Reconstruction of Old Chinese Back Vowels[*]

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This paper proposes a revised system of Old Chinese back vowels: *$ɤ$ (之), *u (宵), *o (幽), *$ɔ$ (侯) and *a (魚), which is purely monophthongal and may account for more related phenomena. There are such kinds of mixed rhymes in the *Shijing*: 之 and 幽, 宵 and 幽, 幽 and 侯. It is due to the sound similarity between the rhyme groups of each pair. The back vowels of Old Chinese widely experienced a raising-diphthongizing process, and this evolution was delayed by a preceding *-*j*-. This revised system may explain this series of evolution more simply and effectively.

0. Introduction

Scholars have different views on the quantity and phonetic specification of Old Chinese vowels. In this paper only back vowels are focused on.

According to their codas, Wang (1978[1982]) divided traditional rhyme groups into three types, among which, type JIA 甲, ending with zero or velar codas, consists of the most rhyme groups. Every vowel maybe appears in the rhyme groups of type JIA 甲. Since the main vowels of ZHI 之, XIAO 宵, YOU 幽, HOU 侯 and YU 魚 (including the corresponding groups of *Yangsheng* 陽聲 and *Rusheng* 入聲) of type JIA 甲 are mainly back vowels, explanation of these five rhyme groups may account for all the back vowels. Several typical systems of Old Chinese back vowels are summarized in Table I.

Table I

	之	幽	宵	侯	魚
Wang 1957	ə	əu	au	o	ɑ
Li 1971	əg	əgw	agw	ug	ag
Wang 1978[1985]	ə	U	o	ɔ	a
Baxter 1992	ɨ(ə)	u, iw	ɑw, ew	o	ɑ
Zheng-Zhang 2003	ɯ	u, iw, ɯw	aw, ow, ew	o	a

It will be discussed in detail below that all previous systems have their limitations. This paper is intended to propose a revised back vowel system of Old Chinese[1], which may avoid limitations of previous systems and account for related phenomena of Old Chinese more effectively.

1. How to Evaluate an Old Chinese System?

Following Ockham's Razor, Baxter (1992: 22) proposed such an assumption:

Hypotheses which tie a number of phenomena together are to be preferred over hypotheses which account for only one phenomenon at a time.

The following items can be used as criteria to evaluate systems of Old Chinese.

1. Major evidence of Old Chinese, including rhymes of Pre-Qin verses, especially the *Shijing* 詩經, and *xiesheng* 諧聲.

2. The development from Old Chinese to Middle Chinese.

3. The internal features of Old Chinese.

4. The naturalness of the system and language universal.

2. Rhyming of the *Shijing*

Duan Yucai reordered the rhyme groups according to their rhyming condition instead of the order in traditional rhyme books, which was another significant contribution besides his division of rhyme groups. Jiang Yougao altered Duan Yucai's order of rhyme groups, and his order was widely accepted subsequently. The orders of ZHI 之, XIAO 宵, YOU 幽, HOU 侯 and YU 魚 of both Duan's and Jiang's are listed as the following:

Duan:　　　　之 ― 宵 ― 幽 ― 侯 ― 魚
Jiang:　　之 ― 幽 ― 宵 ― 侯 ― 魚

The difference between Duan and Jiang lies on the arrangement of XIAO 宵 and YOU 幽. Both of them used the rhyming material. Why did Duan and Jiang draw different conclusions? The rhyming condition of these five rhyme groups are summarized in Table II and III.[2]

In Table II, adjacent ZHI 之 and XIAO 宵 did not rhyme, while ZHI 之 and YOU 幽 separated by XIAO 宵 rhymed, which is abnormal. In Table III, Jiang's revision

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[1] This system is also proposed in Zhao (2003), but lacks detailed discussion.
[2] These two tables are based on Wang Li (1980). The digits are the times of rhyming between the two rhyme groups respectively. The parenthesized counts the corresponding *Yangsheng* or *Ru-sheng* rhyme groups.

indicated the relationship between ZHI 之 and YOU 幽, but brought about a new problem of YOU 幽, XIAO 宵 and HOU 侯. In addition, ZHI 之 and YU 魚 are located on the two terminals in both Table II and III, while they do rhyme.

Table II

	之	宵	幽	侯	魚
之			7(5)		5
宵			9		
幽	7(5)	9		3(2)	
侯			3(2)		(1)
魚	5			(1)	

Table III

	之	幽	宵	侯	魚
之		7(5)			5
幽	7(5)		9	3(2)	
宵		9			
侯		3(2)			(1)
魚	5			(1)	

In Table IV, all kinds of mixed rhymes of these five rhyme groups are listed with their reconstructed forms.

Table IV

	之幽	之魚	宵幽	幽侯	侯魚
Wang 1957	*ə ~ əu*	ə ~ ɑ	au ~ əu	*əu ~ o*	o ~ ɑ
Li 1971	əg ~ əgw	əg ~ ag	agw ~ əgw	əgw ~ ug	**ug ~ ag**
Wang 1978[1985]	**ə ~ u**	ə ~ a	o ~ u	**u ~ ɔ**	ɔ ~ a
Baxter 1992	ɨ(ə) ~ u	ɨ(ə) ~ ɑ	**ɑw ~ u**	u ~ o	o ~ ɑ
Zheng-Zhang 2003	ɯ ~ u	**ɯ ~ a**	**aw ~ u**	u ~ o	o ~ a

Since they are all back vowels, these vowels can be specified by three distinctive features, namely [± high], [± low] and [± round]. Hence, the vowels can be analyzed as below.[3]

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[3] Although there is the contrast between front *a* and back *a* in Wang (1957), it has not been accepted currently, therefore only one of them is remained in Table V. Although there would not be all these seven vowels in ONE system, it would not influence our analysis.

Table V

	ɨ	ə	ɯ	u	o	ɔ	a
[± high],	+	−	+	+	(+)	−	−
[± low]	−	−	−	−	−	(+)	+
[± round]	−	−	−	+	+	+	−

In Table IV, when there are more than two different features between the main vowels of the two rhyme groups, they are marked in bold indicating that they are not regular rhymes. The italics show the rhyming between monophthongs and diphthongs, which are also considered as unnatural rhymes, although they have same or similar main vowels. Additionally, in Li's system, it is abnormal that *əg and *əgw can rhyme, while the parallel *ag and *agw can not.

Baxter and Zheng-Zhang subdivided the traditional rhyme groups XIAO 宵 and YOU 幽; nevertheless, their reconstruction can not account for such rhyme sequences of the *Shijing*:

《王風·君子陽陽》二章	Baxter	Zheng-Zhang
君子陶**陶**(幽)	*lju	*luu
左執**翿**(幽)	*du	*duu
右招我由**敖**(宵)	*ngaw	*ngaaw
其樂只且		

Obviously, all the previous systems have limitations on accounting for the rhymes of the *Shijing*.

3. Revision of the Back Vowel System

Since all the previous reconstructed systems can not explain the main evidence of Old Chinese—that is, the rhymes of the *Shijing*, it is necessary to make some revision.

The naturalness of the system and language universal should be considered when reconstructing a proto-language. In Li's system, there are only closed syllables, which is extremely unnatural. His labial-velar codas *-kw, *-gw and *ngw are also rare. Between monophthong and diphthong, the former is preferred because it is more natural and more universal. Wang (1957) reconstructed two diphthongs *au and *əu for XIAO 宵 and YOU 幽 respectively, which is obviously influenced by their reflexes in Middle Chinese. Li's *-gw and Baxter and Zheng-Zhang's *-w are also labeled with Middle Chinese -u/-w. Among the five systems mentioned above, only Wang (1978) is purely monophthongal, which my revision will be based on.

First, we need to identify a basic point of Old Chinese back vowels on the vowel-triangle. It is recognized that the main vowel of the YU 魚 group is the lowest *a*.

Then according to the interrelationship of rhyming between XIAO 宵, YOU 幽, HOU 侯 and YU 魚, the vowel of each group can be specified as in the diagram below:

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                        u (宵)

                      o (幽)

                    ɔ (侯)

                  a (魚)
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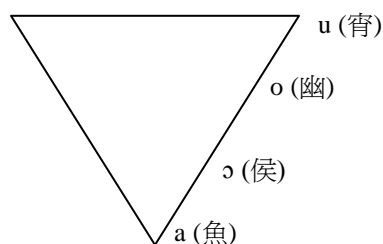
Every pair of adjacent groups rhymed together in the *Shijing* as shown in Table II and III. This reconstruction is from Wang (1978) with an interchange of XIAO 宵 and YOU 幽, and corresponds with Duan Yucai's order of rhyme groups.

As mentioned above, the rhyming condition of the ZHI 之 group is very special, which indicates that the relationship between ZHI 之 and the other four groups is not linear. It is reasonable that most scholars reconstructed schwa *ə for the ZHI 之 group; whereas, ə is not a good candidate as a member of a phonology, because it is a non-cardinal vowel. Considering the relationship between ZHI 之 and the other groups, I reconstruct its main vowel as *□, which is very similar to the main vowel *o of YOU 幽.

The revised back vowel system of Old Chinese can be summarized in Table VI:

Table VI

之	宵	幽	侯	魚
ɤ	u	o	ɔ	a

This system may account for all kinds of mixed rhymes of the five groups in the *Shijing* more effectively:

Table VII

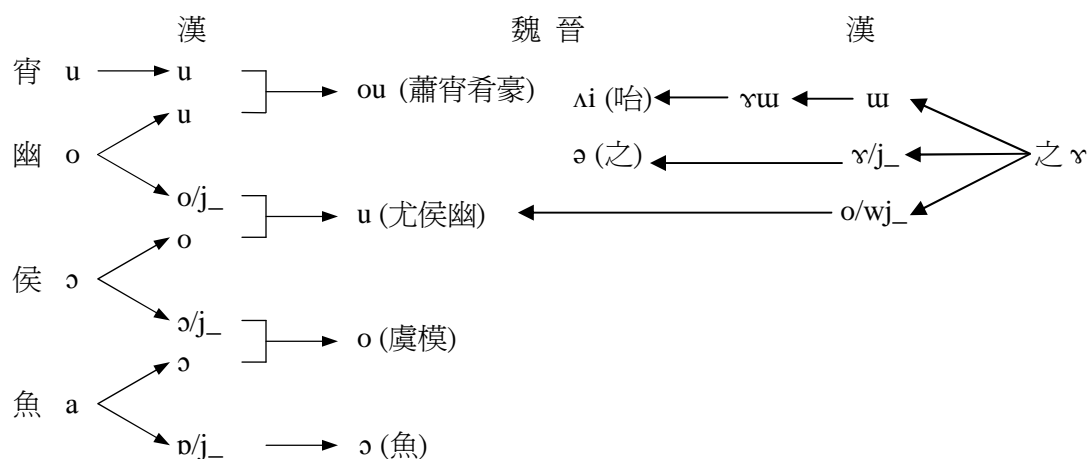| 之幽	之魚	宵幽	幽侯	侯魚
ɤ ~ o	ɤ ~ a	u ~ o	o ~ ɔ	ɔ ~ a

4. The Development from Old Chinese to Middle Chinese

As we all know, back vowels of Old Chinese widely experienced a raising-diphthongizing evolution. When we apply the revised reconstruction to observe this evolution, it becomes more systematical.

The development of back vowels from Old Chinese to Middle Chinese is summarized in the following diagram:[4]

漢　　　　　　　　魏 晉　　　　　　　漢

宵　u ——→ u
　　　　　　u　　　⎤
幽　o ——→ 　　　⎥——→ ou (蕭宵肴豪)　　ʌi (咍)←— ɤɯ ←— ɯ
　　　　　o/j_　　⎦
　　　　　o　　　　　　　　　　　　　　　ə (之) ←———— ɤ/j_ ←——— 之 ɤ
侯　ɔ ——→ 　　　⎤——→ u (尤侯幽) ←——————————— o/wj_
　　　　　ɔ/j_　　⎦
　　　　　ɔ　　　⎤——→ o (虞模)
魚　a ——→ 　　　⎦
　　　　　ɒ/j_ ——→ ɔ (魚)

From Old Chinese to Middle Chinese, back vowels raised and diphthongized systematically, but the evolution delayed when preceded by *-j- (Division III). The raising-diphthongizing process has two steps.

5. Conclusion

Mainly based on the reconstruction of Wang (1978[1985]), this paper proposes a revised back vowel system of Old Chinese, which may account for more phenomena simultaneously.

There is still a mysterious question on Old Chinese back vowels. In type JIA 甲 rhyme groups, only the XIAO 宵 group has no corresponding *yangsheng* 陽聲 group, which is quite abnormal. At the end of this paper, I try to make a tentative explanation. According to the proposal of this paper, the main vowel of the XIAO 宵 group is *u. When pronouncing *u*, soft palate and uvula are raised, so that the air can hardly go through the nasal cavity and produce a nasal.

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[4] The development of rhyme groups is mostly based on Wang (1985), while the reconstruction is revised somewhere, especially two different vowels of the YU 魚 group in the Han time, which still reflected in the Wei-Jin period.

REFERENCES

BAXTER, WILLIAM H. 1992. *A Handbooks of Old Chinese phonology*. Berlin: Mouton de Gruyter.

LI, FANG-KUEI 李方桂. 1971. Shanggu yin yanjiu 上古音研究. *Tsing Hua Journal of Chinese Studies* (new) 9(1 & 2). 1-16.

MADDIESON, IAN. 1984. *Patterns of Sounds*. London: Cambridge University Press.

WANG, LI 王力. 1957. *Hanyu shi gao* 漢語史稿, vol. 1. Beijing: Kexue Chubanshe.

WANG, LI 王力. 1978. Tongyuan zi lun 同源字論. *Zhongguo Yuwen* 中國語文 144(1). 28-33.

WANG, LI 王力. 1980. *Shijing yun du* 詩經韻讀. Shanghai: Shanghai Guji Chubanshe.

WANG, LI 王力. 1982. *Tongyuan zidian* 同源字典. Beijing: Shangwu Yinshuguan.

WANG, LI 王力. 1985. *Hanyu yuyin shi* 漢語語音史. Beijing: Zhongguo Shehui Kexue Chubanshe.

ZHAO, TONG 趙彤. 2003. *Zhan'guo Chu fangyan yinxi yanjiu* 戰國楚方言音系研究 [*A study of the Chu dialect phonology in the Warring States period*]. Beijing: Peking University dissertation.

ZHENG-ZHANG, SHANGFANG 鄭張尚芳. 2003. *Shanggu yinxi* 上古音系 [*Old Chinese phonology*]. Shanghai: Shanghai Jiaoyu Chubanshe.