

Reviewing the arrangement of Yan ㄚ̄ and Fan ㄝ rhyme groups through the perspective of Sino-Vietnamese

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Abstract: As the rhyme group Yan ㄚ̄ and Fan ㄝ are confusingly similar, simultaneously the separation of these two rhyme groups in "Guangyun" (广韵) still raises several questions; there are some scholars who think that the separation of these two rhyme groups in the "Qieyu" (切韵) is unreasonable. Even some scholars consider these two rhyme groups to be inherently the same. The book "Qieyu" divides this rhyme group into two is the case of separation later appeared. However, if we observe these two rhyme groups from a Sino-Vietnamese perspective, we can have a different view. Through a survey of the phonetic transcription, including the archaic and middle sounds of these two rhyme groups in Sino-Vietnamese, we discovered that the two Yan ㄚ̄ and Fan ㄝ are two separated rhyme groups from the corresponding archaic finals which are [uəm] and [uom]. Similar phonetic changing phenomena also occur in Shan ㄨ and Dang ㄨ̄ broad rhyme class. Therefore, through the phonetic changing survey of the two Yan ㄚ̄, Fan ㄝ rhyme groups and the two Shan ㄨ, Dang ㄨ̄ broad rhyme classes from ancient Sino-Vietnamese to Sino-Vietnamese, we can prove the two rhyme groups Yan ㄚ̄, Fan ㄝ are two separated rhyme groups, the Yan ㄚ̄ is the Division III with open mouth, the Fan ㄝ is the Division III with closed mouth, the separation of these two rhyme groups in the "Qieyu" is reasonable.

Keywords: *Sino-Vietnamese; Chinese phonology; rime dictionary; rhyme group; broad rhyme class; phonetic change*

PREAMBLE

From 112 BC to 968, direct contact between Chinese and Vietnamese occurred. Most scholars have identified that in the process of linguistic exposure, there were two periods when Chinese vocabulary transmitted to Vietnam and reached the climax, namely the Eastern Han Dynasty and the Tang Dynasty of China. At the end of the Eastern Han Dynasty, the Chinese language through oral transmission began to be sporadically introduced into Vietnamese with a relatively small number and not yet systematic. Chinese words introduced into Vietnamese during this period were called by the famous Chinese linguist Wang Li as "ancient Sino-Vietnamese", which means words borrowed from Chinese that Vietnamese imitated the Old Chinese pronunciation from the Qin Han Dynasties. For example, the word Fan 帆 with the ancient Sino-Vietnamese sound [bʊom²¹] retained the initial "b-" and the codas "-m" of the Old Chinese sound [biam]; the word "qi" 旗 with the ancient Sino-Vietnamese sound is [kʏ²¹] is pronounced similarly to the Old Chinese sound [giə]; the word "ya" 牙 has the ancient Sino-Vietnamese

sound [ŋa²¹] which is similar to the Old Chinese sound [ŋea] ...

By the Tang Dynasty, the area of Vietnam under Chinese colonial rule was changed to Annam under the protectorate (679). Since then, the spread of Chinese and Chinese characters in Vietnam has achieved a new development, Confucianism, imperial examination system, and religious activities have become popular and made a profound impact. The result of direct language exposure between Chinese and Vietnamese during this period was the birth of "Sino-Vietnamese". The term "Sino-Vietnamese" was re-translated from Wang Li's "Hanyue yu" (汉越语), which originated from Henri Maspero's "Sino-Annamite". According to Wang Li, Sino-Vietnamese which includes all three aspects namely vocabulary, phonetics, and grammar, is a special type of literary language of Vietnamese people. The phonetic system of Sino-Vietnamese was formed and fixed gradually during the Tang Dynasty of China. For example, "bai" 白 is read as [bǎc²²], "feng" 风 is read as [fɔŋ³³], "xue" 学 is read as [hǒk²²], "wu" 武 is read as [vu³⁵] ...

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Sino-Vietnamese which originates from the Chinese phonetic system of the Tang Dynasty is different from the ancient Sino-Vietnamese derived from the Chinese phonetic system of the Han dynasty. Sino-Vietnamese is a systematic way of reading aloud Chinese characters. In theory, we can use Sino-Vietnamese to read aloud almost all of the Chinese characters, the systematic way of reading is virtually equivalent to the phonetic system of the Chinese people. However, Sino-Vietnamese is an independent system with its characteristics, functions, and history. Although from China's Tang Dynasty to the present, there has been a wide range of phonetic changes in Sino-Vietnamese, basically these changes occur slowly and stably. Currently, the initial, the final, and the tone of Sino-Vietnamese still maintain close correspondence with the Chinese phonetic system of the Tang Song Dynasties (the "Guangyun" phonetic system). In "Guangyun", there are many characteristics of finals that are hard to find in Chinese dialects but can be easily seen in Sino-Vietnamese. Therefore, Sino-Vietnamese is extremely valuable in terms of research for both Vietnamese history and Chinese history.

REVIEWING THE SEPARATION AND COMBINATION OF THE TWO RHYME GROUPS YAN ㄩㄥ, FAN ㄨㄥ THROUGH THE PERSPECTIVE OF SINO-VIETNAMESE

Rime dictionaries such as "Qieyun" (切韵) and "Wangsan" (王三), "Tangyun" (唐韵), and "Guangyun" (广韵) are typical documents used to examine the Middle Chinese phonetic system. The two rhyme groups Yan ㄩㄥ and Fan ㄨㄥ are arranged in "Qieyun", "Guangyun" and most of the contemporary rime dictionaries as two separate ways to record their pronunciation. However, because many words of the two rhyme groups are confused, some scholars think that the separation of "Qieyun" is not reasonable, there are even scholars who think that these two rhyme groups are just a single one, the "Qieyun" separating these two rhyme groups is due to the later separation phenomenon.

Chinese linguist Li Rong once mentioned:

When it comes to independent rhyme groups, Yan ㄩㄥ and Fan ㄨㄥ can be said to have a complementary relationship, but the rising tone and entering tone of initial Xi ㄒ are opposite with each other... So far, these two rhyme groups have been identified as having an opposite relationship. However, several issues make us doubt the reliability of

this hypothesis. Please see the Chinese characters pronunciation table on page 71 which records the words of the two rhyme groups Yan ㄩㄥ and Fan ㄨㄥ when they combine with the initial, ... the two opposing groups of Yan ㄩㄥ, Fan ㄨㄥ all have a problem. We temporarily reserve the old hypothesis.

Li Rong points out that in "Qieyun", there are still a variety of doubts in the characters of the two rhyme groups Yan ㄩㄥ and Fan ㄨㄥ, still, he maintains the traditional theory of separation these two rhyme groups to re-describe the sound. Basing on Li Rong's research, Chinese linguist Shao Rongfen revised and supplemented it, and made a new hypothesis that merging the two rhyme groups Yan ㄩㄥ and Fan ㄨㄥ. Li Rong and Shao Rongfen's comments can be said to be a new hypothesis of rhyme group separation and combination. This is also a new perspective that plays a crucial role in the research of the "Qieyun" system, exerting enormous influence on Chinese phonology.

However, whether the fact that the two Yan ㄩㄥ and Fan ㄨㄥ should be merged or not is still observed and discussed further. Sino-Vietnamese is a relatively comprehensive system of Middle Chinese preserved sound; surveying Sino-Vietnamese can give us a relatively accurate view of the separation and combination of the two rhyme groups above.

We rely on the words listed in "Character Table of Dialect Investigation" to compare the pronunciation of broad rhyme class Xian 咸 in Sino-Vietnamese:

- The non-entering tone of Division I and Division II with open mouth in broad rhyme class Xian 咸 has a total of 77 words, of which 74 words are pronounced [-am], accounting for 96% of all; the entering tone of Division I and Division II with open mouth has a total of 40 words, of which 32 words are pronounced [-ap], accounting for 80% of all.
- The non-entering tone of Division III and Division IV with open mouth in broad rhyme class Xian 咸 has a total of 65 words, all are pronounced [-iem]; the entering tone of the Division III and Division IV with open mouth has a total of 30 words, of which 26 are pronounced as [-iep], accounting for 86.7% of all.
- The non-entering tone of Division III with closed mouth in broad rhyme class Xian 咸 has a total of 6 words, of which 5 words are pronounced [-am], 1 word is pronounced [-iem]; the entering tone has a total of 2 words that are pronounced as [-ap].

Table 1: The pronunciation of broad rhyme class Xian 咸 in Sino-Vietnamese

	Division I and Division II		Division III and Division IV	
Open mouth	[am] [ap]	南[nam ³³] 藍[lam ³³] 咸[ham ²¹] 監[zam ³³] 納[nap ²²] 盒[hap ²²] 甲[zap ⁴⁵]	[iem] [iep]	尖[tiem ³³] 斂[liem ³⁵] 𪛗[ɲiem ³³] 甜[diem ²¹] 接[tiɛp ⁴⁵] 业[ɲiep ²²] 叠[diɛp ²²]
Closed mouth			[am] [ap]	凡[fam ²¹] 帆[fam ²¹] 范[fam ³³ '] 榜[fam ³³ '] 样[fam ³³ '] 法[fap ⁴⁵] 乏[fap ²²]

In Sino-Vietnamese pronunciation, the two rhyme groups Tan 覃 and Tan 谈 that belong to the Division I with open mouth of the broad rhyme class Xian 咸 in the Middle Chinese have been merged. Before the Eastern Han Dynasty of China, the two rhyme groups Tan 覃 and Tan 谈 in Chinese both had their final (-əm). Until the Northern and Southern Dynasties, these two rhyme groups split, and from Sui - Tang Dynasties onwards, these two rhyme groups had similar pronunciation, but it was not until the Song-Yuan Dynasties period that these two rhyme groups turned to [-am]. Therefore, the pronunciation of the two rhyme groups Tan 覃 and Tan 谈 has been transmitted to Vietnam since the Song-Yuan period. The two rhyme groups Xian 咸, Xian 銜 belonging to the Division II with open mouth in the broad rhyme class Xian 咸 have pronunciations which were also incorporated in Sino-Vietnamese, after which the four rhyme groups Tan 覃, Tan 谈, Xian 咸, Xian 銜 pronunciation all turned into [-am] [-ap].

In Chinese, the two rhyme groups Yan 盐 and Yan 𪛗 belonging to the Division III with open mouth of broad rhyme class Xian 咸 are pronounced as [-iam] from the Han Dynasty. In the middle ages, the characters of Yan 盐 rhyme group are pronounced as [-iɛm], and the characters of Yan 𪛗 rhyme group are pronounced as [-iɛm]. From Ming-Qing Dynasties onwards, the codas [-m] of these two rhyme groups turned into [-n]. In Sino-Vietnamese, the pronunciation of these two rhyme groups is merged into [-iem] [-iep]. The rhyme group Tian 添 which belongs to the Division IV with open mouth of broad rhyme class Xian 咸 in Middle Chinese has the pronunciation [-iem], and after it was transmitted to Vietnam, the phonetics remain.

However, the rhyme group Fan 凡, which belongs to Division III with closed mouth of Xian 咸 broad rhyme class, has a pattern of [-am][- ap], similar to the pronunciation of Division I and Division II with open mouth in broad rhyme class Xian 咸.

Regarding the separation and combination of the two rhyme groups Yan 𪛗 and Fan 凡 in Middle Chinese, there are still some controversies among Chinese phonology.

Table 2: The pronunciation of Guangyun's rhyme groups Yan 𪛗 and Fan 凡 in Sino-Vietnamese

	Level tone	Rising tone	Falling tone	Entering tone
Yan (𪛗)	𪛗 [ɲiem ³³]	𪛗 [ɲiem ³⁵]	𪛗 [ɲiem ³³ ']	业 [ɲiep ²²] 𪛗 [hiep ⁴⁵] 𪛗 [ɲiep ⁴⁵] 劫 [kiep ⁴⁵] 𪛗 [ɲiem ³³] 𪛗 [tiɛp ²²] 𪛗 [kɔp ⁴⁵]
Fan (凡)	凡 [fam ²¹] 帆 [fam ²¹] 汎 [fiem ²⁵]	范 [fam ³³] 𪛗 [ɲam ³¹³] 𪛗 [fam ²¹]	梵 [fam ³³] [fan ³³ '] 汎泛 [fiem ²⁵] 𪛗 [kiem ²⁵] 欠 [ɲiem ²⁵] 俺 [ɲiem ³³]	乏 [fap ²²] 法[fap ⁴⁵] 𪛗 [fɛp ⁴⁵] 𪛗 [ɲiet ⁴⁵]

Looking at table 2, we can see that the main vowel of the rhyme group Fan 凡 is [a], the main vowel of rhyme group Yan 𪛗 is [ɛ]. This seems to prove these two rhyme groups in "Qieyun" are two different rhyme groups. However, this might be not true in reality. "Guangyun" put the words "jian" 𪛗 and "qian" 欠 into the Fan 凡 rhyme group, but the words "yan" 𪛗 and "xie" 𪛗 of Yan 𪛗 rhyme group used the word "qian" 欠 as the second character indicating the final of fanqie formula, which is a questionable point of "Guangyun".

Except for "jian" 剑, "qian" 欠, "yan" 俺, "xie" 猗, the rest of the rhyme group Fan 凡 all have initial of light lip sounds. The typical initial system of Chinese in the Song Dynasty is "thirty-six initials", compared with "thirty initials" of the Tang Dynasty, the coronal consonants of "thirty-six initials" has more than one sound Niang 娘, dental consonants have one more Chuang 床, labial consonants add four of light lip sounds Fei 非, Fu 敷, Feng 奉, Wei 微. After emerging, the light lip sounds were combined only with the Division III, making the medial inside the final vanished, and the main vowel also changed. These sound changes were almost complete when being transferred to Vietnamese, so the light lip sounds of rhyme group Fan 凡 have the main vowel [a], similar to the main vowel of rhyme groups in Division I and Division II. Some [fiem²⁵] characters being pronounced as "fan" 汎, "fan" 汎, "fan" 泛 are due to the incomplete sound changing process, so they retain the medial [-i-] and the codas [-m] of Division III and Division IV of broad rhyme class Xian 咸 in Middle Chinese.

The pronunciation of the light lip sound of Division III and Division IV with closed mouth in broad rhyme class Xian 咸 is similar to that of Division I and Division II with open mouth. This phenomenon also appeared in the Shan 山 broad rhyme class. Table 3 and Table 4 are the corresponding pronunciation table of the Shan 山 broad rhyme class and Yuan 元 rhyme group belonging to the Shan 山 broad rhyme class in Sino-Vietnamese sound.

Table 3 : The pronunciation of Shan 山 broad rhyme class in Sino-Vietnamese

	Division I and Division II	Division III and Division IV
Open mouth	[an] [at]	[ien] [iet]
	难[nan ³³] 寒[han ²¹] 旱[han ³³] 班[ban ³³] 产[ʃan ³¹³] 达[dat ²²] 擦[sat ⁴⁵] 八[bat ⁴⁵] 察[ʃat ⁴⁵]	面[zien ³³] 仙[tien ³³] 展[tien ³¹³] 先[tien ³³] 研[ɲien ³³] 别[biet ²²] 列[liet ²²] 铁[t ^h iet ⁴⁵] 节[tiet ⁴⁵]
Closed mouth	[ʊan] [ʊat]	[ʊien] [ʊiet]
	端[dʊan ³³] 团[dʊan ²¹] 算[tʊan ²⁵] 撰[sʊan ³³] 关[kʊan ³³] 夺[dʊat ²²] 活[hʊat ²²] 刮[kʊat ⁴⁵]	选[tʊien ³¹³] 船[t ^h ʊien ²¹] 元[ɲʊien ³³] 犬[χʊien ³¹³] 玄[hʊien ²¹] 绝[tʊiet ²²] 说[t ^h ʊiet ⁴⁵] 血[hʊiet ⁴⁵]

Table 4: The pronunciation of Yuan 元 rhyme group in Sino-Vietnamese

Open mouth	建[kien ²⁵] 键[kien ³³] 究[hien ²⁵] 献[hien ²⁵] 蝎[hiet ⁴⁵] 歇[hiet ⁴⁵] 蒿[ʔien ³³] 堰[ʔien ²⁵]
Closed mouth	Light lip sound 藩[fiem ³³] 反[fan ³³] 反[fan ³¹³] 贩[fiem ²⁵] 发[fat ⁴⁵] 烦[fiem ²¹] 藩[fiem ³³] 矾[fan ²¹] 饭[fan ³³] 伐[fat ²²] 晚[van ³⁵] 挽[van ³⁵] 万[van ³³] 袜[miet ²²] [vat ²²]
Others	劝[χʊien ²⁵] 元[ɲʊien ³³] 阮[ɲʊien ³⁵] 月[ɲʊiet ²²] 冤[ʔʊan ³³] 宛[ʔʊien ³¹³] 园[vien ³³] 远[vien ³⁵] 越[viet ²²]

"Character Table of Dialect Investigation" collected 20 words with the light lip sound of rhyme group Yuan 元, of which 11 had the pattern of [an][at] finals in Sino-Vietnamese sound, similar to words from the Division I and Division II with open mouth of broad rhyme class Shan 山; four words with two sounds co-exist [ien][iet] and [an][at], in which the first way of pronunciation retains the archaic tone, the second way of pronunciation is the sound after the changing; there are 4 words with only one way of reading aloud: [ien][iet]; the other only exception being pronounced as [-on].

In addition to the words of light lip sounds, the rest of the words in rhyme group Yuan 元 all have the main vowel sound [-ie-], and the open mouth and closed mouth words are distinguished by the presence of the medial [ʊ-], the center of the final does not change. This circumstance of rhyme group Yuan 元 is completely similar to the rhyme group Fan 凡. This also contributes to proving that the phenomenon of turning from Division III final to Division IV final is due to the influence of the light lip sound. As a result, not just because the two rhyme groups Yan 严 and Fan 凡 now have different ways of pronunciation, we can hastily conclude that the two are two separate things like the separation of "Qieyun". In the Han Dynasty, the two Yan 严 and Fan 凡 in Sino-Vietnamese began to mix, so we need to go back to learn more ancient ways of the pronunciation of these two rhyme groups to clarify their original appearance.

"Guangyun" classified "jian" 剑, "qian" 欠 into Fan 凡 rhyme group, but "jian, ju qian qie" (剑, 居欠切) took "qian" 欠 as the second character indicating the final of fanqie formula, similar to the words "yan" 严 and "xie" 胁 of the rhyme group Yan 严. Later, the "Character Table of Dialect Investigation" put "jian" 剑

, "qian" 欠 into the Yan ㄣ ryme group. In Sino-Vietnamese pronunciation, "jian" 剑, "jie" 劫, "yan" 腌 have the pronunciation as [kiem^{2 5}], [kiep⁴⁵], [ʔiem^{3 3}] respectively, with the main vowel as [ie]. At the same time, these three words all have a different older pronunciation as [ɣwɪm^{3 3}], [kwɪp⁴⁵], and [ʔwɪp⁴⁵] respectively. This initially proves that these three words have the same origin, "Qieyun" placing "jian" 剑, "qian" 欠 into rhyme group Yan ㄣ is appropriate, while "Guangyun" begins to confuse some words of the rhyme groups Yan ㄣ and Fan 凡. If [wɪ] is the archaic sound of the rhyme group Yan ㄣ, then it reflects the sound of the earlier period than "Qieyun". The main vowel sound of Yan ㄣ in "Qieyun" is described as [ie], but the [wɪ] sound must first turn into [ie] before it can be turned into [ie].

In the Fan 凡 rhyme group, there are also two words with two Sino-Vietnamese pronunciation that coexist, "fa" 法 [fap⁴⁵][fɛp⁴⁵] and "fan" 帆 [fam²¹][bɔm²¹]. These are words with the same Division in the same rhyme group, but the second way of pronunciation is not similar. Two possibilities lead to this phenomenon. The first possibility is that the Sino-Vietnamese sound is "Vietnamesized", which is because the time of existence in Vietnamese is too long, and under the influence of the law of transformation in the Vietnamese phonetic system, so the pronunciation is changed. The second possibility is that because the archaic Sino-Vietnamese pronunciation has been firmly established for a long time, it is not influenced by the later rules of the Vietnamese phonetics, so the archaic Sino-Vietnamese pronunciation is still kept until now.

The two Sino-Vietnamese pronunciation of the word "fa" 法 all have the initial of light lip sound, which proves that after the light lips sound appeared in Chinese, these two sounds were born. The word "fa" 法, after being transmitted to Vietnam, has become a new word, often appearing in the daily life of people, so it is easily influenced by the internal Vietnamese phonetics, the main vowel easily turns into the vowel [ɛ] which is more familiar to Vietnamese people. Meanwhile, the word "fan" 帆 which means "sail" is an object familiar with people since ancient times, its pronunciation has been firmly established for a long time and not easily influenced by the later rules of the Vietnamese phonetics. The second sound of "fan" 帆 is [bɔm²¹], most likely the archaic sound, retaining the closed mouth sound of the medial [ɸ-]. This proves that the Fan 凡 rhyme group in the Old Chinese used to contain the medial [ɸ-].

Thus, the two rhyme groups Yan ㄣ, Fan 凡 in archaic Sino-Vietnamese are the opposite, their finals are [wɪm] and [uom] respectively. This contrast also appears in the two broad rhyme classes Shan 山 and

Dang 宕. The Yuan 元 rhyme group belongs to the Division III with closed mouth of the broad rhyme class Shan 山 have the words "fan" 烦 and "wan" 万 which have the sound pronounced [fien²¹] [buon²¹] and [van³³] [muon³³], in which the pattern of archaic pronunciation is [uon]. The Yang 阳 rhyme group belonging to Division III with closed mouth of the broad rhyme class Dang 宕 have the word "fang" (房) that also has two phonetics simultaneously [fɔŋ²¹] [buoŋ²¹], in which the pattern of the archaic sound is [uoŋ].

Table 5 is a phonetic comparison of broad rhyme class Dang 宕 in Sino-Vietnamese sound:

Table 5 : The pronunciation of broad rhyme class Dang 宕 in Sino-Vietnamese

	Division I	Division III
Open mouth	[aŋ] [ak]	[wɪŋ] [wɪk]
	[wɪŋ] (with initial groups "duan"端, "jian"见; level tone)	[aŋ] (with initial group Zhuang 庄)
Closed mouth	[ɸaŋ] [ɸāk]	[uoŋ]
		[wɪŋ][wɪk][ɔŋ] (with labial initials)

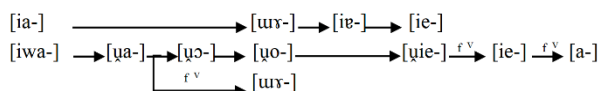
The open mouth sound and closed mouth sound belong to the Division I of the broad rhyme class Dang 宕 are distinguished, the phonetics also retain the same as the Middle Chinese phonetics, the open mouth sound [aŋ], the closed mouth sound [ɸaŋ]. The Yang 阳 rhyme group belongs to the Division III with open mouth of the Dang 宕 broad rhyme class has words with the initials as the Zhuang 庄 pattern, the final of them are pronounced as [aŋ], a trace of the ancient sound. The other words in Division III of the Dang 宕 broad rhyme class are all different from the Middle Chinese.

The medial [i-] of Division III in Chinese is incompatible with the Vietnamese phonetic system, so after transmitting to Vietnam, the medial [i-] disappears, or affect the main vowel, causing the main vowel to turn into another vowel, being distinguished from those of Division I and Division II. The broad rhyme class Dang 宕 after being transmitted to Vietnam, words of Division I with open mouth still maintain the reading [aŋ], words of Division III with open mouth that were originally read as [iaŋ] in Chinese but were influenced by the impact of the medial [i-] so [iaŋ] have turned into [wɪŋ], but when the words of Division III with open mouth combine with the initial as the Zhuang (庄) sound, their finals are influenced by this initial, so the medial [i-] disappears and the main vowel is retained. The words of Division I with closed mouth are still

pronounced as [ɣaŋ]. The words of Division III with closed mouth pronounced as [iwaŋ] in Middle Chinese had lost the sound of medial [i-] and changed to [ɣaŋ], [ɣa-] continued to become [ɣo-], then under the strong impact of [ɣ-], [ɣo-] turns into [ɣo-] when they came to Vietnam. Therefore, the Division III with closed mouth of Dang 宕 broad rhyme class are often read as [ɣoŋ] in Sino-Vietnamese sound. The words that have the initials are labials as Fei 非, Yun 云, in which some words read [wɣŋ] due to the influence of the initial, some words are pronounced as [ʃŋ] because the phonetic sound was "Vietnamesized" and continued to change further. The properties of these sound changes are quite similar to the sound changes of broad rhyme class Xian 咸 and broad rhyme class Shan 山, only the sound change of broad rhyme class Dang 宕 takes place later than the Xian 咸 and Shan 山. In other words, Dang 宕 broad rhyme class is on the path that Xian 咸 and Shan 山 broad rhyme class have taken.

CONCLUSIONS

These broad rhyme classes (Dang 宕, Shan 山, Xian 咸), when transmitting to Vietnam, generate systematic changes with similar properties. Therefore, we can draw the conclusion that the [wɣ-] sound in archaic Sino-Vietnamese originated from the [ia] sound of Old Chinese, and the [ɣo] sound originated from [iwa]. The diagram below shows how the rhyme groups Yan 严, Fan 凡, Yuan 元, Yang 阳 evolve from Old Chinese to Sino-Vietnamese; however, it should be noted that the pace of sound changes in these rhyme groups is different.



In the Han Dynasty, when the Chinese transmitted to Vietnam, the final [ia-] of the open mouth words turned into [wɣ-], the final [iwa-] of the closed mouth words turned into [ɣo-]. Therefore, in the archaic Sino-Vietnamese pronunciation, the Division III of the broad rhyme classes Xian 咸, Shan 山, Dang 宕 still maintain the opposition between the open mouth and the closed mouth.

The Dang 宕 broad rhyme class is influenced by the codas [-ŋ], [-k] so the sound changes of final are relatively gradual. The closed mouth words in this broad rhyme class are influenced by the medial [i-], so the [ia-] transforms into [wɣ-], and because of the restrictions from the codas [-ŋ] and [-k], the [wɣ-] does not easily turn into [ie-] and still keeps the [wɣ-] pronunciation from the middle ages to the present. The closed mouth

words which were [iwa-] in Chinese but after the disappearance of the medial [i-], it turned into [ɣa-] in Sino-Vietnamese, then the impact of [ɣ-] increased, causing the final turned into [ɣo-]. Parallel to that, the closed mouth words with the initial are light lip sounds like Fei 非, Yun 云 due to the influence of the initial, the final turns into [wɣ-], later there are some words that are "Vietnamesized" again and made into [ʃ-].

The broad rhyme class Shan 山 was transmitted to Vietnam in the Middle Ages, and the corresponding phonetic sounds have a very complete and strict rule. The Division I and Division II with open mouth words are pronounced [an][at], the closed mouth words are pronounced [ɣan][ɣat]; the Division III and Division IV with open mouth are pronounced [ien][iet], and the closed mouth words are pronounced [ɣien][ɣiet]. Open mouth words of Yuan 元 rhyme group pronounced [ien][iet] is due to the archaic sound [wɣ-] influenced by the codas [-n], [-t] and easily transformed into [ie-]. That all the closed mouth words are pronounced [ɣien][ɣiet] is due to adding the medial [u-] to distinguish it from the open mouth words. However, the closed mouth words with initials are the Fei 非, Yun 云 sound groups, due to the influence of the initials, so the final becomes [ie-], then it becomes [a-]. However, this process has not been completed yet, so there is still the word reading [ie-], and the word reading [a-].

The two rhyme groups Yan 严, Fan 凡 of Xian 咸 broad rhyme class are also influenced by the initial, causing the final's main vowel to change rapidly, and the number of words in these two rhyme groups are few, so confusion between words of these two rhyme groups appears. However, in the Sino-Vietnamese sound of the rhyme group Fan 凡, the process of light lip sounds influencing on the final is relatively complete, so basically, the Fan 凡 rhyme group is pronounced [am][ap], once again making a clear distinction between it and the Yan 严 rhyme group.

In the end, the Yan 严, Fan 凡, Yuan 元, Yang 阳 rhyme groups all have the same sound changes, the two Yan 严, Fan 凡 in archaic Sino-Vietnamese pronunciation has an opposing position, proving that these two are inherently separate in Chinese, the rhyme group Yan 严 belongs to Division III with open mouth, the rhyme group Fan 凡 belongs to Division III with closed mouth. The assumption of merging these two rhyme groups of the Chinese linguist Shao Rongfen is difficult to establish, and the way to separate these two parts of "Qieyun" is perfectly reasonable.

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