The Finals System of the Tang Dynasty in Northern China in
Mahā-mayūrīvidyārājan
（佛说大孔雀明王经）Translated By Yijng （义净）

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Abstract: This paper mainly addresses the finals system reflected in the Sanskrit transcription of *Mahā-mayūrīvidyārājan* (佛说大孔雀明王经), translated by Yijing (义净). Compared with *Qieyun* (切韵)system, the material reveals some phonetic changes in northern Eastern dialects in the mid-Tang dynasty. *Zhizhizhi* (支脂之) became the same, and glottal stops served as codas. *Sandeng* (三等) and *sideng* (四等) merged into one. Only a few *chongniu* (重纽) remained, and the phenomena of *tantan* (覃谈) and *chongyun* (重韵) appeared. Some differences emerged between northeastern, northwestern, and Central Plain dialects in the *yangsheng* (阳声) rhyme final and *sideng* (四等) medials.

Keywords: Yijing （义净）; *Mahā-mayūrīvidyārājan* （佛说大孔雀明王经）; Sanskrit–Chinese transcription; finals; ancient Chinese sound

1. Introduction

Historical documents have served as the main material in studies of Chinese history. In addition to rhythmic dictionaries, rhyme tables, verses, and homophones, Sino-Sanskrit phonetic contrast and transliteration represent important materials for research on Chinese ancient sounds. Thanks in large part to Sino-Sanskrit phonetic contrast and transliteration, the achievements of Chinese pronunciation in the Tang Dynasty were notably rich. Many researchers have investigated this linguistic period, including Maspero (1920),Liu Guanghe (1982/2002),Shi Xiangdong (1983),Yuchi Zhiping (1985), Coblin (1991), and Nie Hongyin (2005).

As an object of study, the transliterations of Yijing (义净) have been thoroughly investigated by two scholars, namely Coblin and Liu Guanghe. Coblin (1991) discussed the phonetic features of Yi Jing's transliteration based on various materials such as *Jinguangming Jing* (金光明经) and *Mahā-mayūrīvidyārājan* (佛说大孔雀明王经). He referred specifically to Bernhard Karlgren, supplemented by Li Fanggui's research regarding *chongniu* (重纽). Coblin (1991) focused on middle Chinese and corresponding Sanskrit but did not discuss relevant phonetic characteristics in detail. Liu Guanghe (1994) compared the differences in *Mahā-mayūrīvidyārājan* (佛说大孔雀明王经)translated by Bukong (不空) and Yijing (义净), pointed out characteristics of the consonants in the Luoyang (洛阳) and Chang'an (长安) dialects, and constructed a consonant table. He also identified fundamental

characteristics and differences between Bukong (不空) and Yijing (义净) in tail consonants, medials, and *yierdengyun* (一二等韵).

Although Yijing (义净)'s translation has received extensive attention in academic circles, it is not entirely systematic; the Yijing (义净) dialect, Bukong (不空) dialect, and Xuanzang (玄奘) dialect all belong to northern dialects of the mid-Tang dynasty. The commonalities and differences among northern dialects warrant further discussion. Drawing from previous work, we study Yijing (义净)'s translation of the Sanskrit material *Mahā-mayūrīvidyārājan* (佛说大孔雀明王经)to identify phonetic characters, relevant Chinese characters, the pronunciation of middle ancient Chinese, and a finals system of northern dialects of the Tang dynasty. On this basis, we identify disparities between Bukong (不空),Yijing (义净) and Xuanzang (玄奘) and present characteristics and differences of the finals system between the *Chang'an*, *Luoyang*, and *Fanyang (Qizhou)* dialects 范阳（齐州）.

Yijing (635–713), born in either Fan Yang or Qi Zhou, was a famous Buddhist in the Tang dynasty. He is as well-known as Xuanzang and translated many Buddhist scriptures. He became a monk in his childhood and later moved west to India to seek the Buddhist scripture, returning to China in 659 AD. He translated the Buddhist scriptures in Chang'an and then in Luoyang. He also translated *Mahā-mayūrīvidyārājan* in Luoyang. Whether written in Fanyang or Qizhou, the phonetic basis of the translation is generally considered representative of the dialect in eastern North China.

2. Finals system of northern dialects in the Tang dynasty

In this paper, the main object of study consists of Chinese mantras in the Buddhist scripture of *Mahā-mayūrīvidyārājan* (*Tibetan Tripitaka* 大正藏 985), translated by Yijing, and Sanskrit mantras in *Mahā-mayūrīvidyārājan* (*Tibetan Tripitaka* 982). We reveal Yijing's translation process and the characteristics of finals. Several exceptions were identified due to publication mistakes and spelling errors, which were omitted in accordance with phonetic laws.

2.1 Description of Sanskrit–Chinese translation in each *yunshe* (韵摄)

2.1.1 果摄 a ā

The characters of *geyun* (歌韵) (e.g., "攞可娜瑳) are generally translated as a; those of "歌珂拕驮呵柁" are generally translated as ā; and those of "哥痾娑陀诃罗阿多那頞他" are generally translated as either a or ā. Characters in *geyun* (戈韵) (e.g., "佉跛堕锁") are often translated as a; "磨埵" are generally translated as ā; and "摩婆波伽莎么" are frequently translated as either a or ā.

2.1.2 假摄 a ā

The characters of *mayun* (麻韵) (e.g., "茶差舍") are generally translated as a; "洒" are generally translated as ā; "迦咤侘茶拏叉沙遮者车奢舍阇社" are often translated as a, with isolated cases translated as ā; and "耶也唨夜" are generally translated as either ya or yā.

2.1.3 止摄 i ī e ai

The characters of *zhiyun* (支韵) (e.g., "婢避弥弭枳企绮衹昵掫池雌斯只支") are generally translated as i or ī; "箪敧差屣曬" as e; "施离" as i (ī) or e; and "篅" as jva, such as the translation of "jvalani" to "篅喇儞" . Characters in *zhiyun* (脂韵) (e.g., "比仳苾鼻寐器弃雉私死尸唎") are generally translated as i or ī; "戜" as e; "腻师" as i (ī) or e; "毗" as i (ī) or ai; and "尼利" as i (ī), e, or ai. Characters in *zhiyun* (之韵) (e.g., "耻治持峙值儞史止齿始侍异哩") are generally translated as either i or ī; and "底里" are generally translated as i (ī) or e. Characters in *weiyun* (微韵) (e.g., "未") are generally translated as a(ṇ).

2.1.4 蟹摄 e i ī ai ay

The characters of *qiyun* (齐韵) (e.g., "迷米谜羝剃泥泥西细黎丽") are generally translated as e; "剃泥泥西细" as i (ī); "酰" as ai; "鸡提睇曬" as e or i (ī); "薜瞖" as e or ai; and "鞞" as e, i, or ai. Characters in *taiyun* (泰韵) (e.g., "带") are generally translated as ay, such as the translation of muktaye to "木带襄" . Characters of *huiyun* (灰韵) (e.g., "杯") are generally translated as ay, as in payosṇī to "杯瑜瑟儞" . Those of *jiyun* (祭韵) (e.g., "智帝[1]世") are generally translated as e, such as "逝" to je, ji, or jay; "励" to e or ye; and "誓曳襄" to je. There are no characters in *haiyun* (咍韵), *feiyun* (废韵), *jiayun* (佳韵), *jieyun* (皆韵), or *guaiyun* (夬韵).

2.1.5 遇摄 u ū o

Characters of *yuyun* (鱼韵) (e.g., "举") are generally translated as o. Those of *yuyun* (虞韵) (e.g., "拘俱矩区寠具刍主") are generally translated as u (ū); "朱" as o; "句" as u or o; "瞿" as o or au; "输" as u (ū), o, or vā; "树" as u or yo; and "庾" as yu. Viśvāmitrā are generally translated as "毘输蜜怛罗" and śvā as "输" , perhaps due to ancient patterns. The characters of *muyun* (模韵) (e.g., "哺补普步部暮古都妬吐度怒苏邬虎鲁") are generally translated as u (ū). "怖菩孤徒胡" are translated as o; "晡布慕都杜奴苏呼卢噜嚧路" can be translated to to u (ū) or o; and "谟" as u, o, or a. Namaḥ is translated to "南谟" and maḥ as "谟" because 'a' becomes 'o' in front of the voiced consonant.

2.1.6 流摄 u ū

The characters of *youyun* (尤韵) (e.g., "富咎修") are generally translated as u (ū); those of *houyun* (侯韵) (e.g., "母豆喽娄") are often translated as u. There are no characters in *youyun* (幽韵).

2.1.7 效摄 au o u

The characters of *haoyun* (豪韵) (e.g., "高骚") are generally translated as au. Those of *xiaoyun* (宵韵) (e.g., "憍乔") are generally translated as au or o; "烧" as au; and "摇" as u. There are no characters in *yaoyun* (肴韵) or *xiaoyun* (萧韵).

2.1.8 深摄 um

The characters of *qinyun* (侵韵) (e.g., "金") are generally translated as um. Those of *jiyun* (缉韵) (e.g., "湿") are generally translated as m.

2.1.9 咸摄 a(ā)m, a(ā)ṁ, a(ā)ṃ um ap ab av uv

The characters of *tanyun* (覃韵) (e.g., "覃") are generally translated as um; "南" as am, āṁ, or an; and "耽昙" as um or am. Characters of *heyun* (合韵) (e.g., "答") are generally translated as ap, ā(m), or aḍ; "沓" as ab; and "纳" as av. Characters of *tanyun* (谈韵) (e.g., "甘三蓝琰滥") are often translated as am. Those of *heyun* (盍韵) (e.g., "蹋") are generally translated as ap and "腊" as av or ab. The characters of *xianyun* (咸韵) (e.g, "喃") are frequently translated as āṁ. Those of *xianyun* (衔韵) (e.g., "钐") are generally translated as aṁ. The characters of *yanyun* (盐韵) (e.g., "占苫檐庵") are generally translated as a(ā)m, a(ā)ṁ, or a(ā)ṃ; "瞻" as jam; "阎" as yaṁ; and "占" as an. The characters of ye*yun* (叶韵) (e.g.,禰摄") are generally translated as ap or av and "叶" as av o r uv. The characters of *yanyun* (严韵) (e.g., "剑") are generally translated as am(ṁ) or um. Those of *yeyun* (业韵) (e.g., "劫笈") are generally translated as ap or a(m). Characters of *fanyun* (凡韵) (e.g, "梵") are often translated as ahm. Those of *fayun* (乏韵) (e.g., "乏") are generally translated as ap. Brahmavatī can be translated as "梵摩伐底" due to ancient patterns. There are no characters in either *tianyun* (添韵) or *tieyun* (帖韵).

2.1.10 臻摄 in uṇ uṅ uñ il ĩi ir il is iś it iṭ īt id iḍ ṛt ic ud ut ur uṣ

The characters of zhen*yun* (真韵) (e.g"因紧民信") are generally translated as in,"频邻" as in or iṁ,; "真" as il, and"慎" as ĩi. The characters of *zhiyun* (质韵) (e.g"毕必苾蜜密吉室悉质失室一") are generally translated as ir, il, is, iś, it, iṭ, īt, id, iḍ, ṛt, or ic; "叱" as ap; and"栗 (嘌)" as t, ik, or g. The characters of *shuyun* (术韵) such as"律 (喍)" are generally translated as ṇ, with "卒" appearing as ut. The characters of *zhiyun* (栉韵) (e.g. "瑟") are often translated as (ṭ) or (ṇ). Those of *wenyun* (文韵) (e.g"文君分") are generally translated as uṇ, un, uñ, or um. The characters of *wuyun* (物韵) (e.g. "佛弗") are generally translated as ud or ut. The characters of *qiyun* (迄韵) (e.g"讫") are frequently translated as r or ṛ. The characters of *xinyun* (欣韵) (e.g"近") are generally translated as n. Those of *hunyun* (魂韵) (e.g"奔敦孙") are generally translated as uṇ or un and "肮" as uṃ. The characters of *meiyun* (没韵) (e.g"没骨突喝忽") are generally translated as u(ṅ), ur, uṣ, uṭ, ud, or os with "勃" as ar. There are no characters in zhenyun (臻韵), henyun (痕韵), or zhunyun (谆韵).

2.1.11 山摄 a(ā)ñ a(ā)n a(ā)ṇ ar ad a(ā)l a(n) a(ṇ) at aḍ aś as ac aj ar a(ā)d at av

The characters of *hanyun* (寒韵) (e.g., "干单旦炭但惮难珊阑囕兰安") are generally translated as a(ā)ñ, a(ā)n, or aṇ; "汉" as an or at; and "散" as an. Characters of *heyun* (曷韵) (e.g., "达怛捺割渴萨頞嚩曷") are often translated as ar, ad, al, āl, a(n), a(ṇ), at, aḍ, aś, as, ac, or aj; "達喇曷" as ah or ak; and "萨" to ab. Characters of *huanyun* (桓韵) (e.g., "半盘畔曼") are generally translated as añ, āñ, an, aṇ, or āṅ; "搬" as auṇ; and "酸" as van. Characters of *moyun* (末韵) (e.g, "钵跋末") can be translated as ar, a(ā)d, at, aṭ, a(ṇ), a(n), ac, al, āl, aj, or av. Those of *shanyun* (删韵) (e.g., "般") are generally translated as aṇ or āñ. The characters of *shanyun* (黠韵) (e.g., "察杀疤") are often translated as a(ṇ), aḍ, as. The characters of *shanyun* (山韵) (e.g., "山") are generally translated as aṇ. Those of *xiayun* (辖韵) (e.g.,

"刹") are generally translated as as, it, at, or ar. Rakṣitikā was translated as "曷路刹帝迦" and kṣit as, "刹". Because there are no characters in *chumu* (初母) when translated as in *zhiyun* (质韵), *shuyun* (术韵), or *zhiyun* (栉韵), Yijing used *ru-sheng* (入声) characters as in *shanshe* (山摄). The characters of *yuanyun* (元韵) (e.g., "建健") are generally translated as an, aṇ, āṇ, or aṁ (an). The characters of *yueyun* (月韵) (e.g., "发伐羯葛歇") are often translated as al, āt, ad, ās, aṭ, at, ar, ac, a(ṇ), or a(n). Those of *xianyun* (仙韵) (e.g., "寋旃栴扇连") are generally translated as aň, aṇ, an, or āṇ, and "善缮膳演" appear as jan. Those of *xueyun* (薛韵) (e.g., "揭揭设") are often translated as ar, ad, al, at, or aj. "折" is generally jar, j, or jal. Characters of *xianyun* (先韵) (e.g., "先燕") are generally translated as ain and "甸" to yan. The characters of *xieyun* (屑韵) (e.g., "室侄頡") are frequently translated as yad, yat, or ṛ; and "涅" to ir.

2.1.12 江摄

There are no characters in *jiangshe* (江摄) in translation.

2.1.13 宕摄 a(ā)ň aṁ a(ā)k ag ah

Characters of *tangyun* (唐韵) (e.g., "傍忙宕") are generally translated as aň, aṁ, or āṁ, all with velar sound consonants behind them. "谤" is generally translated as ān. Characters of *duoyun* (铎韵) (e.g., "莫博薄托铎诺恶乐喀") are generally translated as ak, āk, ag, or ah; "洛" as ak, ag, uk, or āk; and "索" to ah or aṭ. The characters of *yangyun* (阳韵) (e.g., "鸯商弡") are often translated as aň, aṁ, or āṁ, all of which have velar sound consonants behind them. "上" can be translated to jan and has g behind it; however, this assumption may be incorrect and translated otherwise as jaň. Characters of *yaoyun* (药韵) (e.g., "缚斫") are generally translated as ak; "溺药" as yag or yak; "若" to yag, yav, ai, or aḥ; "铄" to ak or ar; and "嚩" to āt.

2.1.14 梗摄 yaň iň a (ā)k

The characters of *moyun* (陌韵) (e.g., "宅") are generally translated as av or ak; "栝" (*maiyun* 麦韵) is translated as ak, 昔韵字; and "释" (*xiyun* 昔韵) as āk. Characters of *qingyun* (青韵) (e.g., "丁") are often translated as yaň and "经" as iň, both of which have velar sound consonants behind them. No characters appear in *gengyun* (庚韵), *gengyun* (耕韵), *qingyun* (清韵), or *xiyun* (锡韵).

2.1.15 曾摄 iň aň ik ak

The characters of *zhengyun* (蒸韵) (e.g., "冰征") are often translated as iň and all have velar sound consonants g behind them. The characters of *shiyun* (识韵) (e.g., "识力") are generally translated as ik and "式" as iv. The characters of *dengyun* (登韵) (e.g., "僧登楞") are frequently translated as saṁ or aň, both of which have either h, g, k, or j behind them. Characters of *deyun* (德韵) (e.g., "德") are generally translated as ak.

2.1.16 通摄 uk og ok

The characters of *wuyun* (屋韵) (e.g., "目鹿六") are generally translated as uk, "独" as og, and "仆"

as ok and uk. There are no characters in *dongyun* (东韵), *zhongyun* (钟韵), or *zhuyun* (烛韵).

<h2 style="text-align:center">2.2 Discussion of finals</h2>

In this section, we discuss the finals system in the eastern part of northern China in the early years of the Tang dynasty based on the above syllables.

2.2.1 Medial

2.2.1.1 Medial [-u-]

Round-mouth (合口) characters in middle ancient Chinese usually have v in the syllable; for example, the characters of *guoshe* (果摄) (e.g., "埵堕莎锁") are generally translated as va or vā; those of *zhenshe* (臻摄) (e.g. , "奔敦酸") are generally translated as un or van; and "没骨" are often translated as ud. In addition, characters of *yushe* (遇摄) and *liushe* (流摄) are generally translated as u. Therefore, the medial word of *round-mouth* characters is assumed to be [-u-].

There is no v in the syllables of some *round-mouth* characters; they are always labial sounds, such as the characters of *guoshe* (果摄) (e.g., "波婆么"), *xianshe* (咸摄) (e.g., "梵乏"), *zhenshe* (臻摄) (e.g., "勃"), *shanshe* (山摄) (e.g., "搬半盘曼钵跋末"), and *zhishe* (止摄) (e.g., "微"). A transitional [-u-] often appears between the labial sound and the vowel in spelling; as such, the absence of v in syllables is normal.

In middle ancient Chinese, a contrast in *round-mouth* and *open-mouth* characters appears between *zhenyun* (真韵) and *zhunyun* (谆韵), *hanyun* (寒韵) and *huanyun* (桓韵), and *geyun* (歌韵) and *geyun* (戈韵). It is difficult to determine whether *yanyun* (严韵) and *fanyun* (凡韵) are antagonistic. In addition, it is impossible to judge whether *jieyun* (皆韵) and *guaiyun* (夬韵), *haiyun* (咍韵) and *huiyun* (灰韵), *henyun* (痕韵) and *hunyun* (魂韵), and *wenyun* (文韵) and *xinyun* (欣韵) are antagonistic due to a lack of characters.

2.2.1.2 Medial [-i-]

j or y in syllables always appear in *sandengyun* (三等韵), such as in the following translations: "写迦耶也夜喏" as ya or yā; "誓曳襄" as je; "树" as yo; "庾" as yu; "善缮膳演" as jan; "折" as jar, j, or jal; "羊" as yaṁ; "上" as jan; "尚" as jaṅ; "溺药" as yag or yak; and "若" as yag or yav. Additionally, in *zhishe* (止摄), *zhenshe* (臻摄), and *zengshe* (曾摄), i usually appears in *sandengyun*. Therefore, the medieval form of *sandengyun* can be reconstructed as [-i-].

No j or y exists in some syllables of *sandengyun* when the initial syllable is either a velar sound (见系), palatal sound (庄章系), or labial sound (帮系), as in the following examples: "遮者奢社差" as a or ā; "世" to e; "举拘俱区主刍" as u; "呇" as u; "憍乔烧" as au; "金" as um; "湿" as sm; "占苫福剑" as am; "文君" as un; "佛弗" as ud; "建健塞旃柄扇" as an; "发伐羯葛" as at; "彊商" as aṅ; or "缚斫铄" as ak. K- and c- in Sanskrit sound similar to when the tongue is in a rear position, leading to a transitional medial [-i-] in the syllable. An exception is "连", translated as raň; hence, the medial [-i-] in *sandengyun*

exists in ancient Chinese.

Sidengyun (四等韵) is often translated as either i, e, or ia. For example, the characters of *qiyun* (齐韵) are always translated as either i, e, or ai. Those of *xianyun* (先韵) are translated as either ain or yan; those of *xieyun* (屑韵) are yat or ir; and those of *qingyun* (青韵) are either in or yaṅ. No characters are in *xiaoyun* (萧韵). We assume this phenomenon can be explained by the medial [-i-] in *sidengyun*. In medieval Chinese, *sandengyun* and *sidengyun* can be translated primarily as either i or e, with a few translated as ai; accordingly, *sandengyun* and *sidengyun* can be merged.

In medieval Chinese, *chongniu* (重纽) should have a rolling medial [-r], such as in the translation of "歆" as kṣe, "绮" as kṣi, "器" as kṣī, and "蜜" as mṛt. Most *chongniu* (重纽) are missing the medial sound and are the same as the normal *sandengyun* and *sidengyun*, such that "乔" is translated as gau, "憍" as kau, "密" as miḍ, "金" as kum, "频" as bhin, "紧" as kin, "民" as min, "必" as pit, "毕" as pil, and "吉" as kis.

2.2.2 Main vowels

2.2.2.1 Difference in opening degree of *yidengyun* (一等韵) and *erdengyun* (二等韵)

Characters in *guoshe* (果摄) and *jiashe* (假摄) are all translated as either a or ā. Half the characters in *guoshe* (果摄) are translated as a, with the other half translated as ā. Most characters in *jiashe* (假摄) are translated as a. Those in *hanyun* (寒韵), *huanyun* (桓韵), *shanyun* (山韵), and *shanyun* (删韵) are all translated as either a or ā, but most are *yidengyun*. There are only six characters of *erdengyun* (二等韵), similar to *tanyun* (覃韵), *tanyun* (谈韵), *xianyun* (咸韵), and *xianyun* (衔韵). There are only two characters of *erdengyun* (二等韵) in the above yuns (韵). There are no characters of *erdengyun* (二等韵) in *xiaoshe* (效摄). Characters in *taiyun* (泰韵) and *huiyun* (灰韵) are translated as ay; the levant stress syllable of the Sanskrit e is ai. The Sanskrit a sounds like either [ɐ] or [ə], whereas ā sounds like either [ɑ] or [ɒ]. The opening degree of a is less than ā[2]. Accordingly, in middle ancient Chinese, the vowel [a] is between a and ā. Most characters are translated as ā, which sounds like [ɑ]. The opening degree of *erdengyun* is less than a or ā; no such sound exists in Sanskrit. Therefore, characters in *yidengyun* are usually translated as either a or ā. In middle ancient Chinese, *yidengyun* is always reconstructed as [ɑ], and *erdengyun* is always reconstructed as [a]. *Yidengyun* and *erdengyun* have a different timbre, such that the opening degree of *erdengyun* is less than that of *yidengyun*.

Characters in *xiaoshe* (效摄) are always translated as au; few appear as either o or u. O and au are separate levant stress syllables of u. *Yidengyun* in *xiaoshe* (效摄) and *xieshe* (蟹摄) are usually translated as ai. The main vowel of *dangshe* (宕摄) is always translated as either a or ā, the same as in *shanshe* (山摄), *xianshe* (咸摄), *xiaoshe* (效摄), and *xieshe* (蟹摄). In this case, *yidengyun* is [ɑ], and *erdengyun* is [a].

Characters in *yushe* (遇摄) are usually translated as either u or ū with few appearing as au or o. As

noted above, o and au are separate levant stress syllables of u; hence, *yidengyun* in *yushe* (遇摄) should be u. Characters in *liushe* (流摄) are often translated as either u or ū. *Liushe* evolved in disyllabification from the ancient ages to the Middle Ages, but no ou exists in Sanskrit; therefore, *yushe* is most often translated as either u or ū. *Liushe* contains a compound vowel, so its *yidengyun* is always reconstructed as [əu]. The main vowel of *tongshe* (通摄) is usually translated as either u or o, such that *yidengyun* can be reconstructed as [uŋ].

The main vowel in *zhenshe* (臻摄) is always translated as either u or i; no characters appear in *yidengyun* and *erdengyun*. The open-mouth *sandengyun* is always translated as i, whereas the remaining round-mouth characters are always translated as u; therefore, the round-mouth *yidengyun* is always reconstructed as [-uən], and the open-mouth *sandengyun* is always reconstructed as [-iən]. Only one character "金" in *shenshe* (深摄) is translated as um. Very few characters in *xianshe* (咸摄) (e.g., "耽昙覃剑") are also translated as um. For this reason, we assume that the syllable um may not exist in Chinese, which would explain why monks used *xianshe* and *shenshe* as a translation of um instead. *Xianshe* should be reconstructed as [-ɑm], and *shenshe* should be reconstructed as [-iəm], both of which are similar to um. The open-mouth nature of *zengshe* (曾摄) and *gengshe* (梗摄) is always translated as either a or ā, identical to *dangshe* (宕摄) with low-pitched sounds translated as i. *Zengshe* and *gengshe* are combined in the Song dynasty (宋代). *Yidengyun* in *sengshe* should thus be reconstructed as [-əŋ], and *erdengyun* in *gengshe* should be reconstructed as [-æŋ] to differentiate *dangshe*.

There are no characters in *jiangshe* (江摄) because the sound of *erdengyun* is quite different from a or ā in Sanskrit. By contrast, *zengshe*, *gengshe,* and *dangshe* can each be translated as either a or ā. Characters in *zhishe* (止摄) are always translated as i or e; there is no difference between *zhiyun* (支韵), *zhiyun* (脂韵), or *zhiyun* (之韵). This phenomenon is the same as in *Fanqie* (反切) in the rhythmic dictionary, wherein e is the levant stress syllable of i; accordingly, the main vowel of *zhishe* should be reconstructed as [-i].

2.2.2.2 Chongyun (重韵)

In middle ancient Chinese, *chongyun* (重韵) existed in *yidengyun*, such as in the translation of *tanyun* (谈) as am and *tanyun* (覃) as either am or um. Similarly, um was always translated as *qinyun* (侵韵). Examples of this pattern are rare, but similar instances appear in material from the same period. The transliteration of Saṃgha-Pāla (僧伽婆罗[3]) displays a pattern in which *tanyun* (谈) and *tanyun* (覃韵) are each translated as either am or um. The characters translated as um are largely *tanyun* (覃韵) compared to only one character of *tanyun* (谈韵). Characters in *qinyun* (侵韵) are usually translated as im. The transliteration of Bukong (不空[4]) displays a phenomenon wherein *tanyun* (覃韵) is translated as either am or om, *tanyun* (谈韵) as am, and *qinyun* (侵韵) as either im or um. The transliteration of Xuanzang (玄奘[5]) also exhibits this phenomenon; *tanyun* (谈) and *tanyun* (覃) are each translated as am, similar to

qinyun (侵韵) translated as [-i]. The transliteration of Bodhiruci (菩提流志[6]) exhibited a related phenomenon where *tanyun* (覃) could be translated as either am, um, or om with *tanyun* (谈韵) translated as am; there is no *qinyun* (侵韵).

These patterns suggest that *tanyun* (覃韵) has a smaller degree of open-mouth formation than *tanyun* (谈韵). *Tanyun* (覃韵) sounds like the lips are more rounded, similar to *qinyun* (侵韵). In the pre-Qin period, *tanyun* (谈韵) and *tanyun* (覃韵) each belong to *qinbu* (侵部). *Tanyun* (覃韵) has stood on its own since the Wei dynasty and Jin dynasty when it became similar to *tanyun* (谈韵). During the Song dynasty, *tanyun* (谈韵) and *tanyun* (覃韵) became the same. Therefore, we can reconstruct *tanyun* (覃韵) as[-ɒm]. *Chongyun* (重韵) likely indicates that the main vowel is quite different in height; for instance, the difference between *yidengyun* and *erdengyun* is the front and back position of the main vowel. Most *chongyun* (重韵) merge except for *tanyun* (谈韵) and *tanyun* (覃韵), as in the translations of *xianyun* (咸韵) and *xianyun* (衔韵) as am compared to *shanyun* (山韵) and *shanyun* (删韵) as an, similar to Yijing.

Therefore, we believe *chongyun* (重韵) reflects a phonetic phenomenon within the dialect rather than an overlap between the phonology of northern and southern dialects. *Chongyun* (重韵) diminished more quickly in the north than in the south, but it has been retained in some cases.

2.2.3 Consonant endings

2.2.3.1 Consonant endings [-p], [-t], [-k]

In middle ancient Chinese, entering tone rhyme endings can be divided into three categories: the labial final consonant translated as ap, ab, av, uv, or m (e.g., "摄" as yap, reconstructed as [-p]); the apical final consonant as il, ir, il, is, iś, it, iṭ, id, iḍ, ic, ud, ut, ur, uṣ, ar, ad, al, aś, as, ac, aj, ar, or aṭ (e.g., "卒" as ut, reconstructed as [-t]); and the velar sound final consonant to ik, ak, og, ok, ak, ag, or ah (e.g., "索" as ah, reconstructed as [-k]). The place of articulation of each entering tone is the same; only the method of pronunciation is different. Besides plosives, there are also fricative, liquid, nasal, and lateral sounds. In translation, the ending of the entering tone is only related to the articulation part at the back.

There are some exceptions in which the entering tone rhyme endings of different articulation parts are mixed, such as "答" as aḍ, "叱" as ap, "栗 (㗚)" as ik or g, "達喇曷" as ah or ak, and "萨" as ab. Other examples include "索" as aṭ, "若" as yav or ai , "铄" as ar, "嚩" as āt, and "宅" as av. Most exceptions are blends of velar and apical sounds. Although the three rhyme endings are distinct, some characters have become [-ʔ].

2.2.3.2 Consonant endings [-m], [-n], [-ŋ]

There are three nasal endings: the labial final consonant translated as am, aṃ, or um (e.g., "耽昙" as um or am, reconstructed as [-m]); the apical final consonant as in, uṅ, uṇ, uñ, añ, an, or aṇ (e.g., "因紧" as in, reconstructed as [-n]); and the velar sound final consonant as aṅ, aṁ, or iṅ (e.g., "莺" as āṅ,

reconstructed as [-ŋ]).

There are exceptions of nasal endings that enter the tone rhyme endings of different mixed articulation parts, including "南占" as an; "肬" as uṃ; "谤" as ān, and "僧" as saṁ (e.g., saṁjīvani as 僧侍伐儞). The repetition may be due to the fact that nasal endings are more stable than entering tone rhyme endings.

2.3 Table of finals

The following table is based on the phonetic features described in the preceding analysis. Finals of the northern Eastern dialect in the mid-Tang dynasty are presented comprehensively and include the level tones only rather than all four tones.

Table 1: Table of finals.

歌[ɑ]戈[uɑ]（戈[iɑ][iuɑ]）	豪[ɑu]（肴[au]）宵（萧）[ieu]	哈（泰）[ɑi]（灰[uɑi]）佳皆夬[ai][uai]祭（废）齐[iei][iuei]	覃[-ɒm]谈[ɑm]咸衔[am]盐严凡（添）[iem]	寒[ɑn]桓[uɑn]山删[an][uan]元仙先[ien][iuen]	唐[ɑŋ][uɑŋ]阳[iɑŋ][iuɑŋ]
麻[a][ua]麻[ia]				（江[-ɔŋ]）	（庚耕[-æŋ][-uæŋ]）（清）青[-ieŋ][-iueŋ]
模[u]鱼虞[iu]					（东冬[-uŋ]钟[-iuŋ]）
支脂之微[i]	侯[əu]尤（幽）[iəu]		侵[-iəm]	（痕[-ən]）魂[-uən]真臻文欣（谆）[-iən][-iuən]	登[-əŋ][-uəŋ]蒸[-iəŋ]

3. Comparison of characters between Yijing (义净), Bukong (不空), and Xuanzang (玄奘)

With regard to certain aspects of characters compared among Yi Jing, Bu Kong, and Xuan Zang, the identified differences were not especially noteworthy due to having a similar finals system. The following section presents a case study of rhyme and characters between Yi Jing and Xuan Zang.

Table 2: Shared rhyme and characters between Yijing and Xuanzang.

Sanskrit pronunciation	Ancient rhyme	Characters for translation

a 或 ā	歌戈麻韵	多他陀婆摩遮阇奢
i, ī 或 e	止摄及蟹摄三等	离支斯尸私尼利鸡提泥逝世
ye 或 je	祭韵	誓曳
u, ū, o 或 au	遇摄，效摄	句具树奴邬憍布慕乔骚
an, yan 或 jan	山摄	安兰难连建健缮膳
un	文魂韵	奔孙
aṁ 或 aŋ	阳唐韵	鸯商
am 或 um	侵谈覃严盐韵	金占三滥琰
at, ad, ar 或 av	曷没末黠辖月薛韵	怛達曷末刹
ur, ud 或 ul	术物没韵	弗佛喝
il, id 或 it	质屑韵	毕质悉室栗
ak, ag 或 ah	铎药陌麦昔德韵	达剌
ap 或 av	盍叶合韵	答沓纳腊摄

Based on the above comparison, the patterns are generally the same; however, differences[7] in rhyme and characters were notable in some cases, including the following. Consider an example of a level tone instead of *shangsheng* (上声), along with a *falling tone* and *entering tone*.

3.1 *Qingyun* (青韵)

Xuanzang translated *zhengyun* (蒸韵) (e.g., "殑") as aṁ or aŋ. Moreover, *zhengyun* (蒸韵) (e.g., "矜兴陵") can be translated as either iṁ(k) or iŋ. *Qingyun* (青韵) (e.g., "瓶") can be translated as veṅg. Yijing used *zhengyun* (蒸韵) as in 冰征 and *qingyun* (青韵) (e.g., "经") translated as iṅ(g). *Qingyun* (青韵) (e.g., "丁") can be translated as yaṅ(g). Bukong translated *zhengyun* (蒸韵) (e.g., 冰僧应仍) as iñ或 iṁ. Additionally, *zhengyun* (蒸韵) (e.g., "殑䐱陵") can be translated as añ, and *qingyun* (青韵) (e.g., "铭冥定宁") can be translated as i, ī, e, or ai. Apart from *sandengyun* and *sidengyun* in *yangyun* (阳韵), Yijing also translated *qingyun* (青韵) (e.g., "丁") as yaṁ, and Xuanzang translated *yangyun* (阳韵) as yaṁ.

Xuanzang, Yijing, and Bukong all used *zhengyun* (蒸韵) to translate *sandengyun* and *sidengyun*[8], whereas transcriptions of *qingyun* reflect a different situation. The main vowel translations of *qingyun* (青韵) are diverse, spanning i, ī, ya, ai, or e. There is no medial i in *sidengyun* of Xuanzang; rather, monks use *zhengyun* (蒸韵) to translate iŋ instead of *qingyun* (青韵). Yet a medial i appears in *sandengyun* and *sidengyun* of Yijing and Bukong; the main vowels of *sidengyun* has a small degree of aperture. Moreover, in Bukong's dialect, there is no nasal ending in *qingyun* (青韵); as such, monks use *qingyun* (青韵) translated as i, ī, e, or ai.

3.2 *Jueyun* (觉韵)

Yijing used *yaoyun* (药韵) (e.g., "溺药若") to translate yak; there is no *jueyun* (觉韵) in translation. Xuanzang used *yaoyun* (药韵) (e.g., "药缚勺") or *jueyun* (觉韵) (e.g., "藐") to translate yak. Bukong used *jueyun* (觉韵) (e.g., "浊濯") to translate o or oc and *yaoyun* (药韵) (e.g., "药弱略") to translate ak, ah, or yak. There is no difference between these three translations of yaoyun (药韵), but there is a distinction in *jueyun* (觉韵).

The phonetic system of Bukong clearly reflects a difference between *jiangyun* (江韵), *yangyun* (阳韵), and *tangyun* (唐韵), but it is hard to detect in Yijing's and Xuanzang's phonology. Considering that *dangshe* (宕摄) and *jiangshe* (江摄) are combined in the Song dynasty and the Yuan dynasty, we think a difference persists between *jiangyun* (江韵) and the other *yangyun* (阳韵) and *tangyun* (唐韵). There is no difference between them in the pronunciation of *jiangyun* (江韵). *Xuanzang* used *jueyun* (觉韵) to translate yak because the sounds of *jueyun* (觉韵) are similar to *yaoyun*[9] (药韵).

3.3 Several characters in *zhishe* (止摄), *xieshe* (蟹摄), and *yushe* (遇摄)

In addition, *Xuanzang* used part of the apical, namely *sandengyun* in *zhishe* (止摄) and *xieshe* (蟹摄), to translate a such as 铼, 缡, 稚, 厘, and 祛. Yijing did precisely the opposite, using only *guoshe* (果摄) and *jiashe* (假摄) to translate as Bukong did. Exceptions include translating 溪 as kha and 语 as ga. Besides *sandengyun* of *mayun* (麻韵) (e.g., "遮车阇奢赊耶"), Xuanzang used *erdengyun* and *sandengyun* of *zhishe* (止摄) and *xieshe* (蟹摄) to translate ja, ya, or yā. Yijing used *mayun* (麻韵) to translate in an identical manner as Bukong (e.g., 耶也喏夜).

By comparing these characters, we can see that *yuyun* (鱼韵) differs from *yuyun* (虞韵) in XuanZang and Bukong's dialects. Regarding individual exceptions, the opening degree of *zhishe* (止摄) in Xuanzang's phonetic system seems slightly larger than that of Yijing and Bukong. The rhyme (i.e., characters) translated as iŋ, īŋ, eŋ, yak, a, ja, ya, and yā are slightly different given the disparities between the three phonetic systems in the medial i of *sidengyun*, nasal ending, differences between *yuyun* (虞韵) and *yuyun* (鱼韵), and degree of opening aperture.

4. Conclusion

Comparing Yijing with Xuanzang and Bukong in the same period, we believe the eastern dialects in the Tang dynasty were nearly the same as those in the northwest and Central Plains of China[10]. The vowel system of the three was highly similar but displayed subtle differences: the nasal ending of the northwest phonology appeared to diminish, whereas entering endings of the northwest dialect and eastern dialects remained relatively stable. The Central Plains sounds were the most unclear in consonant endings;There's no medial i exists in *sidengyun* in the Central Plains dialect. However, *sandengyun* and *sidengyun* were combined in the northwest and eastern dialects, each including a medial i. There are no differences

among *zhiyun* (支韵), *zhiyun* (脂韵), and *zhiyun* (之韵) in the three dialects, although there is an individual retroflex medial of *chongniu* (重纽). Most *chongniu* (重纽) are the same as the other ordinary words along with *chongyun* (重韵) of *tanyun* (覃韵) and *tanyun* (谈韵) in the northwest and eastern dialects. *Chongyun* (重韵) may also persist in the dialect of the Central Plains[11].

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摘要：本文以义净翻译的《佛说大孔雀明王经》中的梵汉对音材料为研究对象，讨论唐代北方方言的韵母系统。我们认为，相较于《切韵》音系，唐代中期北方东部方言发生了若干语音变化，如支脂之无别，入声产生喉塞音韵尾，三四等合并有[-i]介音，个别重纽字仍保留卷舌介音，残存一等覃谈重韵等等。唐代北方东部方言与西北，中原等音系在阳声韵尾，四等介音等方面存在一定的区别。

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[1] 智 is the character of *zhiyun* 支韵，帝 is the character of *qiyun* 齐韵. At the bottom of the word, there are *fanqie* (反切) "贞励反", which is the character of *jiyun* 祭韵; there is no such fanqie in *guangyun*《广韵》and *jiyun*《集韵》.

[2] Found in Xiangdong Shi.施向东.1983" Xuanzang yizhu zhong de Fan-Han duiyin he Tangchu zhongyuan fangyin" 《玄奘译著中的梵汉对音和唐初中原方音》，Yuyan yanjiu 1983.1, Guanghe Liu.刘广和.2002." Yinyun bijiao yanjiu" 《音韵比较研究》,published by China Radio Film & TV Press,Beijing,p271.

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[5] Found in Xiangdong Shi.施向东.1983" Xuanzang yizhu zhong de Fan-Han duiyin he Tangchu zhongyuan fangyin" 《玄奘译著中的梵汉对音和唐初中原方音》，Yuyan yanjiu 1983.1.

[6] Found in Jianqiang Li.李建强.2015" A study of the Transcriptions in Amogha-pāśa Dhāraṇi and Sumukha Dhāraṇi by Bodhiruci" 《菩提流志译<不空羂索咒心经><护命法门神咒经>咒语对音研究》Yuyan yanjiu 2015.2,p59.

[7] Xuanzang(玄奘) used *jieyun* (皆韵) (e.g., �) sandengyun in *zhishe* (止摄) and *xieshe* (蟹摄) to translate e. There is no *jieyun* (皆韵) in Yijing's translation. Xuanzang used *haiyun* (咍韵) and *feiyun* (废韵) to translate ai or ay, but there is no *haiyun* (咍韵) and *feiyun* (废韵) in Yijing's translation. Yijing used *xianyun* (先韵) (e.g., 先燕) to translate yan or ain; however, Xuanzang used *xianyun* (先韵) (e.g.，田颠) to translate yan with no ain. This difference is not discussed in the text.

[8] The *zhengyun* of Xuanzang's dialect is translated as *yidengyun* and *erdengyun* as explained in Xiangdong Shi 施向东 (1983).

[9] Based on Xiangdong Shi 施向东 (1983), *yaoyun* 药韵 is constructed as [-ak], and *jueyun* 觉韵 is constructed as [-ɔk], which sound similar.

[10] The northwest sound is based on Guanghe Liu 刘广和 （1982/2002）; the sound of the Central Plains is based on Xiangdong Shi 施向东 (1983).

[11] The pronunciation of Bodhiruci 菩提流志 is the same as this paper; there is no *chongyun* (重韵) in the earlier pronunciation of *Xuanzang*(玄奘).