *hekou* syllables with dental initials, i.e., those that have dental initials and dental codas which we will write as *TwVn* (T: dental initials, V: vowel, n: dental coda) only rhyme with *hekou* syllables. The ‘Rounded vowel hypothesis’, originally proposed by Yakhontov (1960 [1986]) and adopted in Baxter 1992 system states that the reconstruction such as *Twan for dental initial words in MC *hekou* syllables that belong to the traditional *-an group does not adequately account for the fact that the *Twan does not rhyme with the *Tan or *Kan; therefore the former ought to be reconstructed instead with a different main vowel, viz., the rounded vowel *o. Likewise *Twæn does not rhyme with *Tæn or *Kæn, so it is to be reconstructed as *Tun instead. The ‘Rounded vowel hypothesis’ thus separates *-on from *-an, *-ot from *-at, *-oj from *-aj, *-or from *-ar, *-un from *-æn, *-ut from *-æn, *-uj from *-øj, and *-ur from *-ær etc.

Let us discuss the *-an/*-on as a representative. The reason we prefer the reconstruction *Twan to *Ton despite the fact that the former does not rhyme with *Tan or *Kan is that there is no independent evidence for the distinction between the *-wa- and *-o- after velar/uvular initials as assumed in the ‘Rounded vowel hypothesis’ (RVH). An MC word in the syllable type *KwVn* that rhymes with those in *TwVn* should be reconstructed with a rounded vowel according to the RVH, e.g., *KwVn* < *Kon for a word rhyming with *TwVn* < *Ton; at the same time the *K^wan (= *Kwan) type syllable with a labio-velar initial is assumed to exist contrasting with *Kan in the system analogously with the *K^wan contrasting with *Kan. This means that any given syllable *KwVn* is assumed a priori ‘ambiguous’ with regard to which type, *K^wan or *Kon it goes back to, and that the selection between these two has to be based on whether the individual *KwVn* type word rhymes with the ‘unambiguous’ *-an (*kaikou* syllables with either K- or T-) or *-on (*hekou* with T-).

There are two major problems with this. First, apart from the fact that the *KwVn* rhymes with the *TwVn* < *Ton, it is hard to find evidence for one *KwVn* word not rhyming with another *KwVn*. Second, repeated words or different words with shared phonetic graphic components in the *KwVn* type in the *Shijing* rhyme with an ‘unambiguous *-on’ in one case and with an ‘unambiguous *-an’ in another. It is also notable that no trace of vowel contrast that corresponds the assumed *-wa-/*-o- distinction after velar or uvular initials is known to exist in Sino-Tibeto-Burman cognate words or early Chinese loan words in Tai, Vietnamese, Japanese and Korean. Note the following recurring phonophoric series. The unambiguous *-on/*-ot/*-or and *-an/*-at/*-ar by the RVH are marked by square brackets.

(i) 厥 series

The word *jué* 蕨 rhymes with two words with [**-ot*] in a rhyme sequence in Mao 14. The rhyme words are given in the order they occur in the poem.

蕨 *jué* **kwat* ‘plant name’
 懷 *chuò* **trwat* [**-ot*] ‘worried’
 說 *yuè* **lwat* [**-ot*] ‘content’

But the word *què* 闕 in Mao 91 rhymes with an [**-at*] word.

達 *tà* **tt^hat* [**-at*] ‘appearance of coming and going’
 闕 *què* **k^hwat* ‘look-out tower’
 月 *yuè* **ŋwat* ‘month’

The word *guì* 蹶 in Mao 114 rhymes with an [**-at*] word.

逝 *shì* **dat-s* [**-at*] ‘pass by’
 邁 *mài* **mmrat-s* ‘proceed’
 外 *wài* **ŋwat-s* ‘outside’
 蹶 *guì* **kwat-s* ‘move’

(ii) The 卷 series

The word *juǎn* 卷 in Mao 26 rhymes with [**-on*] words.

轉 *zhuǎn* **trwan?* [**-on*] ‘turn around’
 卷 *juǎn* **krwan?* ‘roll’
 選 *xuǎn* **swan?* [**-on*] ‘select’

But the word *quǎn* 緼 in Mao 253 rhymes with [**-an*] words.

安 *ān* **qqan* [**-an*] ‘secure’
 殘 *cán* **ddzan* [**-an*] ‘damage’
 緼 *quǎn* **k^hwan?* (as in *qiǎn quǎn* 緼緼 ‘stick together’)
 反 *fǎn* **pan?* ‘turn back’
 諫 *jiàn* **kkran-s* [**-an*] ‘admonish’

(iii) 活 series

The word *kuò* 闊 rhymes with an [**-ot*] word in Mao 31.

闊 *kuò* **kk^hwat* ‘far apart’
 說 *shuō* **hlwat* [**-ot*] ‘say’

But the *kuò* 括 in Mao 218 rhymes with [*-at] words.

羣 *xiá* *ggrat [*-at] 'linch pin'
 逝 *shì* *dat-s [*-at] 'pass by'
 渴 *kě* *kk^hat [*-at] 'thirsty'
 括 *kuò* *kkwat 'bind'

(iv) 官 series

The word *guǎn* 管 in Mao 42 rhymes with an [*-on] word.

變 *luán* *rwan? [*-on] 'beautiful'
 管 *guǎn* *kkwan? 'pipe, flute'

The word *guǎn* 館 in Mao 250 rhymes with [*-on].

館 *guǎn* *kkwan? 'lodge'
 亂 *luàn* *rrwan-s [*-on] 'messy'
 鍛 *duàn* *ttwan-s [*-on] 'hammer'

But the same word *guǎn* 館 in Mao 75 rhymes with an [*-an] word.

館 *guǎn* *kkwan? 'lodge'
 餐 *cān* *tts^han [*-an] 'meal'

The word *guǎn* 瘡 in Mao 169 rhymes with an [*-ar] word.

蟬 *chǎn* *t^har? [*-ar] 'shabby'
 瘡 *guǎn* *kkwan? 'tired'
 遠 *yuǎn* *Gwan? 'far'

(v) 夬 series

The word *yuàn* 怨 in Mao 58 rhymes with an [*-ar] word.

怨 *yuàn* *qwar-s 'resent'
 岸 *àn* *ŋjar-s [*-ar] 'bay'
 泮 *pàn* *pp^han-s 'water front'

But the *wǎn* 婉 in Mao 94 rhymes with an [*-on] word.

溥 *tuán* *ddwan [*-on] 'plentiful'
 婉 *wǎn* *qwar? 'beautiful'
 願 *yuàn* *ŋwar-s 'desire'

(vi) 原 series

The word *yuàn* 願 rhymes with an [*-on] word in Mao 94.

溥 *tuán* ***ddwan** [*-on] ‘plentiful’

婉 *wǎn* ***qwar?** ‘beautiful’

願 *yuàn* ***ɲwar-s** ‘desire’

But the word *yuán* 原 in Mao 164 rhymes with [*-ar] words.

原 *yuán* ***ɲwar** ‘original’

難 *nán* ***nnar** [*-ar] ‘difficult’

歎 *tàn* ***hnnar-s** [*-ar] ‘sigh’

Baxter 1992 discusses some of these cases treating them as a marginal phenomenon; some are claimed to be of late origin and others simply as irregular rhyming. One cannot argue against ‘irregular rhyming’; his arguments for late origins are speculative. Baxter suggests regarding the problem of the 官 phonophoric series that the character 管 for ‘flute’ rhyming with an *-on word is of late origin. Baxter believes the 官 represents ***K^wan**, and the variant character form 筥 of 管 with the 完, which to him suggests ***Kon**, is original (pp. 381-82). Both 管 and 筥 are registered in the *Shuowen* with similar definitions and both are attested in the early received texts.⁵¹ The graphic variation 管~筥 suggests the compatibility of the two graphs 官 and 完 as phonetic components rather than historical change in the orthography. Baxter likewise suggests that the word *yuàn* 願, written with 原 which contacts both *-an and *-on is due to the replacement of the graph 元 by 原 because the form 𠄎 is used for *yuàn* 願 in the Zhongshan Wang Cuo bronze inscriptions (ca. 310 BCE). We do not find justification to consider the Zhongshan form to be earlier than the received 願. This may well suggest the compatibility of the phonophorics 元 and 原.

The problem of the *Kwan type syllables contacting both the ‘unambiguous’ *-an/*-ar and *-on/*-or is more serious than Baxter seems to suggest. In fact all recurring phonetic components representing the syllable type *Kwan (or Kwat) i.e., those that could be reconstructed either as ***K^wan/-t/-r** or ***Kon/-t/-r** by RVH are in one way or another involved in these “irregular” contacts with both *-an/*-at/*-ar and *-on/*-ot/*-or. There are ten phonophoric series whose members occur three times or more in the *Shijing*: Six of them, 活, 厥, 卷, 官, 原, 𠄎 as

51 筥, 筥也竹完聲‘筥 means 筥 [fū ‘bamboo pipe’]...’ (5a/191)
管, 如簾...从竹官聲‘管 is like 簾 [chí ‘type of flute’]...’ (5a/197)

shown above have direct contact with both the ‘unambiguous’ *-an etc. and ‘unambiguous’ *-on etc. The remaining four, which are 月, 戊, 爰, 宣 are indirectly involved in the fluctuation between *-an etc. and *-on etc. by indirect rhyme contact or word family relation. For example, the 爰 series seems to stay well on the *-an side as seen in the following rhyme sequences with *yuàn* 媛, *yuán* 援 and *xuān* 諼:

Mao 47:

展 *zhǎn* ***tran?** [*-an] ‘ritual garment’
 褫 *fán* ***ban** ‘plain garment’
 顏 *yán* ***ɲɲrar** [*-ar] ‘face’
 媛 *yuàn* ***Gwrar-s** ‘beautiful woman’;

Mao 241:

援 *yuán* ***Gwar** ‘draw’
 羨 *xiàn* ***z(r)ar-s** [*-ar] ‘desire’
 岸 *àn* ***ɲɲar-s** [*-ar] ‘bay’

Mao 56:

澗 *jiàn* ***kkran-s** [*-an] ‘valley’
 寬 *kuān* ***kk^hwan** ‘broad’
 言 *yán* ***ɲan** [*-an] ‘speech’
 諼 *xuān* ***q^hwan** ‘forget’.

But the word *yuàn* ***Gwrar-s** 媛 ‘beautiful woman’ is clearly related to 婉 *wǎn* ***qwar?** ‘beautiful’, so the 爰 series gets indirectly involved in *-an/*-ar ~ *-on/*-or fluctuation of the 宛 series.

The seemingly non-problematic cases are actually ones that appear only once. For example, the word *guàn* 貫 would settle with ***Kon** in RVH because it occurs only once in the *Shijing* in a sequence with an *-on word (Mao 106) and there is no more data to suggest otherwise. The *wán* 丸 could settle as ***K^wan** because it occurs only once (Mao 305). Our examination of repeated *KwVn* type words suggests that a phonemic distinction such as ***K^wan** and ***Kon** does not exist. Overall, the selection between ***K^wan** and ***Kon** for a given **Kwan*/-t/-r type syllable in the RVH is rather arbitrary.

The fact that the MC *hekou* words with dental initials (which are restricted to dental codas) rhyme only with *hekou* words can be explained alternatively by the rounding effect of *-w- on the main vowel. This rounding effect is also conditioned by the initial and coda. The **Kwan* freely rhymes with **Kar* or **Tar* (There is no syllable in the **Twan* type). By contrast the **Kwan* generally rhymes with

the *Twan or *Kwan and only occasionally with the *Kan or *Tan. The *Twan always rhymes with *Twan or *Kwan. We can assume that the *-w- changes the phonetic quality of the main vowel when the coda is *-n, and the effect, presumably rounding, is greatest when both the initial and coda are dental. The *-w- at the same time labializes the preceding velar/uvular initial so that *Kwan and *Kwan̥ do not occur in the same phonophoric series with their *kaikou* counterparts.