

The evidence for Chinese *-r

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Abstract

Starostin (1989) proposes that Old Chinese had a final *-r that later changed to -n (and sometimes -j). Baxter & Sagart (2014a) incorporate Starostin's proposal in their recent Old Chinese reconstructions. This essay attempts to assemble the evidence for Old Chinese final *-r and to elaborate an explicit notation for the relative strength of this evidence for reconstructing an *-r in particular words.

Keywords: Old Chinese, historical phonology, rhotics, reconstruction

斯塔罗斯金曾经提出古汉语有-r的尾音，后来演变成了-n（有时候-j）。白一平和沙加尔（2014a）把斯塔罗斯金的提议加入了他们最近的古汉语重建。这篇文章尝试搜集古汉语-r尾音的证据，而且详细列出在特殊词汇用-r尾音重建证据的力度。

关键词：古汉语，韵史，r音，重建

1 Introduction

Because the Chinese script does not unambiguously encode phonetic information, like all other aspects of Old Chinese phonology, the final consonants of Old Chinese are necessarily somewhat uncertain.² The general tack of Chinese historical phonologists is to begin by projecting the finals of Middle Chinese backward onto Old Chinese and then to make adjustments of various kinds as they seem necessary.³ Schuessler (2009) is a convenient exemplar of the *opinio communis*; he distinguishes final *-p, *-m, *-k, *-ŋ, *-t, *-n, *-w, *-wk, and *-j.⁴ Starostin (1989: 399-407) further proposes *-r, to explain connections between final *-n and final *-j, a suggestion which Baxter & Sagart (2014a and 2014b) implement in their reconstruction, but without systematically presenting the data they relied on.

In the system of Baxter & Sagart “the notation ‘*[X]’ means ‘either *X, or something else that has the same Middle Chinese reflex as *X’” (2014a: 8). According to this explanation *-r, *-n, and *-j would have the same meaning, i.e. ‘could either be *-r or could be *-n or *-j as the case may be’.

1 I would like to acknowledge the generous support of the European Research Council for supporting this research, under the auspices of ‘Beyond Boundaries: Religion, Region, Language and the State’ (ERC Synergy Project 609823 ASIA). This paper has also benefited from comments I received following its presentation at the University of Washington.

2 Here I provide a Chinese character with a reference number from Schuessler (2009), a Middle Chinese reading using Baxter’s (1992) system and an Old Chinese reading using Schuessler’s (2009) system. However, I mechanically adapt the conventions of Schuessler’s reconstructions to match the typographical conventions of Baxter & Sagart (2014a) to ease comparison with the latter.

3 Karlgren’s (1923: 27-30) voiced stop finals (cf. Baxter 1992: 325-342) and Pulleyblank’s (1977-8: 187-194) palatal finals (cf. Baxter 1994: 145, 153-155) are of historic interest only and need not distract the current discussion. Karlgren reconstructed *-r and *-n in Old Chinese (Karlgren 1933: 19-37, Schuessler 1974: 80-81); most researchers change his *-r to *-j and extend its occurrence (Schuessler 2009: 25), i.e. Karlgren’s *-r and Starostin’s (1989) *-r are not equivalent. Some researchers prefer to reconstruct *-l rather than *-j (e.g. Zhengzhang 2000), a rather cosmetic disagreement that has no effect on the structure of Old Chinese phonology.

4 I omit from this list final *-h, *-s, and *-ʔ which are needed to explain the origin of tone in Middle Chinese, but are not relevant to the current discussion of *-r.

Despite their own description of their notation, it seems likely that they intend the item in the brackets as somehow the favored option, if not, why do they write ever write *-r], which carries the disadvantage of not predicting the Middle Chinese value? Thus, one is compelled to assume that they in fact intend a four valued hierarchy of certainty with *-r, *-r], *-r]/*-r] and *-r]/*-r] as the possible setting on a scale from 'there is certainly an *-r' to 'there is certainly not an *-r'. This notation has several disadvantage. It obscures the evidence base upon which Baxter & Sagart reached their decisions. Also, these four tiers of confidence obscure the fine-grained and complex evidence available for the readings of various characters. Here I attempt to rectify these disadvantages in the Baxter & Sagart system. I do so by assessing the data which Baxter & Sagart provide as systematically as I am able, with particular attention to establishing the relative confidence with which final *-r may be presumed in readings of particular characters, and proposing a notation that transparently expresses the fine-grained confidence levels inherent in the data. The notation proposed here is an improvement on the notation of Baxter & Sagart; I commend it for all ends which their reconstructions serve.

Evidence for *-r divides into two types, (1) direct evidence for *-r readings of specific characters, and (2) indirect evidence, which links the characters for which there is direct evidence to further characters for which there is no direct evidence.

2 Direct evidence of *-r

Three types of evidence pertain to the reconstruction of final *-r in the reading of a particular character: (1) explicit discussion in traditional literature of alternative -n and -j pronunciations of a word, (2) the mixture of Middle Chinese -n and -j readings of a single character, (3) rhyme contact in early poetry between a word with Middle Chinese -n and a word with Middle Chinese -j readings.⁵

Each of these three types of evidence is weaker than the preceding type. (1) Because the explicit discussion in traditional literature of dialect variation in the pronunciation of specific words isolates the specific time and place of the variation, this type of evidence is the strongest.⁶ (2) The mixture of Middle Chinese -n and -j readings of single characters in the *Qìèyùn* 切韻 (601 CE) pertains to a much later date than discussions of dialect variation. In addition, because the *Qìèyùn* does not specify variant readings as originating from particular locales, no geographic information is available about Middle Chinese -n and -j variation. (3) Rhyme contact in early poetry between a word with a Middle Chinese -n reading and a word with a Middle Chinese -j reading is more convoluted than may be obvious at first blush. Since this evidence relies on *Qìèyùn* readings, it does not directly reveal anything about the pronunciation of the words in a poem at the time of its composition. Presumably in the speech of a poem's author there was no difference between the finals that would later become Middle Chinese -n and those that would become -j. The challenge of explaining such cases is not to explain the pronunciation of the original poem per se, but to explain how Middle Chinese came to have an -n reading in the one case and a -j reading in the other. By virtue of the *Ausnahmslosigkeit der*

5 A fourth type of evidence, namely the use of a character to transcribe foreign syllables that end in -r, is also relevant. However, because foreign transcriptions are not directly relevant to -n and -j alternations and their treatment gives rise to a number of complications, the present article does not address the use of foreign transcriptions as evidence for *-r.

6 One might object that because discussion of the readings of the characters in the passages that constitute the first type of evidence will inevitably make reference to the *Qìèyùn*, one should regard the evidence of the *Qìèyùn* itself (i.e. the second type of evidence) as more secure than evidence of the first type. However, in evidence of the first type, it is the texts themselves and not the *Qìèyùn*, that posit distinct readings; epistemologically reference to the *Qìèyùn* is unnecessary. In contrast, as is discussed presently, rhyme contact between -n and -j in early poetry must make reference to the *Qìèyùn* and is consequently a less secure source of evidence.

Lautgesetze, such rhymes provide evidence that both *-n* and *-j* readings of both characters involved in a relevant rhyme *could* have appeared in the *Qiyùn*; that not all such readings were transmitted is an accident of fate. If one follows the explanation of Baxter & Sagart that **-r* > *-n* is the mainstream development, whereas **-r* > *-j* is characteristic of an eastern dialect (2014a: 254-268), then in all cases in which Middle Chinese *-n* rhymes with Middle Chinese *-j*, the dialect(s) reflected in the *Qiyùn* could have replaced the inherited *-n* reading with an eastern *-j* borrowing and could have failed to borrow the *-j* reading, instead retaining inherited *-n*. Because this third type of evidence implies the possibility of the second type of evidence, evidence of the third type is necessarily weaker than evidence of the second type.

As a notational convention it is convenient to distinguish these three forms of evidence as a, b, c, and to note these letters as a superscript (^a, ^b, ^c) to indicate what evidence supports the reconstruction of final **-r* in a given word. For example, the character 桓 (25-12f) *hwan* < **w^aan* is glossed by a third century scholar as pronounced as 和 (19-07e) *hwa* < **w^aaj* (Baxter & Sagart 2014a: 266); the Old Chinese reconstruction can make explicit this source of evidence for **-r* by writing 桓 *hwan* < **w^aar^a*. Similarly, since the character 洒 (26-31g) has Middle Chinese readings *sejX* and *senX*, it may be represented in Old Chinese as 洒 **sⁱir^b*. In Ode 215 難 (24-35d) *nan* < **n^aan* 'difficult' rhymes with 那 (18-12a) *na* < **n^aaj* 'much', so the Old Chinese reconstructions of 難 and 那 can make explicit this source of evidence for **-r* by writing 難 **n^aar^c* and 那 **n^aar^c*.

3 Indirect evidence of **-r*

In addition to the three types of direct evidence pertaining to the reconstruction of final **-r* for a particular word (i.e. the reading of a particular character), there exist two types of indirect evidence also suggestive of final **-r* in words for which direct evidence is lacking. First, a character may have 諧聲 *xiéshēng* contacts with a character with readings for which there is direct evidence for final **-r*. Second, a word written with a character that has a Middle Chinese readings in *-n* may rhyme with another word (also written with a character that has a Middle Chinese reading in *-n*), for which there is direct evidence of final **-r*.

The relationship of *xiéshēng* series membership is transitive (i.e. if 蟠 is in the same series as 播 and 播 is in the same series as 譌 then 蟠 is in the same series as 譌). Thus, if 桓 *hwan* is reconstructed **w^aar^a* on the basis of it being glossed as 和 (19-07e) *hwa* < **w^aaj*, then, according to the '*xiéshēng* hypothesis',⁷ any character built on the phonetic 亘 probably had the rhyme **-ar* in Old Chinese. Such cases of *xiéshēng* links to characters with **-r^a* readings may be represented as ^A, using the capital letter to reflect the more abstract nature of the evidence. In the same way ^c may mean that the reading in question has a *xiéshēng* connection to a word that rhymes in a way that implies **-r*, either a Middle Chinese *-n* word that rhymes with a *-j* word or vice versa.

The notation ^B by analogy would mean a reading that has *xiéshēng* connection to a character with

7 Duàn Yùcái 段玉裁 (1735-1815) first elaborated the principle that the same phonetic component in the writing of two characters implies the words expressed by these characters have the same rime category in the *Shījīng* 詩經 (cf. Li 1974: 221). Li Fang-kuei 李方桂 adds the stipulation that each Old Chinese rime category have one vowel (Li 1974: 243, Baxter 1992: 348, Schuessler 2009: 11). For characters that do not occur as rhyme words in the *Shījīng* this principle is necessarily an assumption, but for words represented by characters that are in the same *xiéshēng* series and also occur as rhyme words in the *Shījīng* whether or not the readings of these characters rhyme is a testable hypothesis. There are many such cases. For example, 結 *ket* < **k^sit* (29-01q) and 纈 *het* < **g^sit* (29-01y) rhyme in Ode 8.3 and 脫 *thwajH* < **l^sots* (22-13m) and 輓 *sywejH* < **l^sots* (22-13g) in Ode 23.3. Such examples probably led Duàn Yùcái to formulate his theory.

both *-n* and *-r* readings, e.g. since 洒 (26-31g) has Middle Chinese readings *sejX* and *senX*, the Old Chinese reconstruction of 洒 *syinX* (26-31i) could be written **ŋər^Bʔ*. However, using ^B exclusively for such cases would leave no way to express the cases in which a *xiéshēng* series contains both *-n* and *-j* readings, but where no single character has both, e.g. 𪛗 (24-35g) has an *-n* reading and 𪛗 *na* < **n^saj* (24-35k) has a *-j* reading, but no single character in series 24-35 has both *-n* and *-j* readings. Consequently, I propose to use ^B to mark all readings of all characters in a series that contains *-n* and *-j* readings whether of the type seen in series 26-31 (洒洒 etc.) or in series 24-35 (𪛗 etc.).⁸

Unlike *xiéshēng* contact, rhyme contact is not transitive. If A rhymes with B and B with C, it is quite possible that A does not rhyme with C. If great philological care is not taken, the use of rhyme evidence would quickly lead to the presumption that all cases of Middle Chinese *-n* and *-j* descend from **-r* (List forthcoming). The use of superscript numerals conveniently captures the non transitive nature of the rhyme evidence. For example, if 泉 (25-40a) *dzjwen* < **dzwan* 'spring, source' is thought likely to have final **-r* because in Ode 197 it rhymes with 垣 (25-12m) *hɿwon* < **wan* 'wall' and the latter is in a *xiéshēng* series that also contains the character 桓 *hwan* which is glossed with 和 (19-07e) *hwa* < **w^saj* this evidence can be noted 泉 **dzwar^Δ*. Turning to another example of representing indirect rhyme evidence, in Ode 250 the words written 原 (25-20a) *ngjwon* < **ŋwan* 'spring, source; origin' rhymes with both 宣 (25-12t) *sjwen* < **swar^Δ* 'spread (v.)' (^Δ again because of 桓 [25-12f] *hwan* < **w^sar^a*) and 歎 (24-35c) *than* < **ŋ^sar^B* 'to sigh' (^B because of contacts such as [24-35g] *nan* and 𪛗 [24-35k] *na* < **n^saj*). Consequently, 原 (25-20a) *ngjwon* may itself be reconstructed **ŋwar^{ΔB}*.

The notational conventions are now in place for keeping track of the strength of evidence for **-r* in the reading of particular characters. The discussion proceeds to a presentation of the evidence belonging to each type (three direct and two indirect) and the calculation of the strength of evidence for **-r* in particular characters.

4 Direct evidence in detail

4.1 (a) Explicit discussions of alternate pronunciations of a word

Baxter & Sagart (2014a: 264-267) cite evidence from discussions by early Chinese writers suggesting the need to reconstruct the readings of three characters with final **-r*. By way of example, in his commentary on *Lǚshì Chūn-qiū* 吕氏春秋, the late Hàn commentator Gāo Yòu 高诱 (fl. 205–212) writes:

今兖州人謂殷氏皆曰衣

8 It is not reasonable to presume that all words that are written with characters in a *xiéshēng* series that shows contact between *-n* and *-j* had a final **-r*. For example, series 06-38 (𪛗) contains only one character that has a reading with final *-n*, namely 𪛗 (26-38i) *bjinX*, and this character also has the reading *bjiX*. Since **-r* > *-j* is a minority development, characteristic of eastern dialects (Baxter & Sagart 2014a: 264-271), the chances of an entire *xiéshēng* series reflecting this change is very small. Instead, it is safer to presume that only the word written with the character 𪛗 is to be reconstructed with a final **-r*. One may suppose, for example, that a speaker of an Eastern dialect first used this character to write this word in the pronunciation ancestral to *bjiX*, but that as this orthography became established speakers of Western dialects, saying something ancestral to *bjinX*, also took up the practice. Nonetheless, such late readings do nothing to challenge the transitivity of *xiéshēng* series membership per se. All characters built on 𪛗 are members of the same series and the reading 𪛗 *bjinX* is *prima facie* evidence for **-r* in the reading of any of the other characters in the series.

"Nowadays the people of Yǎnzhōu 兗州 all pronounce the family name 殷 Yīn [*ʔər] as 衣 Yī [*ʔ(r)əj]" (Baxter & Sagart 2014: 265).

Baxter & Sagart (2014a: 264-267) provide three cases of explicit discussions of dialect pronunciations:

殷 (33-09a) *jīn* < *ʔən pronounced as 衣 (27-05a) *jīj* < *ʔəj

桓 (25-12f) *hwan* < *wʰan pronounced as 和 (19-07e) *hwa* < *wʰaj

癰 (23-21d) *sjeŋX* < *senʔ⁹ 'ringworm' pronounced as 徙 (07-28a) *sjeX* < *seʔ¹⁰ 'move (to)'

This evidence permits the reconstructions 殷 *jīn* < *ʔərᵃ, 桓 *hwan* < *wʰarᵃ, and 癰 *sjeŋX* < *serᵃʔ and all readings in the series 33-09 (殷), 25-12 (桓), and 23-21 (癰) can be reconstructed with *-rᵃ.

4.2 (b) Characters with both -n and -j readings in Middle Chinese

The following characters have both -n and -j (or ∞ < *-j) readings, which permits their reconstruction with final *-rᵇ and all readings of characters in their series with *-rᵇ.

19-02l 輓 *hwaeX, hwanX, hwojX*

24-17e 獻 *sa, xjonH*

24-21l 癰 *tanX, taH*

24-54b 番 *pa, phjon*

25-32a 卵 *lwaX, lwanX*

26-31g 洒 *sejX, senX*

26-38i 牝 *bjiX, bjīnX*

33-02l 圻 *ngjīn, gjij*

m 頤 *khonX, gjij*

33-25i 姪 *sejX, senX*

33-25j 洗 *sejX, senX*

33-29a 賁 *pwon, pjeH*

34-18g 鐔 *dwojH, dzywin*

h 鐔 *dwojH, dzywin*

p 敦 *twoj, twon*

r 燇 *thwoj, thwon*

34-23f 揆 *tswojH, tswonH*

Baxter & Sagart (2014a: 283) also argue for a final *-r in the word 短 (10-16a) *twanX*, 'short' because Pto-Mǐn *toi B 'short' (on the basis of forms such as Fúzhōu /tɔi 3/ and Amoy /te 3/) suggests final *-j. As in the case of rhyme contact between -n and -j one might see this Mǐn evidence as arguing that there *could* have been a reading 短 *twaX < *twajX in the *Qièyùn*, had fate not intervened. Outside of a systematic comparison of Middle Chinese with Proto-Mǐn this use of Mǐn data to argue for *-r remains merely suggestive and will not receive further consideration here.

4.3 (c) Rhyme contact among words with final -n and -j

Baxter & Sagart (2014a: 257, 262) mention a number of cases in which words that end with -n rhyme

9 Baxter & Sagart (2014b) reconstruct with the main vowel *-a-.

10 Baxter & Sagart (2014b) reconstruct with the rime *-aj.

directly with words that end with *-j*.¹¹

Ode 43.1:

泚 (07-25h) *ts^heʔ > *tshjeX*

瀾 (07-20o) *meʔ > *mjieX*

鮮 (23-21a) *sen > *sjen*

Ode 137.2:¹²

差 (18-13f) *ts^hraj > *tsrhea*

原 (25-20a) *ŋ^wan > *ngjwon*

麻 (18-18a) *m^raj > *mae*

娑 (18-15e) *s^raj > *sa*

Ode 215.3:

翰 (24-02f) *g^sans > *hanH*

憲 (24-18a) *ŋ^sans > *xjonH*

難 (24-35d) *n^ran > *nan*

那 (18-12a) *n^raj > *na*

Ode 222.2 (cf. 299.1):

芹 (33-02f) *gən > *gjin*

旂 (33-02p) *gəj > *gjij*

Ode 259.7:

番 (24-54b) *p^raj > *pa*

曄 (24-21m) *t^han > *than*

翰 (24-02f) *g^sans > *hanH*

憲 (24-18a) *ŋ^sans > *xjonH*

Ode 299.1 (cf. 222.2):

芹 (33-02f) *gən > *gjin*

旂 (33-02p) *gəj > *gjij*

Zhōuyì 周易 (Baxter & Sagart 2014a: 259-260)

幡 (24-54r) *b^raj > *ba*

翰 (24-02f) *g^sans > *hanH*

Zuǒzhuàn 左傳 (4th c. BCE), Duke 僖 Xī, year 5 (Baxter & Sagart 2014a: 255):¹³

辰 (33-13a) *dən > *dzyin*

振 (33-13p) *tən > *tsyin*

11 A search through other early rhyming texts would surely yield further examples; I am currently engaged in such a search and hope to report relevant findings on a later occasion.

12 Baxter & Sagart (2014a: 266) understand Ode 137 as evidence only that 原 *ngjwon* ended with *-r. They point out that this poem is from the 陳風 Chén fēng section of the *Shījīng*, traditionally held to contain poems hailing from 陳 Chén, a region they regard as within the area that underwent the *ar > *-aj isogloss (Baxter & Sagart 2014a: 266). To avoid prejudicing the investigation, I treat Ode 137 like all others.

13 I follow Baxter & Sagart's proposal that the text is "late enough that original *-ur has already diphthongized to *-wər" (2014a: 255), and simplify the presentation accordingly. The effected words are 賁 *p^rur > *p^rwər > *pwon*, 焯 *t^hur > *t^hwər > *thwon*, 軍 *k^wər > *kwər > *kjun*, and 奔 *p^rur > *p^rwər > *pwon*. Behr (2008: 492) also points to this passage and he adds 晨 at the beginning, i.e. he sees the rhyming pattern as extending somewhat longer than Baxter & Sagart do.

旂 (33-02p) *gəj > gĭj
 賁 (33-29a) *pʰwən > pwon
 焯 (34-18r) *tʰwən > thwon
 軍 (34-13a) *kwən > kjun
 奔 (33-28a) *pʰwən > pwon

This evidence permits the reconstruction of the characters 瀾 (07-20o) *mjieX*, 泚 (07-25h) *tshjeX*, 那 (18-12a) *na*, 娑 (18-15e) *sa*, 麻 (18-18a) *mae*, 差 (18-13f) *tsrhea*, 鮮 (23-21a) *sjen*, 翰 (24-02f) *hanH*, 憲 (24-18a) *xjonH*, 𠵽 (24-21m) *than*, 難 (24-35d) *nan*, 番 (24-54b) *pa*, 𩇛 (24-54r) *ba*, 原 (25-20a) *ngjwon*, 芹 (33-02f) *gĭn*, 旂 (33-02p) *gĭj*, 辰 (33-13a) *dzyin*, 振 (33-13p) *tsyin*, 奔 (33-28a) *pwon*, 賁 (33-29a) *pwon*, 軍 (34-13a) *kjun*, and 焯 (34-18r) *thwon* with final *-r^c and the reconstruction of the series 07-20 (爾), 07-25 (此), 18-12 (那), 18-15 (沙), 18-18 (麻), 18-13 (左), 23-21 (鮮), 24-02 (軌), 24-18 (憲), 24-21a (單), 24-35 (嘆), 24-54 (采), 25-20 (原), 33-02 (斤), 33-13 (辰), 33-28 (奔), 33-29 (賁), 34-13 (軍), and 34-18 (絜) with the final *-r^c.

5 Indirect evidence

5.1 Xiéshēng connections

The *xiéshēng* series 07-20 (爾), 24-35 (嘆), 25-16a (丸) *hwan* and 25-24a (耑) appear not to contain individual characters with both *-j* and *-n* readings, but instead contain both characters with *-n* readings and characters with *-j* (or $\infty < *-j$) readings. Readings of characters appearing in these series may be reconstructed with *-r^B.

07-20a 爾 *nyeX*
 07-20k 𠵽 *sjenX*

24-35g *nan*
 24-35k 𠵽 *na*

25-16a 丸 *hwan*
 25-16e 𩇛 *'jweX*

25-24a 耑 *twan*
 25-24p 瑞 *dzyweH*

5.2 Rhyme contacts

Baxter & Sagart (2014a: 258, 295) mention the following examples of a word written with a character that has a Middle Chinese readings in *-n* rhyming with another word (also written with a character that has a Middle Chinese reading in *-n*), in which the latter character has direct evidence of final *-r.

Ode 5.1:

詵 (33-25n) *srər^B > *srin*
 振 (33-13p) *tər^c > *tsyin*

Ode 49.2:

奔 (33-28a) *p^ɛər^c > *pwon*¹⁴

君 (34-12a) *k^wən > *kjun*

Ode 69.1:

乾 (24-02c) *k^ɛar^c > *kan*

歎 (24-35c) *ŋ^ɛar^B > *than*

難 (24-35d) *n^ɛar^c > *nan*

Ode 73.2:

亨 (34-18t) *t^hur^{CB} > *thwon*

璊 (24-57f) *m^ɛən > *mwon*

奔 (33-28a) *p^ɛər^c > *pwon*

Ode 197.8:

山 (24-45a) *sr^ɛan > *srean*

泉 (25-40a) *dzwan > *dzjwen*

垣 (25-12m) *war^A > *hjwon*

Ode 250.2:

原 (25-20a) *ŋ^war^c > *ngjwon*

繁 (24-52b) *ban > *bjon*

宣 (25-12t) *swar^A > *sjwen*

歎 (24-35c) *ŋ^ɛar^B > *than*

巘 (24-17h) *ŋar^B > *ngjenX*

原 (25-20a) *ŋ^war^c > *ngjwon*

Ode 254.7:

蕃 (24-54m) *par^{BC} > *pjon*

垣 (25-12m) *war^A > *hjwon*

翰 (24-02f) *g^ɛar^s > *hanH*

Ode 259.1:

翰 (24-02f) *g^ɛar^s > *hanH*

蕃 (24-54m) *par^{BC} > *pjon*

宣 (25-12t) *swar^A > *sjwen*

Ode 244.4:

垣 (25-12m) *war^A > *hjwon*

翰 (24-02f) *g^ɛar^s > *hanH*

Ode 254.7:

藩 (24-54s) *par^{BC} > *pjon*

垣 (25-12m) *war^A > *hjwon*

翰 (24-02f) *g^ɛar^s > *hanH*

Ode 259.1:

翰 (24-02f) *g^ɛar^s > *hanH*

蕃 (24-54m) *par^{BC} > *bjon*

宣 (25-12t) *swar^A > *sjwen*

Ode 262.4:

14 It is also possible to see 鶉之奔 *dur *tə *p^ɛur > *dzjwin tsi pwon* in 49.1 and 49.2 as intentional line internal rhyming, but this possibility is not further pursued here.

宣 (25-12t) *swar^A > *sjwen*

翰 (24-02f) *g^sar^s > *hanH*

Ode 263.5:

曄 (24-21m) *t^hsar^c > *than*

翰 (24-02f) *g^sar^s > *hanH*

漢 (24-10c) *ŋ^sans > *xanH*

Chūci 楚辭, Jiǔ biàn 九變 (3rd c. BCE) (Baxter & Sagart 2014a: 260):

乾 (24-02c) *k^sar^c > *kan*

歎 (24-35c) *ŋ^sar^B > *than*

Ode 254.1

癉 (24-21l) *t^sar^b? > *tanX*

板 (24-49j) *pr^san? > *paenX*

諫 (23-07b) *kr^sans > *kaenH*

亶 (24-23a) *t^san? > *tanX*

然 (24-36a) *nan > *nyen*

管 (25-01h) *k^wan? > *kwanX*

遠 (25-15f) *wan? > *hjwonX*

The *Jīngdiǎn shìwén* 經典釋文 and the received version of the *Lǐjì* 禮記 both offer 驪 (24-23-) in place of 癉 (24-21l) in citing Ode 254. A bamboo version of the *Lǐjì* excavated at Guōdiàn 郭店 writes this word with 担 (24-22-). The characters 驪 (24-23-) and 担 (24-22-) belong to the series built on 旦 (24-22/24-23),¹⁵ like 亶 *tanX* (24-23a), which is also a rhyme word in this poem (Baxter & Sagart 2014a: 259). I accept the explanation of 癉 (24-21l) as a textual corruption in this poem and do not take it as evidence of *-r in the words it rhymes with.

The calculation of the superscripts is unglamorous. Rhyme-derived superscript notation for those characters that have other evidence of final *-r previously discussed, is deferred to the conclusion. Those characters for which rhymes provides the first, indirect, evidence of final *-r are: 漢 *xanH* < *ŋ^sar^{2c}s (24-10c), 山 *srean* < *sr^sar^{A2} (24-45a), 繁 *bjon* < *bar^{2cA2B2} (24-52b), 璫 *mwon* < *m^sər^{c2B2} (24-57f), 泉 *dzjwen* < *dzwar^{A2} (25-40a), 君 *kjun* < *k^wər^c (34-12a).

6 Conclusions

Here follows a list of reconstructions of specific characters ordered according to strength of the evidence for *-r. The reconstructions of Baxter & Sagart (2014b) are provided in braces for reference. As explained above, despite their explanation to the contrary, the reconstruction of Baxter & Sagart distinguishes four levels of confidence in the reconstruction of *-r which they notate respectively *-r, *-[r], *-[n]/*-[j], and *-n/*-j. The confidence levels calculated here are not parallel with the confidence levels they arrive at. They reconstruct a confident *-r even for words such as 山 (24-45a) *srean* < *sr^sar^{A2} { *s-ŋrar } and 泉 (25-40a) *dzjwen* < *dzwar^{A2} { *s-N-gwar }, where the evidence for *-r is quite indirect. There are also cases where they are skeptical of a final -r, even though the confidence calculation made here is quite high, e.g. 泚 (07-25h) *tshjeX* < *ts^her^c? { *[ts^hje(j)]? } and 娑 (18-15e) *sa* < *s^sar^c { *[s^saj] }. However, such instances of disagreement with the confidences presented here underline the need for further careful scrutiny of the evidence base upon which *-r is proposed. Given the current state of knowledge, the direct use of Baxter & Sagart's reconstructions of *-r in comparative

¹⁵ Baxter & Sagart (2014a: 259) combine series 24-22 and 24-23.

studies (e.g. as in Hill 2014) is premature.

桓 (25-12f) *hwan* < *w^har^a {*[g]^war}

癩 (23-21d) *sjenX* < *ser^a? {*[s]ar?}

殷 (33-09a) *j'in* < *ʔar^a {*[ʔ]rə[r]}

番 (24-54b) *pa* < *p^har^{bc} {*p^har}, *phjon* < *p^har^b {*p^har}

賁 (33-29a) *pwon* < *p^har^{bc} {*p^hur}, *pjeH* < *par^bs {*por-s}

惇 (34-18r) *thwoj*, *thwon* < *t^hur^{bc} {*t^hur}

輅 (19-02l) *hwaeX* < *g^hor^b? {*[g]^h<r>or?}, *hwanX* < *gor^b? {*[g]^hor?}, *hwojX* < *g^hur^b? {*[g]^hur?}

獻 (24-17e) *sa* < *s^har^b {*s-^har}, ¹⁶ *xjonH* < *^har^{bs} {*^har-s}

卵 (25-32a) *lwaX*, *lwanX* < *r^hor^b? {*k.r^hor?}

洒 (26-31g) *sejX*, *senX* < *s^hir^b? {*[s]^hir?}

牝 (26-38i) *bjiX*, *bjinX* < *bir^b? {*[b]ir?}

圻 (33-02l) *ngjin* < *^har^b {*[^h]ar}, *gij* < *g^har^b

瘳 (24-21l) *tanX* < *t^har^b? {*t^han?}, *taH* < *t^har^{bs}

頤 (33-02m) *khonX* < *k^har^b?, *gij* < *g^har^b

姪 (33-25i) *sejX*, *senX* < *s^har^b? {*[s]^har?}

洗 (33-25j) *sejX*, *senX* < *s^har^b? {*[s]^har?}

鐔 (34-18g) *dwojH* < *d^hur^{bs}, *dzywin* < *dur^b

鐔 (34-18h) *dwojH* < *d^hur^{bs}, *dzywin* < *dur^b

敦 (34-18p) *twoj*, *twon* < *t^hur^b {*t^hur}

掇 (34-23f) *tswojH*, *tswonH* < *ts^hur^{bs}

翰 (24-02f) *hanH* < *g^har^{cc25A24B24C2}s {*[g]^har}

暉 (24-21m) *than* < *t^har^{cc2} {*t^har}

原 (25-20a) *ngjwon* < *^har^{ccA22B2} {*N-g^har}

難 (24-35d) *nan* < *n^har^{ccB2C2} {*n^har}

奔 (33-28a) *pwon* < *p^har^{ccB2C2} {*p^hur}

振 (33-13p) *tsyin* < *t^har^{ccB2} {*t^har}

瀾 (07-20o) *mjieX* < *mer^c? {*m.ner}

泚 (07-25h) *tshjeX* < *ts^her^c? {*[ts^h]e(j)?}

那 (18-12a) *na* < *n^har^c {*n^har}

娑 (18-15e) *sa* < *s^har^c {*[s]^ha[j]}

麻 (18-18a) *mae* < *m^har^c {*C.m^har}

差 (18-13f) *tsrhea* < *ts^har^c {*ts^har}

鮮 (23-21a) *sjen* < *ser^c {*[s][a]r}

16 Schuessler (2009) does not include the reading 獻 (24-17e) *sa*, but does reconstruct *s^h- in series with similar patterns (e.g. 21-11 on p. 232).

憲 (24-18a) *xjonH* < * η ar^cs { *q^har-s }
 幡 (24-54r) *ba* < *b^ʰar^c { *[b]^ʰar }
 芹 (33-02f) *gjin* < *gər^c { *C.[g]ər }
 旂 (33-02p) *gij* < *gər^c { *C.[g]ər }
 辰 (33-13a) *dzyin* < *dər^c { *[d]ər }
 軍 (34-13a) *kjun* < *k^wər^c { *[k]^wər }
 垣 (25-12m) *hjwon* < *war^{A3c2B22C2} { *[g]^war }
 宣 (25-12t) *sjwen* < *swar^{A4c2B22C2} { *s-q^war }
 巘 (24-17h) *ngjenX* < * η ar^{Bc2A2B2} { * η (r)ar }
 歎 (24-35c) *than* < * η ar^{B2c2A2B22C2} { * η ar }
 蕃 (24-54m) *bjon* < *par^{BC3c2A2} { *par }
 藩 (24-54s) *pjon* < *par^{BCc2A2} { *[b]ar }
 噶 (34-18t) *thwon* < *t^hur^{BCc2}
 誅 (33-25n) *srin* < *srər^{Bc2} { *srər }
 乾 (24-02c) *kan* < *k^ʰar^{Cc2B2} { *[k]^ʰar }
 繁 (24-52b) *bjon* < *bar^{2c2A22B2} { *[b]ar }
 璫 (24-57f) *mwon* < *m^ʰər^{c2B2} { *m^ʰur }
 漢 (24-10c) *xanH* < * η ar^{2c2s} { * η ar-s }
 君 (34-12a) *kjun* < *k^wər^{c2} { *C.qur }
 山 (24-45a) *srean* < *sr^ʰar^{A2} { *s- η rar }
 泉 (25-40a) *dzjwen* < *dzwar^{A2} { *s-N-g^war }

A list of the reconstructions of specific characters ordered according to the numbering of Schuessler (2009) is perhaps a convenience to the reader.

瀾 (07-20o) *mjieX* < *mer^{c?}
 泚 (07-25h) *tshjeX* < *ts^her^{c?}
 那 (18-12a) *na* < *n^ʰar^c
 娑 (18-15e) *sa* < *s^ʰar^c
 麻 (18-18a) *mae* < *m^ʰrar^c
 差 (18-13f) *tsrhea* < *ts^hrar^c
 輅 (19-02l) *hwaeX* < *g^ʰror^{b?}, *hwanX* < *gor^{b?}, *hwojX* < *g^ʰur^{b?}
 鮮 (23-21a) *sjen* < *ser^c
 癰 (23-21d) *sjenX* < *ser^{a?}
 乾 (24-02c) *kan* < *k^ʰar^{Cc2B2}
 翰 (24-02f) *hanH* < *g^ʰar^{cc25A24B24C2}s
 漢 (24-10c) *xanH* < * η ar^{2c2s}
 獻 (24-17e) *sa* < *s- η ar^b, *xjonH* < * η ar^bs
 巘 (24-17h) *ngjenX* < * η ar^{Bc2A2B2}
 憲 (24-18a) *xjonH* < * η ar^cs
 瘴 (24-21l) *tanX* < *t^ʰar^{b?}, *taH* < *t^ʰar^bs
 曄 (24-21m) *than* < *t^har^{cc2}

歎 (24-35c) *than* < *n̥^sar^{B2c²A²B²2C²}
 難 (24-35d) *nan* < *n̥^sar^{cB²C²}
 山 (24-45a) *srean* < *sr^sar^{A²}
 繁 (24-52b) *bjon* < *bar^{2c²A²2B²}
 番 (24-54b) *pa* < *p^sar^{bc}, *phjon* < *p^har^b
 蕃 (24-54m) *bjon* < *par^{BC3c²2A²}
 幡 (24-54r) *ba* < *b^sar^c
 藩 (24-54s) *pjon* < *par^{BCc²A²}
 璫 (24-57f) *mwon* < *m^sar^{c²B²C²}
 桓 (25-12f) *hwan* < *w^sar^a
 垣 (25-12m) *hwon* < *war^{A3c²2B²2C²}
 宣 (25-12t) *sjwen* < *swar^{A4c²4B²2C²}
 原 (25-20a) *ngjwon* < *ŋ^war^{cA²2B²}
 卵 (25-32a) *lwaX*, *lwanX* < *r^sor^{b?}
 泉 (25-40a) *dzjwen* < *dzwar^{A²}
 洒 (26-31g) *sejX*, *senX* < *s^sir^{b?}
 牝 (26-38i) *bjijX*, *bjinX* < *bir^{b?}
 圻 (33-02l) *ngjin* < *ŋar^b, *gjij* < *gar^b
 芹 (33-02f) *gj̃in* < *gar^c
 頤 (33-02m) *khonX* < *k^har^{b?}, *gjij* < *gar^b
 旂 (33-02p) *gj̃ij* < *gar^c
 殷 (33-09a) *j̃in* < *ʔar^a
 辰 (33-13a) *dzvin* < *dər^c
 振 (33-13p) *tsyin* < *tər^{cB²}
 姦 (33-25i) *sejX*, *senX* < *s^sər^{b?}
 洗 (33-25j) *sejX*, *senX* < *s^sər^{b?}
 詵 (33-25n) *srin* < *srər^{Bc²}
 奔 (33-28a) *pwon* < *p^sar^{cB²C²}
 賁 (33-29a) *pwon* < *p^sər^{bc}, *pjeH* < *par^bs
 君 (34-12a) *kjun* < *k^wər^{c²}
 軍 (34-13a) *kjun* < *k^wər^c
 鎔 (34-18g) *dwojH* < *d^sur^bs, *dzywin* < *dur^b
 鎡 (34-18h) *dwojH* < *d^sur^bs, *dzywin* < *dur^b
 敦 (34-18p) *twoj*, *twon* < *t^sur^b
 焞 (34-18r) *thwoj*, *thwon* < *t^hur^{bc}
 噲 (34-18t) *thwon* < *t^hur^{BCc²}
 掇 (34-23f) *tswojH*, *tswonH* < *ts^sur^bs

The proceeding lists do not include the many hundreds of characters for which *xiéshēng* contacts are

the only evidence of *-r. Instead, this information is more conveniently presented at the level of the whole *xiéshēng* series. To do this, the system of Hill (2015) is useful. As employed here, -NR means that -n readings predominate in the *xiéshēng* series and -IR means that -j readings predominate.

- 07-20 (爾) NEIR^{BC}
- 07-25 (此) TSEIR^C
- 18-12 (那) NAIR^C
- 18-13 (左) TSAIR^C
- 18-15 (沙) SAIR^C
- 18-18 (麻) MAIR^C
- 19-02 (果) KOIR^B
- 23-21 (鮮) SENR^{AC}
- 24-02 (軌) KANR^C
- 24-17 (虜) ÑANR^B
- 24-18 (憲) ÑANR^C
- 24-21 (單) TANR^{BC}
- 24-35 (嘆) NANR^{BC}
- 24-54 (采) PANR^{BC}
- 25-12 (亘) WANR^A (or QUANR^A according to Baxter & Sagart 2014b)
- 25-16 (丸) WANR^B (or QUANR^B according to Baxter & Sagart 2014b)
- 25-20 (原) KUANR^C
- 25-24 (崙) TONR^B
- 25-32 (卯) ovo (pronounced *r^sor^b?)
- 26-31 (西) SIR (or SYIR^B according to Baxter & Sagart 2014b)
- 26-38 (匕) PIR^B
- 33-02 (斤) KYNR^{BC} (or QYNR^{BC} according to Baxter & Sagart 2014b)
- 33-09 (殷) YNR^{A"}
- 33-13 (辰) TYNR^C
- 33-25 (先) SYNR^B
- 33-28 (奔) PYNR^C
- 33-29 (賁) PYNR^{BC}
- 34-13 (軍) KUYNR^C
- 34-18 (祭) TUNR^{BC}
- 34-23 (允) TSUNR^B

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