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THE PROTO-CHINESE FINAL SYSTEM

AND THE CH'IEH-YÜN

by

Kun CHANG and Betty Shefts CHANG

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The Proto-Chinese Final System and the Ch'ieh-yün

Kun Chang and Betty Shefts Chang

University of California, Berkeley

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I. Introduction

To carry out comparative studies of the Sino-Tibetan languages on a firmer basis, we must first work out the proto-forms for the Chinese, Miao-Yao, Tai, and Tibeto-Burman languages: we cannot compare the Archaic Chinese phonological system based on the Shih-ching rime patterns of c. 1100-600 B.C. with the written forms of Tibetan, Burmese, and Thai, which came into being at a much later date. This is a first attempt to project a proto-Chinese phonological system from evidence within the Chinese language; we may, of course, refine and revise this system when we compare proto-Chinese with the other reconstructed branches of the Sino-Tibetan language family.

The Nature of the Ch'ieh-yün

The investigation of the phonological history of the Chinese language began with the study of Ancient Chinese. The phonological system of "Ancient Chinese", which is supposed to represent the Chinese language of the sixth or century A.D., has been mainly reconstructed on the basis of the commonly available dictionary Kuang-yün, a work completed in 100 under the auspices of the Sung government. The Kuang-yün is an expanded version of Lu Fa-yen's Ch'ieh-yün, a dictionary completed in 601, and represents the same phonological system. Until 1947, when a complete copy of Wang Jen-hsü's 706 version of the Ch'ieh-yün was recovered in Peking, the Kuang-yün offered the most comprehensive information on the Ch'ieh-yün system. Of the 601 edition of the Ch'ieh-yün, only the preface is extant; until 1947,

there were available only some twenty fragmentary manuscripts of revised or augmented versions of Lu's dictionary, found for the most part in the Tun-huang caves around the beginning of this century. It is on Wang Jen-hsü's version of the Ch'ieh-yün that we base our discussion.

What, actually, does the phonological system of the Ch'ieh-yün represent? Its outline was devised in Ch'ang-an by a group of nine intellectuals led by Lu Shuang, Lu Fa-yen's father; most of these men had come to Ch'ang-an from the city of Yeh, the capital of Pei-ch'i, shortly after the annexation of Pei-ch'i by Pei-chou in 577. Lu Fa-yen, a junior, served as their secretary, recording their decisions; twenty years later, it was he who actually compiled the dictionary. From the time of its conception, coinciding with the reunification of China under the Sui Dynasty (581), we may infer that their intent was mainly to compile a standard reference work for poets which would be universally accepted throughout China, north and south. The Ch'ieh-yün does not represent the Ch'ang-an dialect, nor did its authors intend that it should. They aimed not at presenting one coherent, natural system but rather at synthesizing a number of systems which had been set forth earlier in such varied dictionaries as those of Lü Ching, Hsia-hou Yung, Yang Hsiu-chih, Li Chi-chieh, and Tu T'ai-ch'ing. These dictionaries, which are mentioned in the Ch'ieh-yün's preface, and whose categories are referred to in the table of contents of Wang's edition of the Ch'ieh-yün, were rendered obsolete by the comprehensiveness of Lu's work: the Ch'ieh-yün included all of the categories in any one of these dictionaries, and more.

What is particularly noteworthy in the Ch'ieh-yün's synthesis is its southern element. Two dictionaries of roughly the same period as the Ch'ieh-yün have the same classificatory features as the Ch'ieh-yün. One of these, the Yü-p'ien of Ku Yeh-wang (519-81), was compiled in the pre-unification south; the other, Hsüan Ying's I-ch'ieh-ching Yin-yi, an exegetical handbook on Buddhist texts, was compiled in Ch'ang-an, in the post-unification north, in the middle of the seventh century. We infer that this system of classification came from the south, that it was not native to Ch'ang-an. Its embodiment in the Ch'ieh-yün, a dictionary compiled in the north, was due to the major role played in the design of the Ch'ieh-yün by two southern scholars, Yen Chih-t'ui and Hsiao Kai. Its incorporation in Hsüan Ying's I-ch'ieh-ching Yin-yi merely testifies to the influence and success of the Ch'ieh-yün, a success so great that in Ch'ang-an the Ch'ieh-yün even won out over several rime dictionaries based on the Ch'ang-an dialect; though through the centuries the Ch'ieh-yün has been revised and simplified, its system has never been completely abandoned.

The Ch'ieh-yün classifies characters according to the phonological categories of tone, final, and initial. The pronunciation of each group of homophonic characters is further indicated by a fan-ch'ieh spelling, a device which has been used since the end of the third century A.D. to indicate the pronunciation of a character by employing two commonly known characters, the first with the same initial as the character glossed, the second with the same final and tone. It is not just the categories of

earlier works which are found in the Ch'ieh-yün. Though Lu Fa-yen may have classified some of the words in the Ch'ieh-yün according to their pronunciation in his dialect, he obviously quoted some, and perhaps most, of his entries from earlier dictionaries and other reference works, inferring their pronunciation from fan-ch'ieh. (To check on the sources of the Ch'ieh-yün's fan-ch'ieh we have, in addition to commentaries on ancient texts, the Ching-tien Shih-wen, a voluminous handbook compiled by Lu Te-ming [c. 550-c. 630] to aid in the reading of the Classics.)

The validity of any category in the Ch'ieh-yün depends ultimately on its supporting examples; to determine whether the examples actually support a category we must first investigate the individual history of each word, from its earliest appearance to its modern reflexes in the dialects of different areas. In this way we may also solve some of those vexing problems in the Ch'ieh-yün where a word, with the same or different graphic representations, is given in more than one category. Several explanations are possible; in each case we must attempt to determine whether there was a difference in pronunciation, in either different dialects or different historical stages, or whether two characters were equivalent because their phonetic elements had ceased to represent any living contrast.

Not all of the categories in the Ch'ieh-yün are supported by a large number of examples. Ideally, a category should have a fair number of examples, with modern reflexes to lend credence to the interpretation of an ancient fan-ch'ieh. Some words which are used in pre-Ch'in classics

but which are not attested in later usage were probably not used in Lu Fa-yen's time, either. Without living reflexes, fan-ch'ieh are not precise enough to define with certainty the phonetic characteristics of a character's pronunciation. If the examples given in a category are all of this sort we have strong reason to suspect the validity of the category. Other dubious categories are those which are unique in patterning and which have only one example.

In spite of all these problems, the Ch'ieh-yün offers us highly valuable source material; it is the most extensive collection of phonological information on the Chinese language that we have. It also presents us with the most elaborate phonological system for the Chinese language that we have, much more complex than the phonological system of any modern dialect. Clearly, the systems of Ancient Chinese and the Ch'ieh-yün are not one; before we can make a reasonable reconstruction of Ancient Chinese which will take its place in the total history of the language, we must put the Ch'ieh-yün in historical perspective, examining the defective patterns of distribution among initials, finals, and tones, exploring historical origins and areal spreads, and checking modern reflexes.

Dialect Variations; the 元 Category.

Chinese linguistic history is not a straight line. To portray it as such is a great distortion. There have always been dialect variations, some more pronounced than others. Evidence that this is so is readily available. We are not reconstructing a language without a documented past;

the written records for Chinese are abundant and of different types. Of course, the various dialects and the different stages of these dialects are not equally represented in the literature. We must attempt to reconstruct the multiple developments on the basis of often scanty and sometimes inaccurate records. Obviously, it will take skill and imagination to interpret these records.

The Shih-ching, a collection of folksongs and religious songs of different regions and different periods, extending from c. 1100 to c. 600 B.C., manifests, on the whole, a unified phonological system, with only occasional traces of its heterogeneous origins; we may assume that this was the system underlying the standard language of the Chou Dynasty, spoken along the middle course of the Yellow River. ("Archaic Chinese", which will form an important part of our discussion, is based on the rime categories established by Ch'ing scholars through their analysis of rime words in the Shih-ching.) There are, however, striking differences in the rime patterns of the Shih-ching and those of the Ch'u-tz'u, a body of songs composed during the late Chou Dynasty in the Ch'u region along the middle course of the Yangtzu River. And there are obvious dialect differences in the poetry of different regions in the Han Dynasty. It is crucial that we recognize synchronic dialect differences and that we distinguish between diachronic sound changes within one dialect and those dialect differences which emerge into prominence with political changes.

At different times throughout Chinese history, different dialects have achieved the status of standard language. In describing the phonological

history of the Chinese language, we must recognize the sudden changes from one dialect to another which have accompanied shifts in political and cultural centers. One such shift followed the dissolution of the Han Dynasty. In the standard language of the Han Dynasty (206 B.C.-207 A.D.), the $*(j)\hat{a}g$: $*(j)ug$ contrasts which we find in the Shih-ching had been lost: in the poetry of Mei Ch'eng (died 140 B.C.), words with finals derived from $*-ug$ (走, 口) rime with words with finals derived from $*(j)\hat{a}g$ and $*-rag$ (武, 怒, 鼓, 馬); in the poetry of Ts'ui Yüan (77-142 A.D.), words with finals derived from $*(j)ug$ (走, 後, 腐) rime with words with finals derived from $*(j)\hat{a}g$ (處, 黍, 緒, 楚). The latest evidence of this merger is found in the poetry of Ts'ao P'ei (187-226 A.D.), where words with finals derived from $*-ug$ (走) rime with words with finals derived from $*(j)\hat{a}g$ (阻, 舉, 叙, 醜, 鼓). After the Han Dynasty, the dialect on which the standard language was based kept the $*(j)\hat{a}g$: $*(j)ug$ categories apart. (There are, however, many modern dialects in which after dental initials we see traces of the $*-\hat{a}g$: $*-ug$ merger; these are dialects spoken in the provinces of Shensi [e.g. the dialect of Si-an], Hupei [e.g. the dialect of Hankow], Hunan [e.g. the dialect of Ch'ang-sha], Anhwei [e.g. the dialect of An-ch'ing], and possibly also in the southern tip of the province of Honan [e.g. the dialect of Hsin-yang] and the northwestern corner of the province of Kiangsi.)

One of the greatest political-cultural shifts came in the fourth

century when the rulers of the Chin Dynasty were driven south of the Yangtzu River by the Northern Barbarians. Here, for almost three centuries, the Southern Dynasties continued their rule.

On one major point, the rimes of this era differ from those of both the earlier (Shih-ching, Han) and the later (T'ang) periods, and in a way that bespeaks not a succession of phonological changes but a break in continuity from Han to T'ang. In the Shih-ching, for instance, finals given by the Ch'ieh-yün in the 元 category had already merged with a subgroup of the 山 category and rimed with words which the Ch'ieh-yün gives in the first-division low-vowel category 寒 (*-ân); finals of the 月 category had merged with a subgroup of those in the 薛 category and rimed with words which the Ch'ieh-yün gives in the first-division low-vowel category 末 (*-ât). In the poetry of the Southern Dynasties, the 元 and 月 categories were distinct from the 山 and 薛 categories, and unlike them, rimed with words which the Ch'ieh-yün gives in the first-division 痕 (*-ən), 魂 (*-wən), 沒 (*-ət), 沒 (*-wət) categories, i.e. words which have a higher vowel (*-ə-) and which are generally preceded by a rounded segment (*-w-).

The origins of these rimes lie in the north, in a dialect or dialects which had not experienced those changes which led to the Shih-ching vowel-mergings. Members of the royal family of the Wei Dynasty must be numbered among those who spoke such a dialect: in the poetry of Ts'ao P'ei (187-226), we find 言 (of the 元 [*-jəun] category) riming with 存 (of the 魂 [*-wən] category) and 昔羽 (of the 元

category) riming with 臻 (of the 臻 [= 真 *-jən] category); in the poetry of Ts'ao Chih (192-232), we find 言 riming with 存 (of the 魂 [*-wən] category), 論 (of the 真 [*-wjen] category), and 贊 (of the 文 [*-jun] category). Similar rimes are found in the poetry of Yen Yen-chih (384-456), Hsieh Chuang (421-466), and Pao Chao (?-466). (Note that in the Ch'u-tz'u words of the 元 category generally follow the Shih-ching rime pattern. In one song, 天問, however, 言 [of the 元, *-jəun, category] rimes with 文 [of the 殷 / 文, *-jun, category].)

The riming of 月 and 發 (both of the 月 category) with 忽, 沒, and 骨 (members of the Ch'ieh-yün's 沒 [*-wet/*-ət] category), surfaces at the same time, in the period of the Three Kingdoms. In the poetry of Hsü Kan, who wrote in the Chien-an period (196-219), we find 發 riming with 忽. Later writers, such as Yen Yen-chih (384-456), Hsieh Ling-yün (385-433), and Pao Chao (?-466) all rime 月 and 發 with 忽, 沒, and 骨.

The non-Shih-ching-type rimes reached their ascendancy in the poetry of the Ch'i-Liang-Ch'en-Sui period (479-619), where, for example, the words 言 and 存 rimed regularly and exclusively with words of the Ch'ieh-yün's 痕 (*-ən) and 魂 (*-wən) categories, and where it was standard practice to rime 月 and 發 with 忽, 沒, and 骨. It is this type of rime which explains the position of the 元 (*-jəun) category in the table of contents to the Ch'ieh-yün, between 真 (*-jən) 臻 (*-jən), 文 (*-wjun), 殷 (*-jun) and 魂 (*-wən), 痕 (*-ən),

and the position of the 月 (*-jəut) category between 賢 (*-jət), 物 (*-wjut), 櫛 (*-jət), 迄 (*-jut), and 沒 (*-wət/*-ət).

The non-Shih-ching development, which was taken south in the fourth century, is represented even today in a southern dialect, that of Foochow, and is reflected in the Go-on variety of Sino-Japanese, which is of southern origin. Foochow and Go-on preserve separate 元, 月 categories and support the reconstruction of a rounded vowel for the finals of these categories, in contrast to the unrounded vowel of the 仙, 辯 categories. For example:

Category	Example	Foochow	Go-on	Category	Example	Foochow	Go-on
仙	愆	khien	ken	元	建	kion	kon
	諺	ŋien	gen		言	ŋion	gon
	乾	kien	gen		憲	hion	kon
辯	傑	kiek	ketši	月	缺	hiok	kotši

By the mid-T'ang Dynasty (618-906), the Ch'ieh-yün, with its heavy admixture of the Southern Dynasties, non-Shih-ching development, was criticized for its southern, "Wu" speech: the dominant, "Ch'in" (i.e. Ch'ang-an) dialect was once again in the Shih-ching line of development which had prevailed in the Chou-Ch'in-Han period. Only in Hsüan Ying's I-ch'ieh Ching Yin-yi (655-660) were the 元 and 月 categories still independent entities. In Yen Shih-ku's Han-shu Yin-yi (641), Chang Shen's Wu-ching Wen-tzu (775-6), and Hui Lin's I-ch'ieh Ching Yin-yi (810), the

characters appearing in second place in the fan-ch'ieh spellings for members of both the 元 and the 山 categories were drawn indiscriminately from either the 元 or the 山 categories; the 月 and 薛 categories were similarly one in these works. Textual variations and scribal errors in the folk-literature of the Tun-huang regions show that in the north-western dialect of the T'ang Dynasty the 元, 山, and 先 categories had all merged. This is, of course, true of all modern, non-Min Chinese dialects, and of all Sino-Xenic dialects, except for Go-on.

Fan-ch'ieh spellings in the editions of the Shuo-wen Chieh-tzu put out by Hsü Hsüan (916-991) and Hsü K'ai (920-974), as in the Ch'ieh-yün and Hsüan Hing's I-ch'ieh Ching Yin-yi, show independent 元 and 月 categories. This appears to represent merely a bookish tradition. Hsü Hsüan credits Sun Mian's revision of the Ch'ieh-yün for his fan-ch'ieh; these fan-ch'ieh are the same as in Lu Fa-yen's version. Chu Kao was responsible for the fan-ch'ieh in Hsü K'ai's edition of the Shuo-wen. These fan-ch'ieh, though they too indicate separate 元 and 月 categories, are not the same as Lu Fa-yen's. We do not know where Chu Kao came from or what dialect he spoke, and perhaps such information would not be relevant. Chu Kao most likely culled his fan-ch'ieh from earlier rime dictionaries or a revision of the Ch'ieh-yün lost to us.

Some time between the T'ang and Sung Dynasties, classificatory systems were developed to show the distributions among initials, finals, and tones of the words given in the Ch'ieh-yün. (The earliest extant work of this kind is an edition of the Yün-ching, a set of forty-three

charts with a preface by Chang Lin-chih dated 1161.) The contents of the Ch'ieh-yün were methodically mapped onto charts, each with twenty-three columns and sixteen rows. The rows were used to indicate the four divisions, with their contrasts in initials and postinitials (glides, vowels), and the four tones. (In an exception to this rule, "a"-category members of the third-division ch'ung-niu doublets are given in the fourth row.) A word's initial consonant determined the column in which it was placed; if this initial was an affricate or fricative, it also determined the row: within a given tonal category, the first row was then used for ts, tsh, dz, s, Ø, the second for tš, tšh, dž, š, ž, the third for tš', tš'h, dž', š', ž', the fourth for tsj, tshj, dzj, sj, zj. Though the order of categories is, in general, that of the Ch'ieh-yün, an exception was made for the 元 / 月 categories: the rime charts, like the T'ang Dynasty sound glosses, were made by speakers of a dialect in which the 元 / 月 categories and the 仙 / 薛 categories had merged. In the Yün-ching, Charts 21 and 22, for example, words of the 元 / 月 categories are in the same charts with words of the 山 / 鎡 and 仙 / 薛 categories. In rime charts of the Sung Dynasty (960-1278), there was a classification of the Ch'ieh-yün material into sixteen sheh; the words of the 元 / 月 categories were placed in the 山 sheh, once again in contradiction to the arrangement of 元 and 月 in the Ch'ieh-yün.

The Ch'ieh-yün, then, gives us the "southern" Ancient Chinese contrasts for the 仙 : 元 , 薛 : 月 categories, contrasts which are preserved today only in Min dialects, for example, Foochow, and in the

Sino-Xenic dialect whose categories are of southern Ancient Chinese origin, Go-on. These distinctions had already been lost in the Shih-ching dialect by the twelfth century B.C. A brief glance at the Ch'ieh-yün's treatment of the 東_三 : 鍾 , 屋_三 : 燭 categories should, however, dispel any notion that the Ch'ieh-yün represents any one dialect or dialect area. Not only are these distinctions present in the Shih-ching, there are even double sources for the 東_三 and 屋_三 categories. By the Han Dynasty, however, the 東_三 : 鍾 , 屋_三 : 燭 contrasts had been lost in most parts of China. Exceptions are found in poetry composed in the first and second centuries A.D. in Nan-yang and Ch'en-liu, an area of the north now in Honan Province. Modern preservation of these contrasts is found in the Wenchow dialect, now spoken in the south, but also in Kan-on, a Sino-Xenic dialect whose categories are of northern Ancient Chinese origin. Dialects of no other group, Chinese or Sino-Xenic--and that includes Min and Mandarin--have this distinction. Foochow and Go-on, for example, have high-vowel reflexes for both the 東_三 and 鍾 categories. In view of the widespread loss of these contrasts by the Han Dynasty, we cannot in good conscience force these developments into one line by positing successive changes of lowering and raising.

The Reconstruction of Proto-Chinese

The Ch'ieh-yün's classification presents us with major problems, particularly in relation to Shih-ching Archaic and the Sino-Xenic dialects:

- (1) The Ch'ieh-yün's classification often runs counter to Shih-ching rimes. Examples: (a) Words with Shih-ching *-jen are found in two

Ch'ieh-yün categories, 眞 and 殷 (文 after labial and labialized velar initials). (b) The Shih-ching has both *-âm and *-əm; the Ch'ieh-yün has *-âm (談), *-əm (覃) categories. Words with Shih-ching *-əm are all in the *-əm category, but those with *-âm are found in both the *-âm and the *-əm categories.

(2) Though the 元 category had merged with a subgroup of the 仙 category in Shih-ching Archaic--both were *-jân--there has been an almost universal double development of words which in the Shih-ching had labial initials and *-jân: that is, for reconstructed labial-stop initials of words in the 仙^b category, Sino-Annamese and modern Chinese dialects have labial stops; for labial-stop initials of the 元 category, Sino-Annamese and the modern dialects have labiodental fricatives.

(3) In certain categories with reconstructed *-j- glides and labial or dental endings there are two subgroups (the "ch'ung-niu" doublets), each with its own set of fan-ch'ieh spellings. One of these subgroups is given in the fourth row of the phonological charts, the other in the third. Corresponding to labial initials of one (the "a" subcategory), Sino-Annamese has dental-stop initials; corresponding to the other it has labial-stop initials. All words of the 仙 category have an a-vowel in Shih-ching Archaic and rime with each other. Was there just one vowel for both 仙^a and 仙^b? Why does Sino-Annamese have a dental initial for "a"-category words?

The solution to problems such as these lies in the reconstruction of pre-Archaic or proto-Chinese. The positing of one proto-language which

split into ever smaller subgroups--e.g. first into proto-Wu, proto-Min, and so forth, then into individual dialects--is based on a false assumption. The multi-dialect aspect of the Chinese language must certainly have been even more pronounced when the language was spoken by small, relatively isolated tribes. With technological advances and population growth, linguistic contacts have grown more numerous and more frequent, not less, and nonstandard dialects have felt more and more the unifying impact of the standard language. What the proto-system legitimately represents is, however, not one historical language but rather the system of contrasts we must assume in order to account, in the simplest and linguistically most realistic way, for the historically documented things we know about the Chinese language. Our proto-Chinese (like our Shih-ching Archaic) has, for example, just one open-syllable ending (*-a). A more balanced system in which open syllables were at least as numerous as closed syllables might appear more "natural", but the evidence is against such a reconstruction; in most instances we cannot avoid positing postvocalic consonants. By the Han Dynasty, Chinese had a number of finals, in addition to those which we reconstruct with *-a, which ended in vowels or glides. Attempts to reconstruct either a proto-Chinese or an Archaic Chinese final system with more open syllables have failed, however, to account for the following facts: many words with ostensibly open syllables share phonetic elements with words in *-t or *-k, have textual variants with *-t or *-k, and in the Shih-ching rime with words in *-t or *-k. To account for these phenomena, as well as for the absence of a stop (or the presence of a glide) in later

stages of the language we reconstruct finals which differ from *-t and *-k only in the feature of voicing, i.e. *-d and *-g. The evidence for *-d and *-g is overwhelming. For *-b, the evidence from rime is lacking. The change from *-b to *-d was apparently so early that there are just a few traces in phonetic compounds (𠵹 Proto-Chinese *nwəb → Archaic *nwəd : 𠵹 Archaic *nəp, 𠵹 Archaic *ñjəp; 𠵹 Proto-Chinese *kâb → Archaic *kâd : 𠵹 Archaic *hâp) and textual variants (𠵹 Proto-Chinese *twəb → Archaic *twəd : 𠵹 Archaic *təp; 𠵹 Proto-Chinese *hwâb → Archaic *hwâd : 𠵹 Archaic *həp). It is, of course, possible that in the case of the voiced stops we are dealing with once disyllabic words in which these stops were syllable-initial, but there is no evidence from within Chinese to support such a speculation.

For clues to the reconstruction of proto-Chinese we first examine gaps in the distribution of Shih-ching vowels. (We know that the Shih-ching system cannot account for everything that proto-Chinese must. And it would be unreasonable to assume that merely because the Shih-ching presents us with a fairly unified phonological system, the earliest for which we have literary documentation, there was no dialect diversity at--and before--the time of its composition.) We find a marked disproportion between the number of vowels which may occur before velar endings in the Shih-ching and the far smaller number which may occur before dental or labial endings. (See Chart 1; note that the vowel-ending sequences shown in this chart have been abstracted from all four divisions.) Before dental and labial endings there is a front a : back â contrast which is lacking before velar endings;

ig	ug	ik	uk	iŋ	uŋ
eg	ueg eug	ek	uek euk	eŋ	ueŋ euŋ
	âg aug âug		âk auk		âŋ
id		it		in	
ed		et		en	
ad	âd	at	ât	an	ân
eb		ep		em	
	âb	ap	âp	am	âm
ir					
er					
	â				

Chart 1. The Vowels and Endings of Shih-ching Archaic Chinese.

[Note that *-a/*-au- and *-â/-*-âu- contrast only after the third-division *-j- glide.]

only before velar endings, however, do we find the vowel u and the diphthongs, which have u as one member.

We assume, first, that in proto-Chinese there was a wider distribution of vowels, i.e. one less limited by endings, than in Archaic Chinese: our working assumption is that the same vowels which appear before velar endings in Archaic Chinese once appeared before dental and labial endings as well. We have already seen evidence for this assumption in the back rounded vowels of Foochow and Go-on for words of the lower-vowel 元 category. Both Northern and Southern Min testify to a high rounded vowel, which we reconstruct as *-u-, for the 殷 category, e.g. 𠄎 (Al), proto-Chinese *kjun : Foochow kyŋ, Amoy kun. When we compare Shih-ching *kjən 𠄎 with this reconstruction we see why words with Shih-ching *-jən are found in the two Ch'ieh-yün categories of 眞 (*-jən) and 殷 (*-jun): *-jun had merged with *-jən in the Shih-ching dialect, but not in the Southern Dynasties dialect which was the source of this aspect of the Ch'ieh-yün's classification.

Our next assumption is that changes which in the post-Archaic period affected vowels which appear before velar endings but are missing before dental and labial endings may in the pre-Archaic period have affected these vowels before dental and labial endings.

One of these changes is the post-Archaic metathesis of *-uə- to *-əu- between the *-j- glide and the *-k, *-g, *-ŋ endings. Shih-ching *-juəg and *-jəug, for example, are both in the same Ch'ieh-yün category, 𠄎. We infer a change of *-uə- to *-əu- rather than the reverse on the basis of the modern reflexes of words of this category, which generally have a

diphthong with -u as second member, and never one with -u- as first member. If we posit this change before labial and dental endings, proto-Chinese *-jueŋ and *-jeuŋ, for example, would merge in *-jeuŋ, the final which we reconstruct for the Ǟ category. The changes which lead from labial-stop initials to labiodental-fricative initials were, then, set in motion before finals with *-j- and dental endings by the back rounded vowels *-u- and *-eu-, before finals with labial endings by *-u-, before finals with velar endings by any simple back vowel (*-â-, *-u-) and by the diphthong *-eu-.

Another post-Archaic change which we invoke to explain the front a : back â contrast before labial and dental endings is that of *-au- to *-â- between the *-j- glide and the *-k ending: Shih-ching *-jâk and *-jauk are both in the Ch'ieh-yün's 藥 category. We assume for proto-Chinese a simple-vowel scheme with just one a-vowel:

i u
 e
 a

This a, we assume, had front variants in certain environments, for example, before dental and labial endings; before velar endings, there was a back variant. The change of *-au- to *-â- thus produced an a : â contrast in pre-Archaic and Shih-ching Archaic before dental and labial endings. The simple-vowel scheme was then as follows:

i u
 ə
 a â

Words of the ㄣ^a category, for example, had the front *-a-; words of the ㄣ^b category had the back *-â- derived from *-au-. (*pjan, then, led to Sino-Annamese tien, *pjân to pien.)

Another approach to the reconstruction of at least pre-Archaic Chinese is through the analysis of phonetic compounds: the Chinese writing system was in existence long before the editing of the Shih-ching. Phonetic compounds do not represent marginal dialects: to win wide acceptance, they must have been based on the standard language of their time. We minimize the possibility that a compound may represent a post-Shih-ching dialect by including in our study only characters which are used in pre-Ch'in texts and/or are listed in the Shuo-wen, a dictionary completed by 100 A.D.

Phonetic compounds present many challenges to our understanding. For example: Why are some phonetic elements used for final-categories of several divisions while others are restricted to words of just one category? Why are some phonetic elements shared by words with both voiced and voiceless endings (*-b, *-p; *-d, *-t; *-g, *-k)? Why are some phonetic elements shared by words with oral and nasal endings (*-p, *-m; *-t, *-n; *-k, *-ŋ, and more rarely, *-d, *-n; *-g, *-ŋ)?

And yet, as we examine these compounds in relation to the Ch'ieh-yün categories and Shih-ching rimes, patterns of sharing emerge which lead us to pre-Archaic Chinese.

Constellations of phonetic elements confirm the three-way contrast among both high-vowel categories and low-vowel categories of third-division finals with labial and dental endings. Words of the 仙^a category (*-jan), for example, characteristically share phonetic elements (e.g. 連, 前) with fourth-division words (*-ian), but not with 仙^b (*-jân) words. In 元 (*-jœun) category words we find a number of phonetic elements never used for 仙^a or 仙^b words (e.g. 原, 袁). Most phonetic elements used for 仙^b (*-jân) words are also used for 元 words (reflecting a Shih-ching-type merging); this is, however, not always the case (cf. 健 : 建).

Though phonetic compounds reveal the same pre-Archaic vowel system for third-division finals with labial endings (e.g. *-jam, *-jâm, *-jœum), the distribution of the *-jam : *-jâm contrast is not that of the Ch'ieh-yün's classification, where the "a" and "b" subcategories contrast only after the glottal initial. Once again, words with *-a- share phonetic elements with words of the fourth division (e.g. 闊 : 鰻); words with *-â- share phonetic elements with words of the first-division *-âm (談) category (e.g. 鹽 : 藍). Words with *-œu- have phonetic elements used for neither the fourth division nor the first-division 談 category (e.g. 奄, 傘, 嚴, 僉).

Moreover, phonetic compounds enable us to reconstruct these same pre-Archaic vowels in words which do not have the *-j- glide. In this way we reconstruct *-am, *-âm, *-œum; *-am words share phonetic elements with *-jam

words (e.g. 血白 : 陶), *-âm words with *-jâm words (e.g. 薑 : 薑), *-əm words with *-jəm words (e.g. 廣 : 廣).

The discrepancy in Shih-ching rime and Ch'ieh-yün classification noted above, where examples of Shih-ching *-âm are in the Ch'ieh-yün's *-əm category, stems from different changes which *-am and *-əm → *-um underwent in the precursors of the Shih-ching dialect, on the one hand (A below), and, presumably, the Southern Dynasties dialect, on the other (B):



Note that, as in the case of the 元 (*-jəun) category, *-əu- → *-u- had merged with *-â- in the Shih-ching.

Words which have Shih-ching *-âm but are in the Ch'ieh-yün's *-əm category have, then, a double pre-Archaic origin: *-am (e.g. 血白) and *-um (e.g. 廣). And the vowel contrasts of the ch'ung-niü doublets were not limited to the position following *-j-; what was unique to these doublets was the concatenation of *-j- and the *-a-, *-â- vowels and the developments which initials and vowels underwent as a consequence.

Chart 2 shows the vowels and endings we reconstruct for proto-Chinese. We have discussed above the reasons for positing just one open syllable. The two finals for which, following Tung T'ung-ho, we reconstruct *-r endings are those which rime in the Shih-ching with finals in *-d, but

ig	ug	ik	uk	ig	uŋ
eg	eug	ek	euk	eŋ	eug
ag	aug	ak	auk	aŋ	aug?
id	ud	it	ut	in	un
ed	eud	et	eut	en	eun
ad	aud	at	aut	an	aun
ib?	ub?	ip?	up	im?	um
eb	eub?	ep	eup	eŋ	eum
ab	aub?	ap	aup	am	aum
ir					
er					
a					

Chart 2. The Vowels and Endings of Proto-Chinese.

which the Ch'ieh-yün assigns to other categories: *-wjəd is in the Ch'ieh-yün's ㄐ^b category, *-wjər in the ㄑ^b category, together with *-jâ; *-jid is in the ㄐ^a category, *-jir in the ㄑ^a category, together with *-jig. (Cf. Tung 1948: Shang-ku Yin-yün Piao Kao [Archaic Chinese Phonological Charts], Bulletin of the Institute of History and Philology, Academia Sinica 18.1-249.) Sequences followed by a question mark are conjectural. *-auŋ may have changed to *-âŋ, as in the post-Archaic period *-auk changed to *-âk. There is evidence in phonetic compounds of a change from *-b to *-d after *-ə- and *-â-; we posit a similar labial-to-dental change for *-b, *-p, *-m after the front vowel *-i-. *-b preceded by *-u- (*-u-, *-uə-, *-əu-, *-au-) could conceivably have changed to the corresponding back ending, *-g. Changes for which there is no evidence in phonetic compounds would, of course, have been very early ones.

By filling in gaps in symmetry where this is phonetically plausible we prepare a more flexible proto-system for comparative studies. If, for example, proposed non-Chinese cognates point to *-im where phonetic compounds indicate *-in, we should bear in mind the two posited proto-Chinese sources of *-in, i.e. *-in and *-im.

The other proto-systems with which we will want to work are those of Miao-Yao, Tai, and Tibeto-Burman. Chart 3 gives the proto-Miao-Yao system tentatively worked out by Herbert C. Purnell, Jr. [Toward a Reconstruction of Proto-Miao-Yao: Ph.D. diss., Cornell, 1970]. Chart 4 gives Li Fang-kuei's proto-Tai vocalic system [mimeographed]; Li's proto-Tai has six consonantal endings--m, n, ŋ, p, t, k.

i		iu	im	in	in	ip	it	ik
e	ei	eu	em	en	en	ep	et	ek
ɛ			ɛm	ɛn	ɛn	ɛp	ɛt	ɛk
a	ai	au	am	an	an	ap	at	ak
aa	aaí	aaú	aam	aan	aan	aap	aat	aak
ɔ			ɔm	ɔn	ɔn	ɔp	ɔt	ɔk
o	oi	ou	om	on	on	op	ot	ok
u	ui		um	un	un	up	ut	uk

Chart 3. Purnell's Proto-Miao-Yao Finals.

i	ii							
e	ee	ie	iee	ue	uee			
o	oo	io	ioo	uo	uoo	wo	woo	
a	aa	ia	iaa	ua	uaa	wa	waa	wua?
u	uu		iuu					wuu
w	ww				www			
					iu			
ei	eei	iei	uei		eu	eeu?	ieu	
oi	ooi	ioi	uoi		ou		iou	
ai	aaí	iai	uai	wai	au	aaú	iau	
					wu			

Chart 4. Li's Proto-Tai Vowels.

Proto-Tibeto-Burman has yet to be firmly established. The best information to be had on the early Tibeto-Burman finals is still through written Tibetan and written Burmese (Chart 5), both of late origin--for Tibetan, the seventh or eighth century; the earliest Burmese chronicles we have today date from the fifteenth century.

Prefatory Remarks

Our goal in the following is to show the development of Chinese finals from proto-Chinese to Shih-ching Archaic, to the systems implied by the Ch'ieh-yün categories (synonymous, on a number of occasions, with the standard dialect of the Southern Dynasties), and in some cases to the modern dialects. Our primary evidence is internal to Chinese: phonetic compounds, fan-ch'ieh spellings, rime practice, the Ch'ieh-yün's classification, modern Chinese-dialect data. Though we do not ignore auxiliary clues from outside Chinese, such as the rounded vowel of Go-on in words of the ㄨ category, and though we account through our system for such Sino-Xenic phenomena as the dental : labial contrast of Sino-Annamese in ch'ung-niu doublets, we do not consider evidence from the Sino-Xenic dialects on a par with that of Chinese. These dialects are, after all, adaptations of a bookish pronunciation filtered through the phonological systems of foreign languages.

In the charts which show the posited changes and stages leading from proto-Chinese, numbers heading the columns indicate that a given column represents the systems of proto-Chinese (1), Shih-ching Archaic (2), the Ch'ieh-yün categories (3), and modern dialects (4). The columns representing

Tibetan

i	im	ims	in	iŋ	iŋs	ib	ibs	id	ig	igs	il	is
e	em	ems	en	eŋ	eŋs	eb	ebs	ed	eg	egs	el	es
a	am	ams	an	aŋ	aŋs	ab	abs	ad	ag	ags	al	as
o	om	oms	on	oŋ	oŋs	ob	obs	od	og	ogs	ol	os
u	um	ums	un	uŋ	uŋs	ub	ubs	ud	ug	ugs	ul	us

Burmese

i	im	in			ip	it		
e								
a	am	an	aŋ	aŋ	ap	at	ac	ak
ai								
o				oŋ				ok
u	um	un			up	ut		
ui				uiŋ				uik

Chart 5. The Finals of Written Tibetan and Written Burmese.

these and intermediate stages are also labelled alphabetically. Similar alphabetic subdivisions in charts for different finals do not imply chronological identity: in some charts we have considered it necessary to go into greater detail than in others; also, there is not always evidence to determine in what order a change before, say, dental endings stands in relation to a change before, say, velar endings. Nor can we always correlate stages in Shih-ching and non-Shih-ching-type developments. In a chart for the non-Shih-ching development, "2" is, then omitted from the numbering; in a chart for the Shih-ching development, "3" is omitted.

In charts for words with velar initials, "k" stands for all velar initials--ʔ-, h-, h-, k-, kh-, g-, ŋ-. "kjan" would, then, include ʔjan, hjan, hjan, kjan, khjan, gjan, and ŋjan. In charts for labial initials, "p" stands for all labial initials--p-, ph-, b-, m-.

II. Finals of the Third Division.

Postinitially, the four divisions of Ancient Chinese contrasted in several ways. The first and second divisions had no glides; the third division had a *-j- glide, the fourth division an *-i- glide. The first division had the main vowels ə, â, u, as opposed to the second division, with front a as its sole main vowel. The Proto-Chinese/Archaic second-division *-r- glide which had neutralized the contrasts of a full roster of Proto-Chinese/Archaic vowels was lost no later than the Han Dynasty; even the third : fourth-division *-j- : *-i- contrast had been largely effaced by the seventh century.

The initials which appear before the finals of the four divisions are summarized in Chart 6. For Proto-Chinese we posit dental, labial, and velar initials. By Ancient Chinese the combination of dental initials with *-j- and *-r- glides had given rise to two additional initial series, the palatal and the retroflex. Proto-Chinese/Archaic *tj-, for example, yielded Ancient *tšj-; Proto-Chinese/Archaic *tr- yielded *t̚-.

All modern labiodental-fricative initials have their origin in the combination of labial initials and third-division finals. From the initial f-/v-/w- reflexes in modern dialects we infer labialization, and subsequently dentilabialization after oral stops, for certain words with labial initials and the third-division *-j- glide: *pj- → *pwj- → f-; *phj- → *phwj- → fh-; *bj- → *bwj- → v-; *mj- → *mwj- → w-. We infer the development of an epenthetic back *-w- from the classification of words with these initials as ho-k'ou ("with closed mouth") in the rime

dictionaries and rime charts, along with labialized velar initials such as *kw-; simple labial and velar initials are classified as k'ai-k'ou ("with open mouth"). The condition for this development was the presence of a back nuclear vowel: before finals with dental endings, *-u- and *-əu-; before finals with labial endings, *-u-; before finals with velar endings, *-â-, *-u-, and *-əu-. (Excepted from this rule are words with labial nasal initials and *-k, *-ŋ endings; the initials of these words were further labialized only before *-â-.)

The development of the *-w- was gradual. It must have begun in the pre-Archaic stage before labial and dental endings: with the same Archaic finals, *-âm, *-ân, *-əm, *-ən, we find two developments, one to a modern p-, the other to f- (e.g. Archaic *pjân : Mandarin pien; Archaic *pwjân : Mandarin fan). It must have continued into the post-Archaic stage before velar endings: corresponding to Archaic *pjəug, for example, there are two developments, one with fronting of the *-ə- to *-a- and retention of the labial-stop initial, the other with retention of the nonfront *-ə- and development of the f- initial.

The earliest recorded evidence of the completed change to f-/v-/w- is found in the fan-ch'ieh spellings of Hui Yüan's Yin-yi (720); the same initial distinctions are made in two other roughly contemporaneous dictionaries, Chang Shen's Wu-ching Wen-tzu (775-6) and Hui Lin's Yin-yi (783-810).

Chart 6. The Occurrence of Ancient Chinese Initials in the Four Divisions

<u>Initials</u>	<u>First Division</u>	<u>Second Division</u>	<u>Third Division</u>	<u>Fourth Division</u>
Dental stops, n, and l	X	0	0	X
Retroflex stops	0	X	X	0
Dental affricates and fricatives	X [no z-]	0	X	X [no z-]
Retroflex affricates and fricatives	0	X	X	0
Palatal affricates, fricatives, and ñ	0	0	X	0
Labials	X	X	X	X
Velars [including glottal stop]	X	X	X	X

Some third-division finals occur only after labial and velar initials:

-n	-t	-i or #	-m	-p	-u	-ŋ	-k
仙 b	薛 b	祭 b	鹽 b	葉 b	宵 b	唐 (b?)	陽 (b?)
元 c	月 c	廢 c	嚴凡 c	業之 c			
真 b	質 b	脂 b	侵 b	緝 (b?)	幽 (b?)		
殷~文 c	迄~物 c	微 c					
		支 b					

A. Finals with *-n, *-t Endings.

The Pre-Archaic/Southern Ancient "a" : "b" : "c" Contrasts.

There are among the third-division finals with *-n, *-t endings two sets of categories, distinguished by vowel height:

Lower Vowels			Higher Vowels		
		Tones			Tones
*-n	仙	(A,B,C)	真		(A,B,C)
	元	(A,B,C)	殷~文		(A,B,C)
*-t	薛	(D)	質		(D)
	月	(D)	迄~物		(D)

(The 殷 and 迄 categories have only words with nonlabialized velar initials; words with labial and labialized velar initials are in the 文 and 物 categories.)

Four of these eight categories have subcategories based on a front ("a") : nonfront ("b") distinction:

仙^a (*-jan), 仙^b (*-jân); 真^a (*-jin), 真^b (*-jên);
 薛^a (*-jat), 薛^b (*-jât); 質^a (*-jit), 質^b (*-jêt).

In the Ch'ieh-yün, "a" : "b" : "c" contrasts are limited to words with labial and velar (plain and labialized) initials; all other words are in the "a" category. The front vowels of some of the Ch'ieh-yün's "a"-category words with nonlabial, nonvelar initials may, however, be assumed to have derived through fronting from the nonfront ("b" category) vowels â and ə: even in Archaic Chinese there are *-i- : *-ə- contrasts after nonlabial, nonvelar initials.

Among both lower-vowel and higher-vowel categories there are, then, three-way distinctions, "a", "b", and "c", which were at the pre-Archaic stage *a, *â, *əu (lower) and *i, *ə, *u (higher). After labial initials, examples of minimal "a" : "b" : "c" contrasts are common enough in the Ch'ieh-yün. (See Chart 7 for some of these examples.) After velar initials, however, such examples are rare, and rarer after simple velar initials than after labialized velars. Chart 8 lists these three-way sets.

The evidence on this three-way contrast is of many sorts, ranging from phonetic elements, which go beyond the Archaic stage, to the modern Min dialects and Go-on, which provide clues to the early phonetic realization of these vowels.

Evidence from Phonetic Compounds

Phonetic compounds document the pre-Archaic three-way contrast, of both high and low vowels, before *-n, *-t endings.

(1) In the "a" category we find phonetic elements which are not used for words in the "b" or "c" category. These elements are, however, often used for words in the fourth division: "a"-category words with labialized velar or labial initials (rarely simple velar initials) and a low vowel, of the types *kwjan, *kwjat, *pjan, *pjat, share phonetic elements with fourth-division words of the types *kwian, *kwiat, *pian, *piat, indicating a common front vowel, *-a-. "a"-category words with simple velar initials and a high vowel, *kjin, *kjit, share phonetic elements with the fourth-division words in *-in, *-it, again indicating a common front vowel, here *-i-.

Chart 7

Three-way Contrasts of Third-division Words
with *-n, *-t Endings and Labial Initials

	"a" category	"b" category	"c" category
1. Tone B:	*pjan 福	*pjân 辯	*pwjəun 反
2. Tone B:	*bjan 梗	*bjân 辯	*bwjəun 飯
3. Tone B:	*mjjan 緬	*mjân 免	*mwjəun 晚
4. Tone C:	*bjan 便	*bjân 弁	*bwjəun 餅
5. Tone D:	*pjat 斃	*pjât 剔	*pwjət 髮
6. Tone D:	*bjat 幣	*bjât 剔	*bwjət 伐
7. Tone A:	*pjjin 賓	*pjjen 斌	*pwjəun 分
8. Tone A:	*mjjin 民	*mjjen 岷	*mwjun 文
9. Tone A:	*bjjin 頻	*bjjen 貧	*bwjun 分
10. Tone B:	*mjjin 免	*mjjen 敏	*mwjun 吻
11. Tone D:	*pjtit 必	*pjjet 筆	*pwjut 弗
12. Tone D:	*bjtit 鄙	*bjjet 弼	*bwjut 佛
13. Tone D:	*mjtit 密	*mjjet 密	*mwjut 物

Chart 8

Three-way Contrasts of Third-division Words
with *-n, *-t Endings and Velar Initials

	"a" category	"b" category	"c" category
1. Tone B:	*kjan 楷	*kjân 蹇 蹇 蹇 蹇	*kjəun 建 健 健 勁
2. Tone A:	*ʔjin 因 姻 櫻 櫻	*ʔjən 顛	*ʔjun 殷 慇 隱
3. Tone D:	*hjit 欸 趨 欸	*hjət 𪗇	*hjut 𪗇 𪗇 𪗇 𪗇
		[Note that this word is also given in the "c" category.]	
4. Tone A:	*ʔwjan 娟 娟 媛	*ʔwjan 嫵	*ʔwjəun 鴛 鴛 媛 媛
5. Tone B:	*gwjan 娟	*gwjân 圈 圈	*gwjəun 圈 眷
6. Tone C:	*kwjan 絹 娟 野	*kwjân 眷 眷 眷 眷	*kwjəun 辮
7. Tone D:	*ʔwjat 欸	*ʔwjât 𪗇	*ʔwjəut 𪗇 𪗇 𪗇
8. Tone A:	*kwjin 均 鈞 鈞	*kwjən 鈞 鈞 鈞 鈞	*kwjun 君 棍 軍 鞞
9. Tone C:	*kwjin 均 鈞	*kwjən 棍 擦 擦	*kwjun 棍 擦 擦 𪗇
		[Here the "b" category represents the older pronunciation, the "c" category the newer, according to the <u>Ch'ieh-yün.</u>]	
10. Tone D:	*kwjit 橋 蕎 縞	*kwjət 𪗇	*kwjut 𪗇 𪗇

For example:

1. Pre-Archaic *-jan.

Phonetic elements: 連 前 莪 肩 農
 III 仙^a (*-jan): 連 煎 錢 捐 農羽
 IV 先 (*-ian): 蓮 前 淺 涓 獮

2. Pre-Archaic *-jin.

Phonetic elements: 真 羴 馭 因
 III 真^a (*-jin): 真 羴 緊 因
 IV 先 (*-in): 顛 憐 堅 咽

3. Pre-Archaic *-jat:

Phonetic elements: 皆
 III 薛^a (*-jat): 皆 皆 皆 皆
 IV 屑 (*-iat): 皆 皆 皆 皆

Shared phonetic elements link the third-division high-vowel "a"-category *-t ending words with three other categories:

4. Pre-Archaic *-jit:

Phonetic element: 比
 III 質^a (*-jit): 比 比 ; III 脂^a (*-jid): 比 比
 IV 齊 (*-id): 比 ; IV 屑 (*-it): 比

(Sound change has put some words with pre-Archaic *-jid in the 脂^b category, e.g. 比 [Archaic *phjid, post-Archaic *phjød]; cf. II.b.: The Post-Archaic Lowering of *-jid to *-jød.)

(2) The "c"-category words have a number of phonetic elements which are not used for "a" or "b"-category words:

1. Pre-Archaic *-jəun: 元^c; Phonetic elements: 原 員 袁
2. Pre-Archaic *-jun: 殷^c; Phonetic elements: 殷 曷 云 熏
3. Pre-Archaic *-jəut: 月^c; Phonetic elements: 厥 粵 曰
4. Pre-Archaic *-jut: 迄物^c; Phonetic elements: 乞 鬱

(3) Among the high-vowel "b"-category words, there are phonetic elements which are never used for "a" or "c"-category words. This is less common in the low-vowel "b" categories:

1. Pre-Archaic *-jân: 仙^b; Phonetic element: 衍
2. Pre-Archaic *-jât: 薛^b; Phonetic elements: 牙 別
3. Pre-Archaic *-jən: 真^b; Phonetic elements: 辰 屯
4. Pre-Archaic *-jet: 質^b; Phonetic element: 韋

(4) Some of the phonetic elements used for high-vowel "b"-category words, and most of those used for low-vowel "b"-category words are also used for "c"-category words. These elements may have been first used in the north for a Shih-ching-type dialect where (*-əu- →) *-u^c had merged with *-â^b, and *-u^c with *-ə^b. But if this was so in all cases, why were there so few phonetic elements for the low-vowel "b" category in the pre-merging period? Another possibility is that at least some of the elements were first used for either *-â^b, *-ə^b or (*-əu- →) *-u^c, *-u^c in the pre-merger stage and were then extended to words of other categories after the merger. Once again, unless we suppose that a number of such elements were first used for the "b" category, we must ask why there were so few phonetic elements for the low-vowel "b" category. But if they were all used originally for the "b" category, why was extension to the "c" category more common among

low vowels than among high vowels?

Examples:

1. Low vowels, *-n endings.

Phonetic element: 建

III 仙^b (*-jân): 健 驥 ; III 元^c (*-jəun → *-jun → *-jân): 建 健 健

2. Low vowels, *-t endings.

Phonetic element: 易

III 薛^b (*-jât): 謁 ; III 月^c (*-jəut → *-jut → *-jât): 謁 謁

3. High vowels, *-n endings.

Phonetic element: 董

III 真^b (*-jən): 董 董 ; III 殷^c (*-jun → *-jən): 謹 謹

4. High vowels, *-t endings.

Phonetic element: 出

III 質^b (*-jət): 出 絀 ; III 迄物^c (*-jut → *-jət): 出 出

Shih-ching-type "a" : "b"/"c" Systems.

In most modern Chinese dialects, including the Mandarin dialects, and in Kan-on, which is based on a northern Chinese dialect, there is after nonlabial initials just one low vowel and just one high vowel where for pre-Archaic Chinese we reconstruct three lower vowels and three higher vowels. Kan-on, for example, has -en for 仙 / 元, -etsu for 薛 / 月, -in for 真 / 殷, and -itsu for 質 / 迄. (With labial initials, the changes leading to dentilabialization have kept the "c"-category words

distinct in both initial and vowel.)

At a less-advanced stage of merging in this development, Shih-ching Archaic still has only "a" : "b"/"c" vowel contrasts after nonlabial initials (cf. Chart 9). Sino-Korean has the same contrasts, with, for example, such correspondences for words with velar initials as 仙^a : -ien, 仙^b, 元^c : -en, 真^a : -in, 真^b, 殷^c : -un. (For examples, see Charts 10-13; note that Sino-Korean witnesses to some of the same linguistic facts as the phonetic elements: "a"-category words with (a) simple velar initials followed by either low or high vowels and (b) labialized velar initials followed by low vowels are homonymous with words with fourth-division finals.)

The Ch'ung-niu Doublets: "a"/"b" Merging.

The Ch'ieh-yün groups together characters with the same fan-ch'ieh. Generally, all the fan-ch'ieh within one category have the same group of second characters, indicating a common final. Third-division categories where the words have labial or velar initials and dental or labial endings form an exception to this rule: here there are two groups of fan-ch'ieh. These groups of fan-ch'ieh correlate with two groups of words in the phonological charts and with two types of initial reflexes in Sino-Annamese. One member of these "ch'ung-niu" doublets ("a") is found in the fourth row of the rime charts and has a dental initial in Sino-Annamese (t- for oral stops, d- for nasals) where Chinese has a labial; the second ("b") is found in the third row of the rime charts and has a labial initial (b-, m-) in Sino-Annamese where Chinese has a labial. ("c"-category words are also given

Chart 9

Third Division: *-n Endings, Velar Initials; Shih-ching-type Development

1		2				Ch'ieh-yün Category
a	b	c	d	e		
kjan	— kjan	— kjan	— kjan	— kjan	a ㄐ	
kjaun	— kjàn	— kjàn	— kjàn	— kjàn	b ㄐ	
kjuen	— kjeun	— kjeun	— kjun	— kjàn	c ㄐ	
kjeun	— kjeun	— kjeun	— kjun	— kjàn		
kjin	— kjin	— kjin	— kjin	— kjin	a ㄐ	
kjen	— kjen	— kjen	— kjen	— kjen	b ㄐ	
kjun	— kjun	— kjun	— kjen	— kjen	c ㄐ	

Changes:

- a. au → â, ue → eu
- b. u → e
- c. eu → u
- d. u → â

Chart 10

Sino-Korean Correspondences: Third-division *-n, *-t Finals
Simple Velar Initials; Low Vowels

- | | |
|---------------------------------|--|
| 1. Third-division a category: 仙 | Third-division b category: 仙 |
| Fourth-division category: 先 | Third-division c category: 元 |
| kiən: (a) 甄 遣 繼 謹 | ken: (b) 件 虔 乾 愆 褰 蹇 |
| (4) 肩 堅 見 簡 牽 | (c) 建 健 |
| iən: [no a examples] | ən: (b) 焉 諺 譎 |
| (4) 煙 硯 燕 宴 研 | (c) 言 偃 蠃 隤 |
| hiən: [no a examples] | hen: [no b examples] |
| (4) 賢 絃 顯 現 | (c) 軒 楹 巔 憲 |
| 2. Third-division a category: 薛 | Third-division b category: 薛 |
| Fourth-division category: 屑 | Third-division c category: 月 |
| kiəl: [no a examples] | kəl: (b) 榮 傑 |
| (4) 結 潔 | kal: (b) 竭 |
| iəl: [no a examples] | (c) 謁 |
| (4) 噎 | əl: [no examples]; al: [no b examples] |
| hiəl: (a) 牙 | (c) 謁 |
| [no 4 examples] | həl: [no b examples] |
| | (c) 謁 |

Chart 11

Sino-Korean Correspondences: Third-division *-n, *-t Finals
Simple Velar Initials; High Vowels

1. Third-division a category: 眞 Third-division b category: 眞
Third-division c category: 殷

kin: (a) 緊

kun: (b) 僅 覲

in: (a) 因 姻 茵 氤
漣 禪 印

(c) 斤 近 芹 靳 筋
勤 謹 謹 堯

un: (b) 銀

(c) 殷 隱 隱 隱

hun: (b) 興
曩

(c) 欣 昕

[c low vowel: 欸 (元)]

2. Third-division a category: 質 Third-division b category: 質
Third-division c category: 迄

kil: (a) 吉 桔 桔 詰 鷓

kwil: (c) 乞

il: (a) 一

wil: (b) 乙

hil: (a) 詰

hwil: (c) 屹 迄

Chart 12

Sino-Korean Correspondences: Third-division *-n, *-t Finals
Labialized Velar Initials; Low Vowels

- | | |
|---------------------------------|--|
| 1. Third-division a category: 仙 | Third-division b category: 仙 |
| Fourth-division category: 先 | Third-division c category: 元 |
| kiɛn: (a) 狷絹 | kuɛn: (b) 卷拳捲園眷權 |
| (4) 犬畎蠲 | (c) 券勸 |
| iɛn: [no a examples] | uɛn: (b) 員圓園 |
| (4) 淵 | (c) 元原源袁遠苑爰垣 |
| hiɛn: [no a examples] | huɛn: [no b examples] |
| (4) 玄法絃懸 | (c) 喧萱 |
| 2. Third-division a category: 薛 | Third-division b category: 薛 |
| Fourth-division category: 屑 | Third-division c category: 月 |
| kiɛl: (a) 缺 | kuɛl: [no b examples] |
| (4) 決訣缺閱 | (c) 厥厥魚厥閱 |
| hiɛl: [no a examples] | uɛl: [no b examples]; ual: [no b examples] |
| (4) 血穴 | (c) 月越 (c) 曰 |

Chart 13

Sino-Korean Correspondences: Third-Division *-n, *-t Finals
Labialized Velar Initials; High Vowels

1. Third-division a category: 眞 Third-division b category: 眞
Third-division c category: 文
- kiun: (a) 勻均 kun: (b) 窟
(c) 軍君郡涓裙群
un: (b) 隕殞韻
(c) 運云雲耘
hun: [no b examples]
(c) 暈韻訓勳薰燻
2. Third-division a category: 質 Third-division b category: 質
Third-division c category: 物
- kiul: (a) 橘 kul: [no b examples]
(c) 屈倔掘崛窟
ul: [no b examples]
(c) 蔚尉鬱

in the third row.)

The rime charts have just four rows; the primary criterion for a character's placement in a given row is its membership in the corresponding division of the Ch'ieh-yün. So, in the fourth row we find the fourth-division categories 添 *-iam, 帖 *-iap, 先 *-ian, 屑 *-iat, 青 *-iaŋ, 錫 *-iak, 齊 *-iai, and 蕭 *-iau. Shared phonetic elements, however, provide a second criterion by which certain third-division subcategories find their way into the fourth row when there is insufficient space in the third row. In a number of cases, for example, third-division "a" subcategories in the fourth row have phonetic elements indicating an i-vowel--unlike the "b" subcategories in the third row, but like the fourth-division categories. [Cf. (1) fourth row: fourth-division category 齊 *-iai (Archaic *-ig), third-division category 支^a *-ja (Archaic *-jig); third-row space used for third-division category 支^b *-jâ (Archaic *-jâ); (2) fourth row: fourth-division category 錫 *-iak (Archaic *-ik), third-division category 昔 *-jak (Archaic *-jik); third-division space in the third row left vacant to indicate a nonoccurring 陌_三 *-jak to parallel the A-B-C tone 庚_三 *-jaŋ; (3) fourth row: fourth-division category 齊 *-iai (Archaic *-id), third-division category 脂^a (Archaic *-jid); third-row space used for third-division category 脂^b *-ji (Archaic *-jêd); (4) fourth row: fourth-division category 屑 *-iat (Archaic *-it), third-division category 質^a *-jit (Archaic *-jit); third-row space used for third-division category 質^b *-jit (Archaic *-jêt).]

The correlation of Sino-Annamese t-, Archaic front *-i- with the "a"

category, Sino-Annamese p-, Archaic nonfront (central) *-ə- with the "b" category supports the hypothesis that within Archaic Chinese there was a front a : nonfront (back) â contrast: Sino-Annamese t-, Archaic front *-a- would then be the correlates of the "a" category, Sino-Annamese p-, Archaic nonfront *-â- the correlates of the "b" category.

The attempt to find Archaic antecedents for the ch'ung-niu doublets is, however, doomed to failure: each of the Archaic finals which corresponds to a "b" subcategory also corresponds to another, totally distinct, category which we may call the "c" category, as for example, Archaic *-jân : Ch'ieh-yün 仙^b, 元^c; Archaic *-jât : Ch'ieh-yün 薛^b, 月^c; Archaic *-jen : Ch'ieh-yün 真^b, 殷/文^c; Archaic *-jæt : Ch'ieh-yün 質^b, 迄/物^c. One feature unique to "c"-category words is the development of sequences of labial-stop initials and *-j- to semivowels (from *m-) or labiodental fricatives (from *p-, *ph-, *b-). The labial initials of categories "a" and "b" are still labial stops, oral or nasal, in modern Chinese dialects; those of category "c" have changed to f, v, h, h, ɸ, β, or w. Sino-Annamese has fricatives for both oral-stop and nasal "c"-category labial initials: ph [f] for original oral-stop initials, v for original nasal initials.

The Min Dialects and Go-on: Relics of an "a"/"b" : "c" System.

It is in some of the southern, Min dialects and in Go-on, which is based on a southern Chinese dialect that we find again the non-Shih-ching-type system recorded by the Ch'ieh-yün in which the "a" and "b" categories have merged, leaving the "c" category distinct (cf. Chart 14). Foochow,

for example, has a low front -e- in words of the 仙^{a,b} category, a low, back rounded -o- in words of the 元^c category (Chart 15). Foochow and Amoy both have a high front -i- in words of the 真^{a,b} category and a high rounded vowel--back -u- in Amoy, fronted -y- in Foochow--in words of the 殷^c category (Chart 16).

There are three exceptions to the above statement: (1) A few of the Ch'ieh-yün's 仙^b words have -o- in Foochow: 寔 kioŋ (Go-on kon), 件 kioŋ (Go-on gen), 馬 ioŋ (Go-on en). Apparently, beside the major change of fronting between *-j- and *-n/*-t, in which *-â- became *-a- (and then -e-), there was a minor one in which, in the same environment, raising took place, and some instances of *-â- changed to *-əu- (→ -o- in Foochow). (2) There are two instances of high-vowel "b"-category words in which *-ə- has changed to *-u- in a parallel to the *-â- → *-əu- change: 巾 Foochow kyŋ, Amoy kun (Go-on kon); 銀 Foochow ŋyŋ, Amoy gun (Go-on gon). From the comment in the Ch'ieh-yün that 標 (with graphic variants 標 and 摺) had two pronunciations, the "b"-type the older one, the "c"-type the modern one we now infer on the basis of Foochow changes an earlier *kjən 標 which changed to *kjun. (3) One word in the Ch'ieh-yün's 殷 (*-jun) category has -i- in both Foochow and Amoy: 謹 Foochow kiŋ, Amoy kin (Go-on kon). This may be an error in the Ch'ieh-yün's classification, based on a Shih-ching-type merging: 謹 could be a 真^b word, i.e. one for which we would reconstruct *kjən.

Reflexes of the "c" categories, where these have not merged with the

Category	Example	Foochow	Go-on	Category	Example	Foochow	Go-on
ㄒㄢ	乾	kien	gen	元 c	建	kion	kon
ㄒㄢ	虔	kien	ken	元 c	寔	kion	kon
ㄒㄢ	遣	khien	ken	元 c	建	kion	kon
ㄒㄢ	遣	khien	ken	元 c	健	kion	gon
ㄒㄢ	健	khien	ken	元 c	健	kion	kon
ㄒㄢ	健	khien	ken	元 c	言	nion	gon
ㄒㄢ	寔	nien	gen	元 c	寔	hion	kon
ㄒㄢ	寔	nien	gen	元 c	寔	hion	kon
薛	保	kiek	ketši	月 c	勳	hiok	kotši

Chart 15

Foochow and Go-on Correspondences: Third-division *-n, *-t Finals
Simple Velar Initials; Low Vowels

Category	Example	Foochow	Amoy	Go-on	Category	Example	Foochow	Amoy	Go-on
a	緊	kiŋ	kin	kin	殷	斤	kyŋ	kun	kon
b	儻	kiŋ	kin	gin	殷	筋	kyŋ	kun	kon
a	因	iŋ	in	in	殷	葦	khyŋ	khun	gon
a	姻	iŋ	in	in	殷	芹	khyŋ	khun	gon
a	茵	iŋ	in	in	殷	欣	hyŋ	him	kon
a	印	iŋ	in	in	殷	忻	hyŋ	him	kon
b	垠	ŋiŋ		gin	殷	殷	yŋ	un	on
					殷	愆	yŋ	un	on
					殷	隱	yŋ	un	on
					殷	齒	ŋyŋ	gun	gon
					殷	圻	ŋyŋ	gun	gon
a	吉	keik	kiat	kitʃi	迄	乞	khɔyk	khit	kotʃi
b	乙	ʔeik	ʔit			吃	ŋeik	gut	

Chart 16

Foochow, Amoy, and Go-on Correspondences: Third-division *-n, *-t Finals
Simple Velar Initials; High Vowels

"b" categories, point then to original back rounded vowels. The higher-vowel "c" categories clearly had *-u-. Our inventory of proto-Chinese/Archaic vowels does not include *-o- (cf. Charts 1 and 2); proto-Chinese vowels with a back rounded element include, in addition to *-u-, just the three diphthongs, *-au-, *-uə-, and *-əu-. We have assumed a pre-Archaic change of proto-Chinese *-au- to *-â- and *-uə- to *-əu- before labial and dental endings. Since the "c" category was distinct from the "b" (*-â-) category, *-əu- is left as the lower "c"-category vowel. The change of *-əu- to *-o-, which Foochow and Go-on imply, we place in the post-Ch'ieh-yün period.

The reconstruction of these back rounded vowels for the "c" categories fits in with what we know about the rimes of these categories in non-Shih-ching-type poetry, particularly of the Southern Dynasties, where (*-jəun), for example, rimes with *-ən, *-jən, *-wən, *-wjən, and *-jun. The neglect of evidence from non-Shih-ching-type poetry and the preoccupation with the later rime charts in the study of the Ch'ieh-yün may have had one source in a bias fostered by the knowledge of modern Mandarin, which is comfortably close to the language of these charts. In the charts of Yun-ching and Ch'i-yin Lüeh, for instance, words of the ㄨ̄ category are listed together with those of the ㄨ and ㄨㄛ categories.

The order in which the categories of third-division finals with *-n, *-t endings are given in the Ch'ieh-yün's table of contents reflects this non-Shih-ching-type rime practice: the ㄨ̄ category (*-jəun) is listed in the midst of the categories with *-ə/*-u- vowels (Chart 17.a, categories 1-7),

Order of citation in
the Ch'ieh-yün's table
of contents →

真 臻 文 殷 元 魂 痕 寒 刪 山 先 仙
1 2 3 4 5 6 7 8 9 10 11 12

Rime dictionaries

↓

Lü Ching	1 = 2 = 3	?	5	6 = 7	8 = 9	10	11	12	
Hsia-hou	1	2	3	4*	5 = 6 = 7	8	9	10	11 = 12
Yang	1 = 2	3 = 4	5 = 6 = 7	8	9	10 = 11 = 12			
Tu	1 = 2	3 = 4	5 = 6	?	8	?	10	11 = 12	
Li Chi-chieh						9 = 10			

* 2 = 4

a. Finals with *-n Endings

Order of citation in
the Ch'ieh-yün's table
of contents →

質 物 柳 迄 月 沒 末 黠 鎋 屑 薛
1 2 3 4 5 6 7 8 9 10 11

Rime dictionaries

↓

Lü Ching	1 = 2		4	5	6				10	11
Hsia-hou	1 = 2		4	5 = 6					10 = 11	
Li Chi-chieh									10 = 11	

b. Finals with *-t Endings

Chart 17

Non-Shih-ching-type Rimes:

Evidence from the Ch'ieh-yün and Early Rime Dictionaries

immediately between 殷 *-jun and 魂 *-wən, not with the categories with *-a/*-â- vowels (Chart 17.a, categories 8-12), where development along the Shih-ching line (*-jəun → *-jun → *-jân) would put it. The combining of 元 (*-jəun), 魂 (*-wən), and 痕 (*-ən) into one category in the rime dictionaries of both Hsia-hou Yung and Yang Hsiu-chih points to the same fact (Chart 17.a). The 月 category (*-jəut), put between 迄 *-jut and 沒 *-wət/*-ət, is similarly separated from the *-a/*-â- categories (Chart 17.b, categories 7-11).

Changes in Labial Initials: Labialization, Dentilabialization, and Dentalization.

With velar initials, the merging of the "b" : "c" contrasts in the Shih-ching-type development produces homonyms; with labial initials, the high and mid back vowels (*u, *əu) form the condition for the labialization of labial initials in words with *-n, *-t endings which is manifest in most modern Chinese dialects and Sino-Annamese as a labiodental fricative or labial semivowel contrast to the oral or nasal labial-stop initials of categories "a" and "b" (i.e. f : p, f : ph, v : b, w : m). (See, for examples, Charts 18 and 19.)

Among the words with nasal initials, the changes which lead from *mwj- to w- may be short-circuited, so that the "c" category in modern dialects may show m- here, too. And yet there are traces of the *mwj-: because of the earlier loss of *-j- after labialized labial initials than after simple labial initials, certain vowel changes for which the presence

of *-j- or *-i- forms the condition do not take place. So, for the "c"-category low vowels, Cantonese has -a:- before *-n endings, Mandarin has -a-; for the "a" and "b"-category low vowels, Cantonese has -i-, Mandarin has -ie- (Chart 18; similarly, in Sino-Korean, category "c" has -a-, categories "a" and "b" have -iə-). The series of changes which leads from *pwj- to f- and so forth may be stated as follows:

1. -w- → -f- between p(h)- and -j-; -w- → -v- between b- and -j-
2. -j- → -∅- after p(h)f-, bv-, mw-
3. p(h)-, b-, m- → -∅- before -f-, -v-, -w-
4. -h- → -∅- after f-
5. -w- → -∅- after m-

So:

pwj- → pfj- (1) → pf- (2) → f- (3)
 p^hwj- → p^hfj- (1) → p^hf- (2) → f- (3)
 bwj- → bvj- (1) → bv- (2) → v- (3)
 mwj-: (a) → mw- (2) → w- (3)
 or (b) → mw- (2) → m- (5)

Sino-Annamese shows consonantal correspondences for labial initials (Chinese p- : Sino-Annamese t-, p-; Chinese m- : Sino-Annamese d-, m-) which correlate with the Chinese "a" : "b" contrasts deriving from *-ja- : *-jâ- and *-ji- : *-jə-; it also shows the loss of these vocalic contrasts, in part through the same fronting changes we see in both the north and south of China. To avoid positing an extended period of contact with Chinese, during which Sino-Annamese was revised in tandem with Chinese

changes, we propose two sets of changes (Charts 21 and 22) which differ only in their later stages; one of these sets leads from Archaic Chinese to Mandarin, the other to Sino-Annamese. (The earlier Shih-ching-type development, from proto-Chinese to Archaic Chinese, is outlined in Chart 20.) Though we do not know whether or not Sino-Annamese was based on the official standard language of China, it undeniably has much in common with modern Mandarin. If we do not involve Sino-Annamese, we can derive Mandarin in a more direct way from the Archaic Chinese system, omitting the early change to *-i- of a *-j- not preceded by *-w- and followed by a nonfront vowel (Chart 21, a.); more direct derivations are, of course, not necessarily more accurate historically.

Category	Example	Archaic Chinese	Cantonese	Mandarin	Soochow	Sino-Annamese	Sino-Korean
a	便	*bjan	pín	pien	biI	tiên	pien
a	緜	*mján	min	mien	miI	dién	mien
a	滅	*mjat	mit	mie	miə?	diêt	miəl
b	弁	*bjân	pín	pien	biI	biên	pien
b	免	*mjân	min	mien	miI	miên	mien
b	別	*bját	pit	pie	biə?	biêt	piəl
c	餞	*bwjân	fa:n	fan	vE	phạn	pan
c	晚	*mwjân	ma:n	wan	uE	vãn	man
c	鞞	*mwjât	ma:t	wa	ma?	miêt	mal

Chart 18

Labialization, Dentilabialization, and Dentalization

*-n, *-t Finals; Low Vowels

Category	Example	Archaic Chinese	Cantonese	Mandarin	Soochow	Sino-Annamese	Sino-Korean
a	賓	*pjɿn	pan	pin	pin	tán	pin
a	真	*bjɿn	pan	p'in	bin	tán	pin
a	真	*mjɿn	man	min	min	dán	min
a	質	*pjɿt	pit	pi	piə?	tát	phil
a	質	*mjɿt	mat	mi	miə?	mát [sic]	mil
b	真	*pjɿn	pan	pin	pin	bán	pin
b	真	*bjɿn	pan	p'in	bin	bán	pin
b	真	*mjɿn	man	min	min	mán	min
b	質	*pjɿt	pat	pi	piə?	bút	phil
b	質	*mjɿt	mat	mi	miə?	mát	mil
c	文	*pwjɿn	fan	fɛn	fɛn	phán	pun
c	文	*bwjɿn	fan	fɛn	vɛn	phán	pun
c	文	*mwjɿn	man	wɛn	vɛn	ván	mun
c	物	*pwjɿt	fat	fu	fu	phát	pul
c	物	*mwjɿt	mat	wɥ	fɛ?, vɛ?	vát	mul

Chart 19

Labialization, Dentilabialization, and Dentalization

*-ɿ, ʔ-t Finals; High Vowels

Chart 20

Third Division: *-n Endings, Labial Initials; Shih-ching-type Development

		1				2				Ch'ieh-yün Category	Sino-Annamese
		a	b	c	d	e	f				
a	pjan	— pjan	— pjan	— pjan	— pjan	— pjan	— pjan	— pjan	— pjan	仙 ^a	tien (tien)*
	pjaun	— pjân	— pjân	— pjân	— pjân	— pjân	— pjân	— pjân	— pjân	仙 ^b	pjen (bien)
	pjuen	pjeun	— pjeun	— pjeun	— pjeun	— pjeun	— pjeun	— pjeun	— pjeun	元 ^c	fan (phan)
	pjeun										
	pjin	— pjin	— pjin	— pjin	— pjin	— pjin	— pjin	— pjin	— pjin	真 ^a	tʌn (tân)
	pjen	— pjen	— pjen	— pjen	— pjen	— pjen	— pjen	— pjen	— pjen	真 ^b	pʌn (bân)
	pjun	— pjun	— pjun	— pjun	— pjun	— pjun	— pjun	— pjun	— pjun	文 ^c	fʌn (phân)

* Forms in parentheses are in traditional Vietnamese transcription.

Changes:

- a. au → á, ue → eu
- b. pj- → pwj- before u, eu
- c. u → e
- d. eu → u
- e. u → á

Chart 21

From Archaic Chinese to Sino-Annamese (via a Mandarin-type Dialect): Third-division *-n Finals; Labial Initials

2	a	b	c	d	e	Sino-Annamese			Ch'ieh-yün Category	
						f	g	h		
	pjan	pjan	pjan	pjen	pjen	tjen	tjen	tjen	tien (tien)	a
	pjan	pjan	pjan	pjen	pjen	pjen	pjen	pjen	pjen (bien)	b
	pwjan	pwjan	pwjan	fân	fân	fân	fân	fân	fân (phan)	c
	pjin	pjin	pjin	pjen	pjen	tjen	tjen	ten	tân (tân)	a
	pjen	pjen	pjen	pjen	pjen	pjen	pjen	pen	pân (bân)	b
	pwjen	pwjen	pwjen	fên	fên	fên	fên	fên	fân (phân)	c

Chinese : Sino-Annamese correspondences, with the exception of p- : b- (Vietnamese has no initial voiceless Labial stop), may be viewed as orthographic: Ch. -e- : SA -a-; Ch. -â- : SA -a-; Ch. p- : SA b-; Ch. f- : SA ph- [f]. (The conventional transcription is given in parentheses.)

Changes:

- a. -j- not preceded by -w- → -i- before nonfront vowels. e. p- → t-, m- → t- d- before -j-
- b. -â- → -a- f. -j- → -i-
- c. -a- → -e- between -j-/-i- (not preceded by -w-) and -n/-t → -∅- before nonfront vowels
- i- → -e-
- d. pwj- → f- [through stages pfj- and pf-]

Chart 22

From Archaic Chinese to Modern Mandarin: Third-division *-n Finals; Labial Initials

2					4	Mandarin	Ch'ieh-yün
a	b	c	d	e	f	g	Category
pjan	— pjan	— pjan	— pjen	— pjen	— pjen	— pjen	a 山
pjan	— piân	— piân	— piên	— piên	— piên	— piên	b 仙
pwjân	— pwjân	— pwjân	— pwjân	— fân	— fân	— fân	c 元
pjin	— pjîn	— pjîn	— pjen	— pjen	— pjen	— pin	a 真
pjen	— piên	— piên	— piên	— piên	— piên	— pin	b 真
pwjen	— pwjen	— pwjen	— pwjen	— fen	— fen	— fen	c 文

Changes:

- a. -j- not preceded by -w- → -i- before nonfront vowels e. -j- → -i-
 b. -â- → -a- f. -e- → -i-; -ii- → -i-
 c. -a- → -e- between -j-/-i- (not preceded by -w-) and -n/-t
 -i- → -e-
 d. pwj- → f- [through stages pfj- and pf-]

B. Finals with *-d Endings.

The Pre-Archaic/Southern Ancient "a" : "b" : "c" Contrasts.

As with *-n, *-t endings, there are two sets of third-division, *-d ending categories, one with lower vowels, one with higher vowels:

Lower Vowels		Higher Vowels	
	Tones		Tones
祭	(C)	脂	(A,B,C)
廢	(C)	微	(A,B,C)

One category in each of these sets has, again, two subcategories, "a" and "b" (the ch'ung-niu doublets):

祭^a (*-jad), 祭^b (*-jâd); 脂^a (*-jid), 脂^b (*-jêd)

The remaining, "c", categories have the rounded vowels *-əu- (廢) and *-u- (微), which labialize preceding labial initials in the first of the changes which lead to dentilabialization.

Words in the Ch'ieh-yün's 祭 and 廢 categories, except for those with nonlabial, nonvelar initials (which occur only before finals of the 祭^a category), are listed in Charts 23 and 24. These categories do not have many members overall, and are characterized by a variety of limitations: (1) their members all have the C tone; (2) in the 祭^b category there are no words with labial initials (perhaps an indication that the fronting of *-â- was an early change in this environment); and (3) among the words with velar initials there is just one, dubious, example of a three-way contrast--dubious because 剝 'to cut (off the nose)' and 刈 'to cut (crops)' appear to be graphic variants of the same word.

a. Simple Velar Initials:

	祭 a	祭 b	廢 c
*k-		掬 罽 罽 罽 罽 罽 罽	
*kh-		憩 惕 藹 厥	
*g-		偈	
*ŋ-	藝 藝 藝 藝 藝 藝	劇	刈 恣 瘡
*ʔ-		緘	

b. Labialized Velar Initials:

*k-	歲 魚 厥 劇	
*kh-		卷
*g-		衛 牛
*ʔ-		穢 穢 穢 穢 穢
*h-		喙 瘰 錄
*h-	衛 衛 衛 衛 衛 轉 環 牛 水 豚	

Chart 23

Words with Velar Initials in the 祭 and 廢 Categories

	祭 a	廢 c
*p-	𪗇 𪗈 𪗉	廢 廢 廢 廢 廢 廢 廢 廢
*ph-		肺 柿 白 柿
*b-	𪗊 𪗋 𪗌 𪗍	吠 茂 𪗎
*m-	𪗏	

Chart 24

Words with Labial Initials in the 祭 and 廢 Categories

Evidence from Phonetic Compounds

(1) "a" category: phonetic elements are shared with fourth-division words.

1. Pre-Archaic *-jad.

Phonetic element: 帶

III 祭^a (*-jad): 滯 ; IV 齊 (*-iad): 帶

2. Pre-Archaic *-jid.

Phonetic element: 比

III 脂^a (*-jid): 比 比 ; III 質^a (*-jit): 比 比

IV 齊 (*-id): 篋 ; IV 屑 (*-it): 槐

(2) "c" category: phonetic elements are not shared with "a" or "b"-category words.

1. Pre-Archaic *-jəud: 廢^c

Phonetic elements: 發 市 艾

2. Pre-Archaic *-jud: 微^c

Phonetic elements: 幾 衣

(3) "b" category: phonetic elements are not shared with "a" or "c"-category words.

1. Pre-Archaic *-jâd: 祭^b

Phonetic elements: 執 曷 厥

2. Pre-Archaic *-jed: 脂^b

Phonetic elements: 佳 萃 豕 素 晶

(4) Phonetic elements shared by "b" and "c" category words.

1. Low vowels:

Phonetic element: 歲

III 祭^b (*-jâd): 歲 歲

III 廢^c (*-jeud →

*-jud → *-jâd): 歲 歲 歲 歲

2. High vowels:

Phonetic elements: 豈 既 希 非 貴 鬼 歸

III 脂^b (*-jêd): 豈 既 希 非 貴 鬼 歸

III 微^c (*-jud → *-jêd): 豈 既 希 非 貴 鬼 歸

Shih-ching-type "a" : "b"/"c", non-Shih-ching-type "a"/"b" : "c" Systems

Shih-ching Archaic has only "a" : "b"/"c" contrasts after nonlabial initials (cf. Chart 25). And once again, Sino-Korean follows the northern Ancient, Shih-ching-type mergings: 脂^a is pronounced -i (-iu after labialized initials); 脂^b and 微^c are, alike, pronounced -ui (-iu/-ue after labialized initials).

Chart 26 traces the development of the non-Shih-ching-type system implicit in the ('ieh-yün' classification from proto-Chinese to Foochow. Sound changes have neutralized the "a"/"b" : "c" contrasts after nonlabial initials in Foochow. Amoy colloquial, however, has examples of ki for 脂^{a,b}, kui for 微^c. Go-on, too, has preserved traces of these contrasts: for ho-k'ou words which in Ancient Chinese ended in *-Vi, Go-on has -e (cf. Chart 27); in a parallel to its contrast of -ai : -e for Ancient *-jei : *-wjei, Go-on has -i : -e for Southern Ancient *-ji : *-jui.

k'ai-k'ou			ho-k'ou		
<u>Ch'ieh-yün</u> Category	Ancient Value	Go-on	<u>Ch'ieh-yün</u> Category	Ancient Value	Go-on
治 (I)	-əi	-ai	灰 (I)	-wəi	-e
泰 (I)	-âi	-ai	泰 (I)	-wâi	-e
齊 (IV)	-iai	-ai	齊 (IV)	-wiai	-e
祭 (III)	-jai	-ei, -ai	祭 (III)	-wjai	-e
			廢 (III)	-wjəui (S)	-e
脂 (III)	-ji	-i	微 (III)	-juí (S)	-e

Chart 27

The Correlation of Go-on -e and ho-k'ou Words with Ancient Chinese *-Vi Finals.

[I = first division; IV = fourth division; III = third division. S = Southern Ancient; this is indicated only where Northern and Southern Ancient contrast.]

We find, then, from the 脂^b (*-jəd → *-ji) category, 器 Go-on ki; from the 微^c (*-jud → *-jui) category, 幾 Go-on ke, 豈 Go-on ke, 祈 Go-on ge, 衣 Go-on e, 希 Go-on ke. For these 微^c category examples, Foochow has ki (A1, B1), khi (B1), ki (A2), i (A1), hi (A1); the Foochow vowel of the 脂^b category 器 (khei C1) is conditioned by the C tone.

The Post-Archaic Lowering of *-jid to *-jəd.

The Ch'ieh-yün's classification shows that *-jid lowered to *-jəd after certain initials. There are, for example, no words in the 脂^a category with labial nasal initials; most words which are reconstructed on the basis of Archaic rimes as *mjid are in the 脂^b category, together with those reconstructed for Archaic as *mjəd. Though the *-jid : *-jəd contrast we reconstruct for Archaic Chinese is shown in the Ch'ieh-yün after some initials, and with some tones, e.g. after *b- with the B and C tones, or *gw- with the A tone, other large blocks of examples which have *-jid in Archaic Chinese but are classified as 脂^b in the Ch'ieh-yün suggest that this change, which began and was completed after *m-, spread to other environments where it was, however, not completed. [cf.

脂^b: 岐 Archaic *phjid (B), 訖 *pjid (C), 駢 *gwjid (A), 几 *kjid (B), 洎 *kjid (C).] It may have been this lowering of *i to *ə after certain initials and the later, extensive raising of *ə to *i after even more initials that made the reconstruction of the Archaic *-jid : *-jəd contrast so elusive: it was firmly established by Wang Li only in 1937 (Shang-ku Yün-mu Hsi-t'ung Yen-chiu, Tsing-hua Hsüeh-pao

12.433-540); Tung T'ung-ho provided additional evidence for the contrast (Shang-ku Yin-yün Piao Kao, Bulletin of the Institute of History and Philology, Academia Sinica 18.1-249 [1948]). Some questions still remain to be answered. Was the spread of lowering cut short by another change (perhaps that of *-d to -i)? How extensive was lowering? Did it affect both Shih-ching and non-Shih-ching-type developments?

In one subcategory of words with labial initials and *-jəd, the *ə failed to raise as far as i in some dialects; the results of this failure are seen in Mandarin 悲 pei (A), 非 fei (A), Soochow 悲 PE (A). (The *-jəd which was the source of Mandarin pei (A), fei (A) derived from the two categories 脂^b and 微^c.) Mandarin examples of a lower vowel after labial initials are found in all but one of the categories which, in general, had by the Ancient Chinese period merged in the vowel -i, i.e. 支^a (Proto-Chinese *-jig → *-jag), 支^b (*-jâ, *-jər), 脂^b (*-jəg, *-jəd, *-jəb), 微^c (*-jud); the exception is the subcategory 脂^a (*-jid), which never had a low vowel.

Tabu interference by the word for 'vagina', pi (A) in Mandarin, appears to have played a part in this phenomenon, as Hugh Stimston suggested (A Tabu Word in the Peking Dialect, Language 42.285-94 [1966]). (The effects of this tabu may go beyond even Ancient Chinese: there is no word with p- and tone A in the one category, 脂^a [*-jid], which would have led directly to homonymy with pi (A) 'vagina'.) Such interference, however, probably made itself felt through the inhibition of a sound change, raising, not through the later effacing of its effects by dialect

borrowing or graph pronunciation. If post-Ancient lowering were responsible for such Mandarin forms as 非心 pei (A), why is there no such example from the 非^a category?

C. Finals with *-m, *-p Endings.

The Ch'ieh-yün's Classification.

Finals with labial endings are outnumbered by those with dental and velar endings, both in the sum of their categories and in the examples supporting these categories. We know some of the changes which are responsible for this. There is, for example, evidence in the writing system of the change from *-b to *-d in some categories; again, when *-w- preceded *-əm, *-ə- was rounded and *-m changed to *-ŋ. It is probable that more labial endings changed to dental or velar than we can trace on the basis of internal evidence. Thus the Ch'ieh-yün's third-division *-m, *-p ending categories parallel the *-n, *-t, *-d categories only for the lower vowels; there are no higher-vowel "c" categories. This is due, in part, to that change in endings through which examples of Archaic *pwəm/*pwjem came into the Ch'ieh-yün's *-uŋ/*-juŋ category.

	Lower Vowels		Higher Vowels	
		Tones		Tones
*-m	鹽	(A,B,C)	侵	(A,B,C)
	嚴~凡	(A,B,C)		
*-p	業	(D)	緝	(D)
	業~乏	(D)		

The 凡 and 乏 categories have words with labial initials and, in a few cases, velar initials; the 嚴 and 業 categories have only words with velar initials. There are no labialized velar initials among

words with labial endings.

Before *-m and *-p, the ch'ung-niu doublets occur only with glottal-stop initials:

鹽^a (*ʔjam), 鹽^b (*ʔjâm); 侵^a (*ʔjim), 侵^a (*ʔjəm);
葉^a (*ʔjap), 葉^b (*ʔjâp); 緝^a (*ʔjip), 緝^b (*ʔjêp)

If we assume that the Ch'ieh-yün's classification was based on one dialect, the lower-vowel "b" : "c" distinction will certainly be suspect: a number of words, some with, some without a difference in graphic representation, are given in both the "b" and "c" categories: 醜 (A: b,c), 龠, 媿 (B: b,c), 穉, 穉 (B: b; C: c), 醜 (A: b; D: c), 穉 (B: b; D: c), 媿, 媿 (C: b,c), 穉 (D: b,c). There are even some contacts between the lower-vowel "a" and "c" categories: 媿, 媿 (B: a; C: c), 穉, 龠, 穉, 媿 (C: a; B: b,c).

The evidence is, however, against the assumption of one dialect underlying the Ch'ieh-yün's classification. On the basis of phonetic compounds, for example, we reconstruct the pre-Archaic vowel *-əu- for 醜 (*ʔjəum): classification in the "c" category would, then, be based on a Southern Ancient dialect; classification in the "b" category would be based on a Northern Ancient dialect in which the "c" category had merged with the "b" category by the Archaic period.

Evidence from Phonetic Compounds

Though the analysis of phonetic compounds among third-division words with *-m, *-p endings reveals the same pre-Archaic *a : *â : *əu contrasts as we have reconstructed before dental endings, the distribution of pre-

Archaic *-jam : *-jâm, *-jap : *-jâp does not correlate with that of the Ch'ieh-yün's "a" : "b" categories, which for both low and high vowels show a contrast only after the glottal initial. There had obviously been much change before *-m, *-p endings from pre-Archaic to Ancient Chinese. For vowels reconstructed on the basis of phonetic compounds we use "1", "2", "3" to correspond to the vowels reconstructed for the Ch'ieh-yün's "a", "b", "c" categories with dental endings.

We may assume that as before dental endings, so before labial endings pre-Archaic Chinese had the vowels *i, *ə, *u. For *-jəm/*-jəp there is ample support in phonetic elements shared with categories in other divisions for which we reconstruct an *ə vowel. Phonetic elements of 𪛗 category words which are not shared with these other categories may (but do not necessarily) imply *-jim/*-jip; there would then be instances of *i followed by a labial which merged with *ə followed by a labial, in a parallel to the merging of *-jam and *-jâm, *-jap and *-jâp (or *-jid and *-jəd). The sharing of phonetic elements with other categories is out of the question here. There are no categories in other divisions for which we can reconstruct *-im or *-ip. We posit, tentatively, a change of labial to dental after front vowels, a change which was especially thoroughgoing after *i. We know that some pre-Archaic labial endings changed to dental: these are the *-jəb/*-jâb words which merged with the words with *-jəd/*-jâd endings. There is evidence for this in phonetic compounds. We may suspect that there was more labial to dental change than meets the eye--*-b, *-p, *-m may have changed to *-d, *-t, *-n

after *i and after some instances of *a at such an early time that there is no trace in phonetic compounds of a labial origin--but for now this must remain a suspicion: phonetic compounds reveal no link.

The list of phonetic elements below is complete; however, only a few representative examples of the compounds in which they occur are given here. For details on Northern Ancient versus Southern Ancient classifications (N, S), see Chapters III and V on the first and second divisions.

I. *-m endings.

1. Pre-Archaic *-jam; Shih-ching *-jam.

Phonetic elements: 向 兼

III 鹽¹ (*-jam): 闕 兼 ; I 罕 (*-am [which later merged with *-əm]): 向 ; II 咸 (*-ram): 陷 兼 ; IV 添 (*-iam): 魚 兼

2. Pre-Archaic *-jâm; Shih-ching *-jâm.

Phonetic elements: 𪗇 斬

III 鹽² (*-jâm): 鹽 斬 ; I 談 (*-âm): 藍 暫 ; II 銜 (*-râm): 藍 斬

(Though there are a few words in the second-division 咸 [*-râm] category with the phonetic elements 𪗇 , 斬 , there are roughly five times as many in the 銜 [*-ram] category. We infer that the use of these elements was extended to the 咸 words after *-râm merged with *-ram.)

3. Pre-Archaic *-jeum; Shih-ching *-jâm.

Phonetic elements: 奄 奔 嚴 僉

(a) Northern classification:

III 鹽³ (*-jəum → *-jum → Archaic *-jâm): 淹 傘 斂

(b) Southern classification:

III 嚴 / 凡^c (*-jəum → *-jum [→ *-jəm → *-jam]): 淹
嚴 斂 險

I 覃 (*-əum → *-um [→ *-âm, N; → *-əm, S]): 淹 嬖

II 銜 (*-rəum → *-rum → *-râm, N): 黯 嚴 驗

II 咸 (*-rəum → *-rum → *-rəm → *-ram, S): 驗

(After labial initials, there is no North/South distinction: 貶 *pjəum

B [III³]; 泛 *phjəum C [III^c].)

4. Pre-Archaic *-jim; Shih-ching *-jəm.

Phonetic element [not shared with other categories]: 心

Example: III 侵¹ (*-jim): 心 沁

5. Pre-Archaic *-jəm; Shih-ching *-jəm.

Phonetic elements: 音 咸

III 侵² (*-jəm): 音 鹹 ; I 覃 (*-əm): 暗 感 ;

II 咸 (*-rəm): 緝 咸

6. Pre-Archaic *-jum; Shih-ching *-jəm.

Phonetic element : 今

III 侵³ (*-jum): 今 ; III 嚴 / 凡³ (*-jəum): 斂 ;

II 咸 (*-rəum or *-rum, if Southern classification; *-rum, if

Northern classification): 吟

[From sharing by high and low vowels here we infer that the common *-um in *-um and *-əum was enough to justify the use of the same phonetic

element. Another possibility is that this element may link pre-Archaic *-jəm² and pre-Archaic *-juəm³.]

II. *-p endings.

1. Pre-Archaic *-jap; Shih-ching *-jap.

Phonetic elements: 夾 逮

III 業¹ (*-jap): 痲 捷 ; II 洽 (*-rap): 夾 逮 ;

IV 帖 (*-iap): 頰 捷

2. Pre-Archaic *-jâp; Shih-ching *-jâp.

Phonetic element: 盍

III 業² (*-jâp): 盍 ; I 盍 (*-âp): 盍 ; II 狎 (*-râp): 鞞

3. Pre-Archaic *-jəup; Shih-ching *-jâp.

Phonetic element: 奄

(A) Northern classification:

III 業³ (*-jəup → *-jup → *-jâp): 奄

(b) Southern classification:

III 業^c (*-jəup → *-jup [→ *-jəp → *-jap]): 鞞 鞞
鞞 鞞 鞞 ; I 合 (*-əup → *-up [→ *-âp, N; →
-əp, S]): 鞞 鞞 鞞 ; II 洽 (-rəup → *-rup →
*-rəp → *-rap, S): 鞞

[Note the not infrequent double classification of one character, implying variant readings.]

4. Pre-Archaic *-jip; Shih-ching *-jəp.

Phonetic element [not shared with other categories]: 急

Example: III 緝¹ (*-jip): 急

5. Pre-Archaic *-jəp; Shih-ching *-jəp.

Phonetic element: 合

III 緝² (*-jəp): 翕 ; I 合 (*-əp): 合 ;

II 洽 (*-rəp): 洽

6. Pre-Archaic *-jup; Shih-ching *-jəp.

Phonetic element: 邑

III 緝³ (*-jup): 邑 ; III 業^c (*-jəup): 鮫

Shih-ching and non-Shih-ching-type Systems

Most words with labial initials and pre-Archaic *-jəum/p are in the "c" category. Because of the change from *pj- to *pwj- to f-, these words are distinct in most dialects even today. (See, for examples with *-m finals, Chart 28. The fronted vowel of Sino-Annamese phiém ← *phwjám^c does not correlate with the voiceless aspirated initial, as it might appear to from the examples in this chart, but indicates rather random retention of the *-j- of *fj- ← *pwj-; we conjecture that the early loss of the *-j- in *pwj- sequences, and not the inhibiting effect of the *-w-, was the reason why the vowels of the "c" category were not fronted in Chinese.)

There are, however, words with velar initials and pre-Archaic *-əu- in the "c" category for which there is no clue in the initial and which had merged in Shih-ching Archaic with words which had pre-Archaic *-â- (cf. Charts 29-30). We infer that once again in Southern Ancient Chinese "c"-category words were distinct from the pre-Archaic "a" and "b" words. In the early northern development of Northern and Southern Ancient Chinese there were, however, many points of contact. Even in the precursor of

Southern Ancient Chinese *-əu- changed to *-u- and then to *-â- in some environments (cf., for example, first-division words with dental endings). The occurrence in the same word of both labial initial and labial ending evidently provided one such environment. So, 𪛗 *pjəum is found in the "b" category, while 𪛘 *phjəum is in the "c" category. In the case of *pjəum, we infer that *-əu- changed to *-u- and then *-â- in the precursors of both northern and Southern Ancient Chinese before the denti-labialization of labial initials in which *pj- changed to *pwj- and, finally, to f- (cf. Charts 31-32). For 𪛗 *pjəum → *pjâm, Foochow has pien, Mandarin has pien.

Today, however, not even Foochow maintains a distinct reflex for the "c" category words with labial endings but velar initials. The development we posit to account for the loss of this contrast (see Charts 33-34) is in some ways like that of the Southern Ancient development of second-division categories with labial endings (i.e. *u → *ə, *ə → a).

Classification in the high-vowel "a" : "b" subcategories is based on a non-Shih-ching-type development (Charts 33-34). In Shih-ching rimes there is just one high-vowel *-jVm rime--*-jəm--and just one high-vowel *-jVp rime--*-jəp. Most words in the high-vowel "a" and "b" subcategories have the same phonetic element: 音 for 侵^{a,b}, 邑 for 緝^{a,b}. The occurrence of these elements in categories of divisions other than the third allows us to reconstruct pre-Archaic *-ə- for 音, pre-Archaic *-u- for 邑. If the Ch'ieh-yün's high-vowel "a" subcategory is historically

valid, its *-i- vowel (like the *-a- of the low-vowel "a" category) was retained in a non-Shih-ching-type development in one environment, after the glottal-stop initial. The change of *-i- to *-ə- in the Shih-ching-type development may have antedated the creation of the phonetic element 音 ; the use of the phonetic element ㄛ must have preceded the *-u- to *-ə- change.

The low-vowel "a" category was distinct from the low-vowel "b" category in both the Shih-ching and the non-Shih-ching-type development. Sino-Korean witnesses to this situation with -iəm for the "a" category with nasal endings, -əm for the "b" and "c" categories. (The Ch'ieh-yün's *kjVp examples with low vowels are rare words for which we have no Sino-Korean counterparts.)

Category	Example	Archaic Chinese	Cantonese	Mandarin	Soochow	Sino-Annamese	Sino-Korean
鹽	𧄸	pjám	pin	pien		biên	
鹽	𧄹	pjám	pin	pien	piI	biém	piem
鹽	𧄺	pjám	pin	pien		biém	
凡	泛	phwjám	fa:n	fan	fE	phiém	pem
凡	汜	phwjám	fa:n	fan		phiém	pem
凡	汎	phwjám	fa:n	fan	fE	phiém	pem
凡	凡	bwjám	fa:n	fan	vE	phàm	pem
凡	帆	bwjám	fa:n	fan	vE	phàm	pem
凡	汎	bwjám	fa:n	fan	vE	phàm	
凡	犯	bwjám	fa:n	fan	vE	phạm	pem
凡	范	bwjám	fa:n	fan	vE	phạm	
凡	梵	bwjám	fa:n	fan	vE	phạm	pem

Chart 28

Labialization and Dental Labialization

*-m Finals; Low Vowels

Chart 31

Third Division: *-m Endings, Labial Initials

	2		3		Ch'ieh-yün Category				
1	a	b	c	d	e	f	g	h	i
	pjam	—	pjan						
	pjaum	—	pjám	—	pjám	—	pjám	—	pjám
	pjuem	—	pjeum	—	pjum	—	pjám	—	pám
	pjeum	—	pjeum	—	pjum	—	pwjám	—	pfám
	pjim	—	pjin						
	pjem	—	pjem	—	pjem	—	pjem	—	pim
	pjum	—	pwjum	—	pwjem	—	pwjem	—	pfum

Changes:

- a. -m → -n after front vowels; au → á; uə → eu; pj- → pwj- before -u-
- b. u → e
- c. əu → u
- d. u → á and pj- → pwj- before -u- [overlapping changes; see phonetic compounds]
- e. u → á continues
- f. After -j- preceded by -w-, ə → u; -m → -ŋ after this -u-.
- g. pwj- → pfj- → pf-
- h. After -j-, á → a, ə → i; -j- → -i- before nonhigh vowels, -∅- before high vowels

鹽

凡

侵

東

Chart 32

Third Division: *-p Endings, Labial Initials

						Ch'ieh-yün Category
1			2-3			
a	b	c	d	e	f	g
	pjap	—	pjat			
	pjaup	—	?			
	pjuəp	↙	pjuəp	—	pjuəp	—
	pjeup	↘	pjeup	—	pjəp	—
					pfáp	—
						pfáp
	pjip	—	pjit			
	pjəp	—	pjəp	—	pjəp	—
	pjup	—	?			

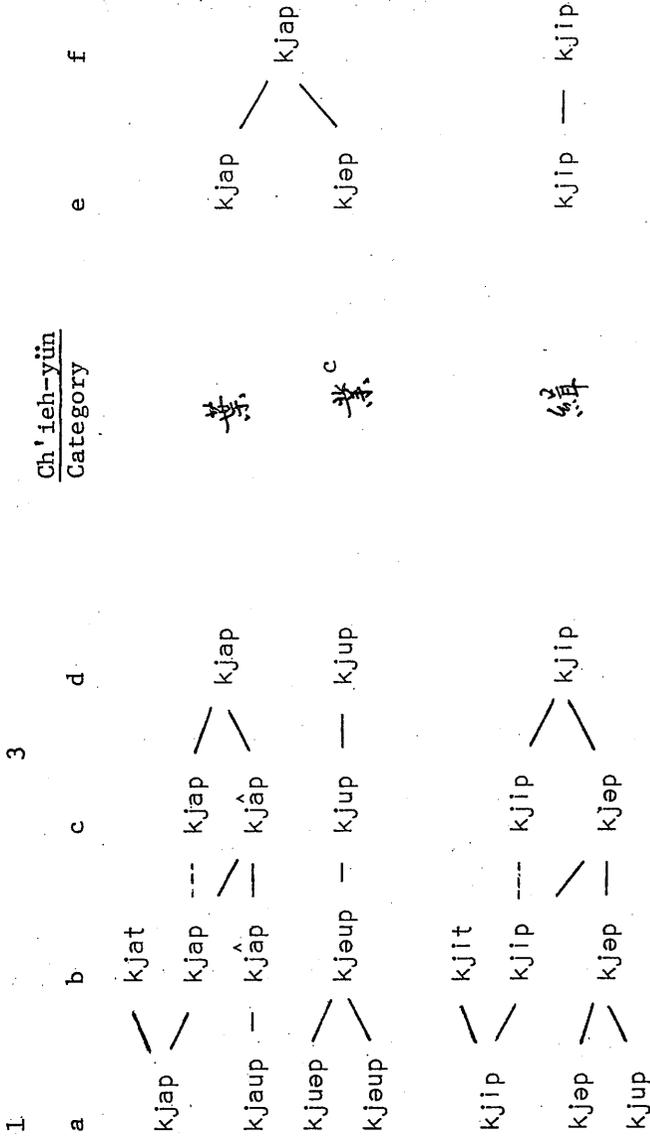
緜

之^c

Changes:

- a. -p → -t after front vowels; uə → eu
- b. eu → u
- c. pj- → pwj- before -u-
- d. u → ^ˆa
- e. pwj- → pfj- → pf-
- f. -j- → -∅- before high vowels

Third Division: *-p Endings, Velar Initials; non-Shih-ching-type Development



Changes:

- a. -p → -t after front vowels; au → á; ue → eu; u → e
- b. eu → u; a → á and i → e except after the glottal-stop initial
- c. á → a, e → i
- d. u → e
- e. e → a [cf. *-røp → *-rap, Chapter V]

D. Finals with *-ŋ, *-k Endings.

The Ch'ieh-yün's Categories.

Third-division words with *-ŋ, *-k endings are found in twelve categories, six with *-ŋ, and six with *-k. The phonological features we reconstruct for these categories are back vs. nonback, and within nonback, front vs. nonfront (ə). Among the back vowels there is a three-way height contrast (low: â; mid: o; high: u); among the front vowels there are only two heights, low (a) and nonlow (i or e):

Back Vowels			Nonback Vowels		
		Tones			Tones
*-ŋ	Low	陽 (A,B,C)	Front: Low	庚 _三	(A,B,C)
	Mid	鍾 (A,B,C)	Nonlow	清	(A,B,C)
	High	東 _三 (A,C)	Nonfront	蒸	(A[B]*C)
* There is just one B-tone word here.					
*-k	Low	樂 (D)	Front: Low	陌 _三	(D)
	Mid	燭 (D)	Nonlow	昔	(D)
	High	屋 _三 (D)	Nonfront	職	(D)

Chart 35 lists examples from these categories (minimally contrastive, wherever possible), together with the Archaic correlates of their medial-final combinations. (The 東_三 category has still another Archaic correlate, *-wjəm; cf. 風 *pwjəm → *pwjuŋ.)

By the Han Dynasty, the *(j)əuŋ : *(j)uŋ, *(j)əuk : *(j)uk distinctions we find in the Shih-ching had been lost in most parts of China. These distinctions were, however, still made in the poems of

Archaic Chinese	Ch'ieh-yün Category	Examples	
*-jân	陽	*?- 央	*p- 方
*-juən	東 _三	*k- 弓	*b- 馮
*-jəuŋ	東 _三	*k- 躬	*ph- 豐
*-juŋ	鐘	*?- 邕	*p- 封
*-jin	清	*?- 櫻	*m- 名
*-jraŋ	庚 _三	*?- 英	*m- 明
*-jəŋ	蒸	*?- 鷹	*p- 冰
*-jâk	樂	*k- 腳	*l- 略
*-jauk	樂 _三	*?- 約	*h- 弱
*-juək	屋 _三	*?- 郁	*p- 福
*-jəuk	屋 _三	*k- 菊	*p- 腹
*-juk	燭	*kh- 曲	*ts- 足
*-jik	昔	*?- 益	*p- 壁
*-jrak	陌 _三	*h- 嶺	
*-jək	職	*?- 憶	*p- 畜

Chart 35

Third-division Categories with *-ŋ, *-k Endings.

Chang Heng (78-139) of Nan-yang and Ts'ai Yung (132-192) of Ch'en-liu; Nan-yang and Ch'en-liu were in that area of the north that is now Honan Province. In the sixth century, Yen Chih-t'ui (c. 535-c. 600) tells us, *kəuŋ (攻) and *kuŋ (工 , 功 , 公) were still distinguished in the north. Modern Wenchow maintains separate reflexes to this day for the *-jəuŋ/*-jək : *-juŋ/*-juk categories (-yoŋ : -yo, -iu : -yo). Even Wenchow, however, does not distinguish between *-uŋ/*-uk and *-oŋ/*-ok.

The delay in the merging of *-əuŋ and *-uŋ through the change of *-əu- to *-u- and the maintenance of the *-jəuŋ : *-juŋ distinction beyond the *-əu- → *-u- change appear to be northern in origin. Though Wenchow is today spoken in the south, the only other witnesses to the lowering of *-juŋ to *-joŋ and *-juk to *-jok in medieval China are Sino-Korean, which in its treatment of other third-division finals we have seen to be northern, and the Kan-on variety of Sino-Japanese, which is known to derive from a northern Chinese dialect. Go-on, which has a southern origin, does not make this distinction.

The compilers of the Ch'ieh-yün were, without question, classifying contrasts whose phonetic content was -əuŋ : -uŋ in the first division and -juŋ : -joŋ in the third division. Implicit in the usual interpretation of the finals with the velar endings *-ŋ, *-k is a model flipflop:

Archaic	Ancient		Archaic	Ancient	
*kjəuŋ	*"kjuŋ"	東 ^三	*kəuŋ	*"koŋ"	冬
*kjuŋ	*"kjoŋ"	鍾	*kuŋ	*"kuŋ"	東 ₋

Neither Ch'ieh-yün categories nor modern developments support this inter-

pretation: forms derived from *kjuəŋ (Ancient *kjuŋ), *kjəuŋ (Ancient *kjuŋ), and *kuŋ (Ancient *kuŋ) are given in one category, 東, in the Ch'ieh-yün. For the forms derived from *kəuŋ (Ancient *kəuŋ) and *kjuŋ (Ancient *kjoŋ), there are two additional and separate categories: 冬 and 鍾. If *kəuŋ had changed to *koŋ, it should have been put in the same category with *kjoŋ → *kjuŋ. The relative height difference posited for *kjuŋ : *kjoŋ is maintained in the modern dialect of Wenchow; forms deriving from *kəuŋ and *kuŋ show no difference. The obvious inference is that there was either no change from Archaic *kəuŋ to its Ancient derivative or that there was a change, but that this was not to *koŋ. There is, however, no evidence to suggest that there was any change before the merging of *kəuŋ and *kuŋ, which was not yet complete in the sixth century. That is:

Archaic	<u>Ch'ieh-yün</u>		Archaic	<u>Ch'ieh-yün</u>
*kjəuŋ	*kjuŋ	東 _三	*kəuŋ	*kəuŋ 冬
*kjuŋ	*kjoŋ	鍾	*kuŋ	*kuŋ 東 _一

Neither Sino-Xenic nor modern Chinese dialects have three-way distinctions in finals corresponding to the Ch'ieh-yün categories for the nonback vowels. In colloquial variants, however, Amoy, Nan-ch'ang, Shuang-feng, Meih sien, Ch'ao-chou, and Foochow all show separate reflexes for the 清 / 庚_三 : 蒸 and 昔 / 陌_三 : 職 categories. The contrast of an entity derived from the 清 and 庚_三 categories with the reflex of the 蒸 category (or of 昔 / 陌_三 with 職) is further documented for Ancient Chinese and beyond by contrasting vowels in all of the Sino-Xenic dialects. For example:

Category	昔	昔	陌 _三	職	職
Example	譯	役	逆	極	域
Sino-Korean	iək	iək	iək	kwk	iək
Kan-on	eki	eki	geki	kioku	ioku
Go-on	iaki	iaku	giaku	goku	uiki
Sino-Annamese	djch	djch	nghjch	cưc	vưc

(Examples of the corresponding 清 / 庚_三 : 蒸 contrasts are listed in Charts 49, 51, and 53.)

It is not certain whether the vowels of the 清 (*-jiŋ) and 庚_三 (*-jraŋ), 昔 (*-jik) and 陌_三 (*-jrak) categories were or were not distinct in the sixth century. They may have been; or again, the Ch'ieh-yün's classification may be based here on distinctions made in dictionaries at the disposal of Lu Fa-yen. Sino-Annamese, however, suggests that there was still a difference in *-jiŋ vs. *-jraŋ and *-jik vs. *-jrak categories. Though in Sino-Annamese the vowels of the 清 and 庚_三, 昔 and 陌_三 finals are almost always the same (-i- before a nonnasal ending, -i-, -e-, -a- before nasal endings, especially with nasal initials), some words of the 清 and 昔 categories whose initials derive from labials have dental-initial reflexes:

<u>Ch'ieh-yün</u> Category	Example	Sino-Annamese
清	*p- (A) 并	tinh
	*p- (C) 併據	tính
	*m- (A) 名洛	danh

<u>Ch'ieh-yün</u> Category	Example	Sino-Annamese
昔	*p- (D) 𦉳	tich
	*p- (D) 辟 癖 𦉳	tich

There are, it is true, also Sino-Annamese labial initials in examples from these categories:

<u>Ch'ieh-yün</u> Category	Example	Sino-Annamese
清	*p- (B) 𦉳	bính
	*p- (C) 𦉳	bính
昔	*p- (D) 辟 𦉳	bích
	*b- (D) 𦉳	bịch

When we examine the Sino-Annamese counterparts to words from the 庚_三 and 陌_三 categories, however, we find no such ambiguity. Here all initials are labial:

<u>Ch'ieh-yün</u> Category	Example	Sino-Annamese
庚 _三	*p- (A) 兵	binh
	*p- (B) 丙 炳 柄	bính
	*p- (C) 丙	bính
	*b- (C) 病	bệnh, binh
	*b- (A) 平 華 評	binh
	*p- (B) 東	bính
	*m- (A) 明 鳴	minh
	*m- (C) 命	mệnh, manh, mạng
	*m- (B) 𦉳	mãnh
陌 _三	*p- (D) 碧	bích

The *tính* : *pính* contrast has a parallel in third-division pairs with dental endings, such as Sino-Annamese *tien* : *pien* and *tʌn* : *pʌn*, where again both members derive from words with labial initials; we have correlated this phenomenon with the Archaic Chinese contrast of front versus nonfront vowels (*a* : *â* and *i* : *ə*): after *-j-* changed to *-i-* before nonfront vowels, *p-* changed to *t-* before *-j-*. The inference that the 清 and 昔 categories had a front vowel is supported by their position in the fourth row of the phonological charts, the place normally assigned to third-division "a"-category words and the fourth-division 青 and 錫 categories. (Phonetic elements shared by words in (a) the 清 and 昔 categories and (b) the fourth-division 青 and 錫 categories made it possible for the 清 and 昔 categories to be put in the fourth row; the otherwise appropriate third-row slots were used for the 庚_三 and 陌_三 categories.) But we infer a front vowel, too, for the 庚_三 and 陌_三 categories on the basis of their second-division members, which show palatalization of velar initials in most modern dialects. (This front vowel was, however, preceded by a medial **-r-* in Archaic Chinese.)

Vowel Lowering before **-ŋ*, **-k*: Three Developments.

There is evidence for three major developments among third-division finals with **-ŋ*, **-k* endings. These developments diverge at a post-Archaic point in time. It is Development A, which leads to Kan-on, Sino-Korean, and Wenchow, for which we can posit at the Ancient Chinese stage all of the *Ch'ieh-yün*'s distinctions. (The 清 : 庚_三 distinction may, of course, have been obsolete by the Ancient Chinese period.) The lowering

of the high back vowel (*-u- → *-o-) sets Development A off from both Development B and Development C; lowering of the high front vowel (*-i- → *-e- → *-a-) is common to Developments A and B, in contrast to Development C:

	Back		Front
	*-u- → *-o-		*-i- → *-e- → *-a-
Development A	YES		YES
Development B	NO		YES
Development C	NO		NO

Examples:

Development A: Kan-on, Sino-Korean, Wenchow

Development B: Go-on, Nan-ch'ang, Foochow

Development C: Sino-Annamese, Cantonese, Mandarin

Examples showing lowering in the Ch'ieh-yün have, however, certain restrictions. Among words with labial initials, for example, two factors militate against lowering before velar endings: (1) nasality in the initial and (2) nonnasality in the ending. As Chart 36 shows, there are no words with *-m- in either the 鐘 (Development A *-joŋ) or the 燭 (Development A *-jok) categories. With *-k endings and labial initials there are just two words in the 燭 (*-jok) category, as opposed to thirty-five in the 屋_三 (*-juk) category.

Wenchow examples of third-division words with velar initials and *-ŋ endings correspond, almost without exception, to the Ch'ieh-yün classification. (Note that before *-ŋ, Wenchow has a further lowering

	* \hat{a} ŋ				* \hat{a} k				* \hat{a} ŋ				* \hat{a} k				* \hat{u} ŋ				* \hat{u} k			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
*p-	X	X	X						X	X	X	X ^{1b}	X				X				X		X	X
*ph-	X	X	X						X	X			X				X				X		X	X
*b-	X		X	X ^{1a}	X	X	X	X ^{1c}	X	X	X	X ^{1c}	X				X				X		X	X
*m-	X	X	X										X				X				X		X	X

Chart 36

Third-division Words with Labial Initials and Velar Endings

Back-vowel Series

¹ = just one word:

a: 纒 \hat{a} k * \hat{b} \hat{a} k The presence of one lone word with a labial initial in this category strongly suggests that * \hat{a} - had undergone some change in this environment--perhaps to *-u-?

b: 鞞 \hat{a} k * \hat{p} \hat{a} k

c: 中 \hat{a} k * \hat{b} \hat{a} k

of *-o- to -ɔ- and of *-u- to -o-, so that 終 *tšjuŋ, for example, yields Wenchow tšyoŋ, while 鐘 *tšjoŋ yields tšyo.) And before the *-k ending, the Wenchow -u- : -o- contrast corresponds, with a high degree of regularity, to the Ch'ieh-yün's classification, no matter what the initial. With labial, *l-, or *ñ- initials and the *-ŋ ending, however, Wenchow often has -oŋ for both the 東 and 鍾 categories (cf. Chart 37). In the post-Ancient prehistory of Wenchow, reflexes of all nonback vowels between *-j- and *-k, *-ŋ merged through raising to *-i-; through various changes, *-jik then diversified to -i, -e, -ei, -iai, *-jiŋ to -eŋ and -iaŋ (cf. Kun Chang, Wenchow Historical Phonology, Bulletin of the Institute of Ethnology, Academia Sinica [1972]). (It was the relatively early loss of *-k in words with labial initials, before *-i- underwent these changes, that preserved the *-i- unchanged in such words, e.g. proto-Chinese *pjik 壁, 壁 [from the Ch'ieh-yün's 昔 category] : Wenchow pi, proto-Chinese *pjək [from the Ch'ieh-yün's 職 category] : Wenchow pi.) Along with this raising of the nonback vowels there was apparently a less thoroughgoing raising of back vowels which extended to words with nonback initials and the *-ŋ ending. Kan-on and, even more, Sino-Korean (see again Chart 37) reflect the earlier stage in which these words had distinct vowels, *-u- and *-o-, in Development A.

Modern Chinese dialects develop from the systems shown in the end stages of Charts 42-47; the Sino-Xenic dialects reflect earlier stages. In Development A, Kan-on is at stage g, with nonhigh vowels for the 蒸

I		II						
	Ch'ieh-yün Category	Sino-Korean	Kan-on	Wenchow	Ch'ieh-yün Category	Sino-Korean	Kan-on	Wenchow
	*-juo 東			-oŋ	*-jon 鍾			-oŋ
1.	*p- 風瘋	phuŋ	fu	hoŋ (A1)	封	poŋ	ho	hoŋ (A1)
2.	*ph- 豐	phuŋ	ho	hoŋ (A1)	峯蜂	poŋ	ho	hoŋ (A1)
3.	*b- 馮	phuŋ	fu	hoŋ (A2)	逢縫	poŋ	ho	hoŋ (A2)
4.	*m- 夢	muŋ	bo	moŋ (C2)				
5.	*l- 隆	luŋ	riu	loŋ (A2)	龍	ioŋ	rio	loŋ (A2)
6.	*ŋ- 戎絨	iuŋ	džu	zoŋ (A2)	茸	ioŋ	džo	zoŋ (A2)

Chart 37

Examples of pre-Wenchow Raising in the 鍾 Category.

category, which is distinct from the 清 / 庚_三 categories; Sino-Korean, with high vowels for the 蒸 category, which is still distinct from the 清 / 庚_三 categories, is at stage h; Wenchow, in which -iaŋ, -eŋ in words of the 清, 庚_三, and 蒸 categories is derived from *-iŋ, proceeds from stage i. In Development B, Go-on is at stage f, with a non-high vowel for words of the 蒸 category; in the precursors of the Nan-ch'ang and Foochow dialects, *-ə- has been raised to *-i- at stage g. In Development C, Sino-Annamese has contrasts for the 清 / 庚_三 : 蒸 categories (stage e); Cantonese and Mandarin do not (stage f). [See Charts 48-53 for examples from these dialects.]

Development B, posited for Go-on and some Chinese dialects, e.g. Nan-ch'ang and Foochow, is more fully preserved in the Sino-Xenic dialect. In Chinese dialects, the lowered front vowel of the 清 and 昔 categories, found in colloquial variants, is relatively vestigial: the native stratum has felt the heavy pressure of the literary tradition, embodied in Development C (i.e. Mandarin). Charts 38 and 39 give examples of the low-vowel reflexes of the 清 and 昔 categories in Development B dialects; Charts 40 and 41 give examples of the single high-vowel reflex for the 清, 庚_三, 蒸 / 昔, 陌_三, 職 categories common to Development B and Development C Chinese (but not Sino-Xenic) dialects.

Example	名	領	贏
Shuangfèng	miõ (A2)		iõ (A2)
Nan-ch'ang	miaŋ (C1)	liaŋ (B)	iaŋ (C1)
Meihsién	miaŋ (A2)	liaŋ (A1)	jaŋ (A2)
Amoy	miã (A2)	niã (B)	iã (A2)
Foochow	miaŋ (A2)	liaŋ (B1)	iaŋ (A2)
Go-on	mió	rió	lió

Chart 38

Low-vowel ("Colloquial") Reflexes of the 清 (*-jiŋ) Category

Development B Dialects

Example	尺	赤	石
Shuangfeng	tho (A1)		šio (C)
Nan-ch'ang	tshak (D1)	tshak (D)	sak (D)
Meih sien	tshak (D1)	tshak (D1)	sak (D2)
Amoy	[tshioʔ, tshioʔk (D1)]	tshiaʔ (D1)	[tsioʔ (D2)]
Foochow	tshak (D1)	tshiak (D1)	[suok (D2)]
	[tshuok (D1)]	[tshiek (D1)]	
Go-on	šaku	šaku	džaku

Chart 39

Low-vowel ("Colloquial") Reflexes of the 昔 (*-jik) Category

Development B Dialects

Examples in brackets show changes in addition to lowering, e.g. the rounding of Amoy.

Category	清	庚 _三	蒸
Example	輕	京	興
A Wenchow	tʃhian	tʃian	ʃian
Kan-on	kei	kei	kio
B Shuangfeng	tʃhin	tʃin	ʃin
Nan-ch'ang	tʃhin	tʃin	ʃin
Meihsien	khin	kin	hin
Amoy	khin	kin	hin
Foochow	khin	kin	hin
Go-on	kio	kio	ko
C Peking	tʃhin	tʃin	ʃin
Canton	hin	kin	hin
Sino-Annamese	khinh	kinh	huh

Chart 40

Reflexes of the 清 (*-jin), 庚_三 (*-jan), and 蒸 (*-jen) Categories
Development A, B, C Dialects

Category	昔	陌 _三	職
Example	譯	逆	極
A Wenchow	hiai (D2)	ñiai (D2)	džiai (D2)
Kan-on	eki	geku	kioku
B Shuangfeng	i (A2)	ñi (A2)	tšhi (C1)
Nan-ch'ang	it (D)	ñit (D)	tšhit (D)
Mèih sien	jit (D2)		khit (D2)
Amoy	ik (D2)	gik (D2)	kik (D2)
Foochow	ik (D2)	ŋik (D2)	kik (D2)
Go-on	iaku	giaku	goku
C Peking	i (C)	ni (C)	tši (A2)
Canton	jik (D2)	jik (D2)	kik (D2)
Sino-Annamese	djich	ngjich	cjɿc

Chart 41

Reflexes of the 昔 (*-jik), 陌_三 (*-jrak), and 職 (*-jek) Categories
Development A, B, C Dialects

Third Division: *-ŋ Endings, Velar Initials (Plain and Labialized); Development A.

	1	2	3						
Ch'ieh-yün Category	a	b	c	d	e	f	ɸ	h	i
陽	kjaŋ — kjaŋ	kwjaŋ — kwjaŋ							
東	kjuəŋ — kjuəŋ	kjeuŋ — kjeuŋ							
鍾	kjuŋ — kjuŋ	kjoŋ — kjoŋ							
清	kjiŋ — kjiŋ	kjeŋ — kjeŋ							
庚	kjraŋ — kjraŋ	kjaŋ — kjaŋ							
蒸	kjeŋ — kjeŋ	kjeŋ — kjeŋ							
清	kwjiŋ — kwjiŋ	kwjeŋ — kwjeŋ							
庚合	kwjraŋ — kwjraŋ	kwjaŋ — kwjaŋ							

Changes: (a) a not preceded by -r- → â; eu with B tone → u; (b) ue → eu; -r- is lost; (c) i → e;
 (d) u → o; (e) eu → u; (f) e → a; (g) ə → i; (h) a → i

Third Division: *-ŋ Endings, Velar Initials (Plain and Labialized); Development B.

Ch'ieh-yün Category	1	2	a	b	c	d	e	f	g
陽			kjaŋ — kjaŋ	— kjaŋ	— kjaŋ	— kjaŋ	— kjaŋ	— kjaŋ	— kjaŋ
			kwjaŋ — kwjaŋ	— kwjaŋ	— kwjaŋ	— kwjaŋ	— kwjaŋ	— kwjaŋ	— kwjaŋ
東			kjuen — kjuen	— kjuen	— kjuen	— kjuen	— kjuen	— kjuen	— kjuen
鍾			kjeun — kjeun	— kjeun	— kjeun	— kjeun	— kjeun	— kjeun	— kjeun
			kjun — kjun	— kjun	— kjun	— kjun	— kjun	— kjun	— kjun
清			kjin — kjin	— kjin	— kjin	— kjin	— kjin	— kjin	— kjin
庚三			kjraŋ — kjraŋ	— kjraŋ	— kjraŋ	— kjraŋ	— kjraŋ	— kjraŋ	— kjraŋ
蒸			kjeŋ — kjeŋ	— kjeŋ	— kjeŋ	— kjeŋ	— kjeŋ	— kjeŋ	— kjeŋ
清合			kwjin — kwjin	— kwjin	— kwjin	— kwjin	— kwjin	— kwjin	— kwjin
庚三合			kwjraŋ — kwjraŋ	— kwjraŋ					

Changes: (a) a not preceded by -r- → â; eu with B tone → u; (b) ue → eu; -r- is lost; (c) i → e; (d) eu → u; (e) e → a; (f) e → i; (g) some a → i?

Third Division: *-ŋ Endings, Velar Initials (Plain and Labialized); Development C.

Ch'ieh-yün Category	1	2	a	b	c	d	e	f	
陽			kjaŋ	—	kjâŋ	—	kjân	—	kjân
			kwjaŋ	—	kwjâŋ	—	kwjân	—	kwjân
東			kjuəŋ	—	kjuen	—	kjeuŋ	—	kjuŋ
			kjeuŋ	—	kjeuŋ	—	kjuŋ	—	kjuŋ
鐘			kjuŋ	—	kjuŋ	—	kjuŋ	—	kjuŋ
清			kjin	—	kjin	—	kjin	—	kjin
庚			kjraŋ	—	kjaŋ	—	kjaŋ	—	kjin
蒸			kjəŋ	—	kjəŋ	—	kjəŋ	—	kjəŋ
清合			kwjin	—	kwjin	—	kwjin	—	kwjin
庚合			kwjraŋ	—	kwjaŋ	—	kwjaŋ	—	kwjin

Changes: (a) a not preceded by -r- → â; eu with B tone → u; (b) ue → eu; -r- is lost;
 (c) eu → u; (d) a → i; (e) e → i

Chart 45

Third Division: *-k Endings, Velar Initials (Plain and Labialized); Development A.

	1	2	3						
Ch'ieh-yün Category	a	b	c	d	e	f	g	h	i
藥	kjak	kjàk	kjàk	kjàk	kjàk	kjàk	kjàk	kjàk	kjàk
	kjauk	kjauk							
	kwjak	kwjàk	kwjàk	kwjàk	kwjàk	kwjàk	kwjàk	kwjàk	kwjàk
屋三	kjuək	kjuək	kjuək	kjuək	kjuək	kjuək	kjuək	kjuək	kjuək
	kjuək	kjuək							
燭	kjuk	kjuk	kjuk	kjuk	kjuk	kjuk	kjuk	kjuk	kjuk
昔	kjik	kjik	kjik	kjek	kjek	kjek	kjek	kjek	kjek
	kjrak	kjrak							
陌三	kjək	kjək	kjək	kjək	kjək	kjək	kjək	kjək	kjək
職	kwjik	kwjik	kwjik	kwjek	kwjek	kwjek	kwjek	kwjek	kwjek
	kwjrak	kwjrak							
昔合	kwjək	kwjək	kwjək	kwjək	kwjək	kwjək	kwjək	kwjək	kwjək
陌三合	kwjək	kwjək	kwjək	kwjək	kwjək	kwjək	kwjək	kwjək	kwjək
職合	kwjik	kwjik	kwjik	kwjek	kwjek	kwjek	kwjek	kwjek	kwjek

Changes: (a) a not preceded by -r- → â; (b) au → â; ue → œ; i → a after -r-; -r- is lost;
 (c) i → e; (d) u → o; (e) œ → u; (f) e → a; (g) œ → i; (h) a → i

Third Division: *-k Endings, Velar Initials (Plain and Labialized): Development B.

Ch'ieh-yün Category	1	2	a	b	c	d	e	f	g
藥			kjak	—	kjâk	—	kjâk	—	kjâk
			kjauk	—	kjauk	—	kjâk	—	kjâk
			kwjak	—	kwjâk	—	kwjâk	—	kwjâk
屋三			kjuək	—	kjuək	—	kjuək	—	kjuək
			kjuək	—	kjuək	—	kjuək	—	kjuək
			kjuk	—	kjuk	—	kjuk	—	kjuk
燭			kjik	—	kjik	—	kjek	—	kjek
			kjrak	—	kjrak	—	kjak	—	kjak
			kjək	—	kjək	—	kjək	—	kjək
昔			kwjik	—	kwjik	—	kwjek	—	kwjek
			kwjrak	—	kwjrak	—	kwjak	—	kwjak
			kwjək	—	kwjək	—	kwjək	—	kwjək
陌三			kjak	—	kjâk	—	kjâk	—	kjâk
			kjauk	—	kjauk	—	kjâk	—	kjâk
			kwjak	—	kwjâk	—	kwjâk	—	kwjâk
職			kjuək	—	kjuək	—	kjuək	—	kjuək
			kjuək	—	kjuək	—	kjuək	—	kjuək
			kjuk	—	kjuk	—	kjuk	—	kjuk
昔合			kjik	—	kjik	—	kjek	—	kjek
			kjrak	—	kjrak	—	kjak	—	kjak
			kjək	—	kjək	—	kjək	—	kjək
陌合			kwjik	—	kwjik	—	kwjek	—	kwjek
			kwjrak	—	kwjrak	—	kwjak	—	kwjak
			kwjək	—	kwjək	—	kwjək	—	kwjək
職合			kjak	—	kjâk	—	kjâk	—	kjâk
			kjauk	—	kjauk	—	kjâk	—	kjâk
			kwjak	—	kwjâk	—	kwjâk	—	kwjâk

Changes: (a) a not preceded by -r- → â; (b) au → â; uə → eu; i → a after -r-; -r- is lost; (c) i → e; (d) eu → u; (e) e → a; (f) ə → i; (g) some a → i?

Chart 47

Third Division: *-k Endings, Velar Initials (Plain and Labialized): Development C.

1	2					
Category	a	b	c	d	e	f
藥	kjak	kjâk	kjâk	kjâk	kjâk	kjâk
	kjauk	kjauk				
	kwjak	kwjâk	kwjâk	kwjâk	kwjâk	kwjâk
屋三	kjuək	kjuək	kjœuk	kjœuk	kjœuk	kjœuk
	kjœuk	kjœuk				
	kjuk	kjuk	kjuk	kjuk	kjuk	kjuk
燭	kjik	kjik	kjik	kjik	kjik	kjik
	kjrak	kjrak				
	kjek	kjek	kjek	kjek	kjek	kjek
昔	kwjik	kwjik	kwjik	kwjik	kwjik	kwjik
	kwjrak	kwjrak				
	kwjek	kwjek	kwjek	kwjek	kwjek	kwjek
陌三	kjik	kjik	kjik	kjik	kjik	kjik
	kjrak	kjrak				
	kjek	kjek	kjek	kjek	kjek	kjek
職	kwjik	kwjik	kwjik	kwjik	kwjik	kwjik
	kwjrak	kwjrak				
	kwjek	kwjek	kwjek	kwjek	kwjek	kwjek

Changes: (a) a not preceded by -r- → â; (b) au → â; ue → eu; i → a after -r-; -r- is lost;
 (c) eu → u; (d) a → i; (e) e → i.

Development A Reflexes: Kan-on and Sino-Korean

(a) Velar Initials.

Ch'ieh-yün Category	Examples	Kan-on	Sino-Korean
陽	*kjân*	kio	kaŋ
東	*kwjân	kio	kuaŋ
鍾	*kjun	kiu	kun
清	*kjon	kio	koŋ
庚	*kjan	kei	kien
蒸	*kwjan	kei	hien
	*kjen (→ *kjio, stage h)	kio	kuŋ

* cf. Chart 42, stage g.

(b) Labial Initials.

陽	*pwjân	ho	paŋ
東	*pwjun	ho	phuŋ
清	*pjan	ho	phuŋ
蒸	*pjen (→ *pjio)	hei	phien
		hio	pio

Development A Reflexes: Wenchow

(a) Velar Initials.

Ch'ieh-yün
Category

Examples

陽	*kján*	*k-:	tši	魚	*k-:	tši
東	*kwjáng (→ *kwjon)	*kh-:	tšhyo	筐	*kh-:	tšhyo
鍾	*kjun	*k-:	tšyon	宮	*k-:	tšyon
清	*kjon	*k-:	tšyo	恭	*k-:	tšyo
清合	*kjin	*kh-:	tshian,	車	*kh-:	tshian, 興
清合	*kwjin	*g-:	džyon,	瓊	*h-:	šyon *h-: šian

* cf. Chart 42, stage i.

(b) Labial Initials.

東	*pwjáo (→ *pwjon)	*p-:	huo	方	*p-:	huo
鍾	*pwjun	*ph-:	hon,	豐	*ph-:	hon 蜂
清	*pjín	*p-:	pen,	銜	*p-:	pen 平 水 *p-: pen

Development B Reflexes: Go-on

(a) Velar Initials.

Ch'ieh-yün
Category

陽	*kjān*
東 鍾	*kwjān
清 庚 三	*kjun
蒸	*kjan
	*kjən

Examples

鹽	*k-:	ko
匣	*kh-:	ko
弓	*k-:	ku, *k-: ku
京	*k-:	kio, *h-: kio
克	*k-:	ko

* cf. Chart 43, stage f.

(b) Labial Initials.

陽	*pwjān
東 鍾	*pwjun
清 庚 三	*pjān
蒸	*pjən

芳	*ph-:	ho
豐	*ph-:	fu, *ph-: fu
名	*m-:	mio, *m-: mio
永	*p-:	hio

Chart 51

Development B Reflexes: Nan-ch'ang and Foochow

(a) Velar Initials.

Ch'ieh-yün
Category

Example	Nan-ch'ang C ²	L	Foochow C	L
陽	*kjan ¹	tšion	kion	
東	*kwjan	khuon	khuon	
東	*kjun	kun	kyŋ	
清	*kjan	tšhiaŋ	kiaŋ	khin ³
清	*kwjan	tšiaŋ	kiaŋ	kin
蒸	*kjin	tšhiuŋ	hiaŋ	hin
蒸	*kwjan	šiaŋ	hiaŋ	hiŋ
蒸	*kjin	šin	hiŋ	heŋ

¹ cf. Chart 43, stage 8; ² C = Colloquial; L = Literary; ³ for 輕 Kienyang has khiŋ (C), khiŋ (L)

(b) Labial Initials.

陽	*pwjan	fuŋ	huŋ	
東	*pwjun	fun	huŋ	
清	*pjan	fun	huŋ	
蒸	*pjan	mian	mian	min
蒸	*pjün	mian	mian	min
蒸	*pjün	pin	pin	pin

Development C Reflexes: Sino-Annamese

(a) Velar Initials.

Ch'ieh-yün
Category

陽	*kjǎŋ*
東	*kwjǎŋ
鍾	*kjuŋ
庚	*kjio
清	*kwjio
庚	*kjəŋ
清	
蒸	

Examples

蔓	*k-:	khưong
筵	*kh-:	khuông
宮	*k-:	cung, k-
京	*k-:	kinh, kh-
兄	*h-:	huynh
興	*h-:	hưng/hung

* cf. Chart 44, stage e.

(b) Labial Initials.

陽	*pwjǎŋ
東	*pwjuŋ
鍾	*pjio
庚	*pjəŋ
清	
蒸	

方	*p-:	phuong
豐	*ph-:	phong, ph-
平	*b-:	binh, p-
水	*p-:	bang, b-

Development C Reflexes: Cantonese and Mandarin

(a) Velar Initials.

Ch'ieh-yün
Category

陽 *kján
東鐘 *kwjân
東鐘 *kjuŋ

清庚蒸 *kjín
清庚蒸 *kwjín
清庚蒸 *kwjín

* cf. Chart 44, stage f.

(b) Labial Initials

陽 *pwjân
東鐘 *pwjun
清庚蒸 *pjín

Examples	Cantonese	Mandarin
*k-	kœŋ	tʃian
*kh-	hœŋ	khuan
*k-	kun	kun
*k-	kun	kun
*k-	kin	tʃio
*kh-	hin	tʃhio
*h-	hin	ʃio
*h-	hin	ʃiuŋ
*p-	fœŋ	fan
*ph-	fun	fœŋ
*ph-	fun	fœŋ
*b-	phin	phin
*p-	pin	pin
*p-	pin	pin

Changes in B-tone Words

There are no B-tone words in the 東_三 (Development A *-juŋ) category. The combination of B tone and *-ŋ endings is, in general, characterized by a more defective distribution than that of either the A or the C tone with the *-ŋ endings. In the first-division 登 (*-əŋ) category, the B-tone subcategory (等) has only words with *ph-, *-t, and *kh- initials. In the second-division 江 (*-auŋ) category, the B-tone subcategory (講) has no *t- or *tʂ- series. In the third-division 蒸 (*-jəŋ) category, the B-tone subcategory (極) has just one word: 極 *tʂjəŋ. These are the facts. We may speculate on the possible reasons for these gaps in distribution. Ancient *-juŋ has three Archaic correlates: *-juəŋ, *-jəuŋ, and, with labial initials, *-jəm. Shih-ching Archaic has, however, no words with either *-juəŋ or *-jəuŋ which the Ch'ieh-yün classifies as B tone; if there were such words, they underwent some vowel change in pre-Archaic Chinese. Shih-ching Archaic has one word with B tone and a labial initial followed by *-wjəm (→ *wjum): 覺 . This is in the Ch'ieh-yün's 鍾_上 category, where the corresponding words with A or C tones and Archaic labial + *-wjəm are found.

We may reasonably assume that if there were pre-Archaic words with B tone and *-əuŋ, and if these words underwent a change which caused them to merge with pre-Archaic words of other categories, this change was the same one which Archaic words with A or C tones and *-əuŋ underwent in the post-Archaic period, i.e. *-əu- → *-u-. That is, the change of *-əu- to *-u- began first among these words and preceded the lowering of *-u- to *-o-; A

and C-tone words retained the *-əu- until after the lowering of *-u- to *-o-:

1	2	3
a	b	c
-jəuŋ ^{A,C}	-jəuŋ ^{A,C}	-jəuŋ ^{A,C}
-jəuŋ ^B	-juŋ ^{A,B,C}	-joŋ ^{A,B,C}
-juŋ ^{A,B,C}	-joŋ ^{A,B,C}	-joŋ ^{A,B,C}

The placing of 豐 in the 鍾 category may imply a similar, though post-Archaic, precocity:

2	3
b	c
pwjəuŋ ^{A,C}	pwjəuŋ ^{A,C}
pwjəm ^{A,C}	pwjəm ^{A,C}
pwjəm ^B	pwjum ^B
pwjəuŋ ^B	pwjuŋ ^{A,B,C}
pwjuŋ ^{A,B,C}	pwjoŋ ^{A,B,C}

Wherever *-jəŋ has merged with another category, as in Wenchow, Cantonese, and Mandarin, it has been through the raising of *-ə- to *-i-; even where it has not, it shows this change, as in Nan-ch'ang, Foochow, and, after labial initials, in Sino-Korean. We may then assume that, with the exception of 極, the B-tone words in the 蒸 (*-jəŋ) category made this change at a particularly early time.

The initial divergence of the B-tone subcategories in each of these cases is through vowel raising: *-əu- to *-u-; *-ə- to *-u- (*-ə- →

*-i- → *-u-? At any rate, in relation to *-ə-, *-u- is high as well as rounded); *-ə- to *-i-. What was it about the B₅ tone that caused this? We may speculate that it was its higher pitch, a speculation which has some support in the designation of this tone as shang 'upper'.

E. Finals with *-g Endings.

Vowel Lowering.

The lowering of vowels before velars was not as extensive before *-g as it was before *-k and *-ŋ: before *-g, *-i- lowered, but *-u- did not. We infer that lowering began with the front vowel, and that the loss of *-g intervened before this change reached the back vowel. The inclusion in one category, 支, of words from *-jig and *-jâ supports the assumption that the *-i- of *-jig, like the *-i- of *-jik and *-jiŋ, lowered to *-a- in some dialect or dialects.

That while before *-k and *-ŋ, but not before *-g, there are in Chinese and Sino-Xenic dialects reflexes of the lowered *-i- may be ascribed to the retention of a following back consonant. With the loss of *-g, *-a- was vulnerable to raising.

Disparities in Archaic : Ch'ieh-yün Correspondences

The Ch'ieh-yün's 𪛗^b and 尤^c categories both correspond to Archaic *-jœug. (尤^c has a double origin, in both *-jœug and *-juœg.) 宵^a and 宵^b both correspond to Archaic *-jaug. At first glance, these may appear to be unconditioned splits. Closer examination of the evidence, however, suggests a different explanation: 𪛗^b, 尤^c, and 宵^a all derive from pre-Archaic *-jœug (尤^c from pre-Archaic *-juœg as well). 宵^b alone derives from pre-Archaic *-jaug; in the Archaic rime *-jaug are subsumed contrasting diphthongs, *au and *âu (cf. Charts 54 and 55).

Third Division: *-g Endings, Velar Initials (Plain and Labialized)

		3				
					Ch'ieh-yün Category	
1	2	b	c	d	e	f
kjuæg	—	kjuæg	—	kjœu	—	kjou
kjeuæg	—	kjeuæg	—	kjeu	—	kjeu
kjaug	—	kjaug	—	kjau	—	kjau
kjaug	—	kjaug	—	kjâu	—	kjâu
kjag	—	kjâg	—	kjâ	—	kjo
kjig	—	kjig	—	kjai	—	kjai
kwjig	—	kwjig	—	kwjai	—	kwjai
kjæg	—	kjæg	—	kjœï	—	kjœï
kwjæg	—	kwjæg	—	kwjœï	—	kwjœï
kjug	—	kjug	—	kju	—	kju
kwjag	—	kwjâg	—	kwjâ	—	kwjâ

Changes:

- a. Some examples of eu → au; a → â, au → âu e. eu → ou
- b. Some examples of eu → eu; uø → eu; i → a
- c. -g → -d → -i after the front vowel a; -g → -ï [a back glide] after the nonback, nonfront vowel e, → -ø after the back vowels u, o
- d. eu → ou; â → o after plain velars, u after labialized velars (after which the labialized velar is delabialized)

Note that examples of *-jrag [which occur only after dental initials] are in the second-division 麻 category:
Proto-Chinese Ancient Chinese
*-jrag → *-ja
*-jag → *-jo
*-wjag → *-ju

尤^c
 魚^b
 宵^a
 宵^b
 魚^a
 支^a
 之^c
 虞^c

Third Division: *-g Endings, Labial Initials

1	2	3	Ch'ieh-yün Category			
a	b	c	d	e	f	
pjuæg	- pjuæg	- pjuæg	- pwjuèu	- pwjuou	- pwjuou*	尤 ^c
pjuèug	- pjuèug	- pjuèug	- pjuèu	- pjuèu	- pjuèu	幽 ^b
pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	宵 ^a
pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	宵 ^b
pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	支 ^a
pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	脂 ^b
pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	- pjuæg	虞 ^c

Changes:

- a. Some examples of eu → au; a → â, au → âu
- b. Some examples of eu → eu; ue → eu; i → a
- c. pj- → pwj- before eu, u, â; -g → -d → -i after a, e; -g → -∅ after u, â
- d. eu → ou; â → u
- e. eu → au

*m- alone among the labial initials is not further labialized here: *mjèug yields *mjèu in stage d, *mjou in stage e; and after *m- alone, the *-eu- of the ^b category also changes to *-ou- (cf. Chart 54, stages e-f, and Chart 56). In the ^c category, however, *mjug and *mjâg (stage c) do yield *mwju and *mwjâ (stage d).

The *-əu- to *-au- Change: 宵^a, 幽^b, 尤^c.

The primary change responsible for the dispersion of pre-Archaic *-jəug into three Ch'ieh-yün categories, 宵^a, 幽^b, and 尤^c, was the fronting of the central element *-ə- of *-əu- to *-a- (via *-e-) after *-j-. Words in *-jəug for which we posit this change in the pre-Archaic period form the 宵^a category. One subgroup in the 幽^b category has merged in modern dialects with the 宵^a category. The 尤^c category is composed of words which remained unaffected by this change.

The same *-əu- to *-au- change is found in fourth-division words in *-iəug, which share phonetic elements with words in *-jəug (e.g. 𠃉 in the fourth-division 𠃉 and the third-division 𠃉) and which yield Ancient Chinese *-iaug, and in second-division words in *-rəug, which also share phonetic elements with words in *-jəug (e.g. 𠃉 in the second-division 𠃉 and the third-division 𠃉) and which yield Ancient Chinese *-aug.

Even within the Ch'ieh-yün there are 幽^b: 宵^a doublets: 長 'long hair' is in both the 幽^b and 宵^a categories; 馬 'to run (of a horse)' is in the 幽^b category, while 犬 'to run (of a dog)' is in the 宵^a category. Such doublets may reflect a lag in the acceptance of the *-əu- to *-au- change, where 'long hair', for example, was pronounced both *bjəug and *bjaug in one community, or again words such as 'long hair' may have been pronounced *bjəug in one regional dialect and *bjaug in another, where *-ə- had changed to *-a- in this environment.

Category	幽 ^b	幽 ^b	宵 ^a	幽 ^b	幽 ^b	尤 ^c
Example	彪	纒	腰	糾	幽	丘
Peking	piau	miau	?iau	tšiou	?iou	tšhiou
Soochow	piæ		?iæ	tšiø	?iø	tšhiø
Canton	piu	miu, mau	jiu	kau	jau	jau
Wenchow	pie		ie	tšiau	iau	tšhiau
Nan-ch'ang	pieu		ieu	tšiu	iu	tšhiu
Foochow	pieu	mieu	ieu	kiu	iu	khiu
Sino-Korean	piu	mu	io	kiu	iu	ku

Chart 56

Reflexes of the 宵^a, 幽^b, and 尤^c Categories
in Modern Chinese Dialects and in Sino-Korean.

Modern Chinese-dialect reflexes for words of the 幽^b category (Chart 56) indicate only a double post-Archaic development of *-jœug, in which *-əu- either remained unchanged (and was thus identical with the 尤^c category final) or merged with the *-au- of the 宵^a category. They do not explain why the Ch'ieh-yün has a third category, 幽^b . Sino-Korean, with three different reflexes for the 宵^a , 幽^b , and 尤^c categories suggests an intermediate stage, in which the 幽^b subcategory of Archaic *-jœug words changed, by the fronting of *-ə-, to an entity distinct from either *-jœug or *-jaug, for which we posit *-jeug (Chart 56; cf. also the Sino-Korean three-way minimal set ku [丘 ; 尤^c], kiu [糾 ; 幽^b], kio [翹 ; 宵^a]). To incorporate this suggestion into our interpretation of the *-g categories, we then posit later changes, within Chinese, in which *-jeug either merges with *-jaug (almost without exception after labial initials) or, after velar initials, with *-jœug (which had become *-jou in, for example, the development leading to modern Mandarin). One reason for the double development of the 幽^b category appears to be the antecedent labialization of labial initials in the 尤^c , but not the 宵^a , category. It would not have been a matter of a simple vowel change to bridge the gap from *pjeu to, say, *pwjou (or an even later development of the words with labialized labial initials). The nasal labial initial, however, failed to further labialize before *-jœug, and here we find merging of the 幽^b category with the 尤^c category even after labial initials (see Chart 56: Cantonese mau beside miu, Sino-Korean mu).

The *-jaug : *-jâug Contrast: 宵^a, 宵^b

Though there is just one Archaic rime for both 宵^a (*-jaug) and 宵^b (*-jâug), the contrast of these two categories is supported by many sets of examples in the Ch'ieh-yün, and by phonetic compounds.

There are phonetic elements which clearly belong to one category, not the other:

After velar initials:

1. *-jaug.

Phonetic elements: 堯 要 敷

Examples: 翹 撓 要 鬧 邀

2. *-jâug.

Phonetic elements: 夭 号

Examples: 夭 妖 号 鷄 鄂

After labial initials:

1. *-jaug.

Phonetic elements: 票 焱 少

Examples: 標 漂 票 魚 鱗 朕 眇 利 妙

2. *-jâug.

Phonetic elements: 麤 表 受 苗

Examples: 麤 麤 麤 表 表 受 受 孺 苗 貓

After velar initials, one phonetic element, 喬, is common to both the 宵^a and 宵^b categories, implying beginning neutralization of the *-au- : *-âu- contrast (cf., for example, from the 宵^a category, 嬌, 緜, 喬羽; from the 宵^b category, 驕, 嬌, 橋).

Evidence for the 宵^a : 宵^b contrast as one of front versus back vowels is found in Sino-Annamese, where some labial-initial words of the 宵^a category, but none of the 宵^b category, have dental initials (Chart 57).

Sino-Annamese tiêu, diêu

Sino-Annamese phiêu, biêu, miêu

*pjau

tiêu 長杓 姦風 標標

phiêu 票鏢 驃鏢 漂鏢 票風

diêu 眇測 緲

剽鏢 縹標

diêu 杪

phiêu 票鏢 縹鏢 剽鏢

diêu 冰杪

鏢驃

diêu 妙

biêu 鏢

biêu 票

*pjâu

phiêu 鏢鏢

biêu 表鏢 錶表 儀表

miêu 描瞄

miêu 杪

miêu 廟

Chart 57

The Ch'ieh-yün's 宵^a : 宵^b Categories

Sino-Annamese Correspondences for Words with Labial Initials

F. Finals with Open-syllable Endings.

There is just one third-division Ch'ieh-yün subcategory with an Archaic open-syllable correlate: 支^b : Archaic *jâ. The 支^a subcategory derives from *-jig. We infer that, on their way to merging as *-ji, these subcategories at one point offered a minimal contrast of front *-a (← *-ig) and back *-â (← *-â). In the first of the fronting and raising changes which followed, *-jâ changed to *-ja. The one final *-ja (← *-jâ and *-jig) was then fronted to *-je → *-ji.

G. Merging of the 支, 脂, 之, 微 Categories.

Modern Correlates

The 支, 脂, 之, and 微 categories form one group in the Ch'ieh-yün. The finals of these categories have converged in most modern dialects in front-vowel endings (cf. Charts 58 and 59 for examples).

Proto-Chinese Sources

Of the 支, 脂, 之, 微 categories, only 脂^b and 微^c overlap when compared with their Archaic correspondents: there are words in Archaic *-jed in both of these categories. To resolve the

脂^b : 微^c conflict we go back to proto-Chinese. We then posit the following proto-Chinese : Ch'ieh-yün correspondences:

Proto-Chinese source	<u>Ch'ieh-yün</u> category	Vowel implicit in the <u>Ch'ieh-yün</u> classification
*-jig, *-jir	支 ^a	a
*-ja, *-jər	支 ^b	â
*-jid	脂 ^a	i
*-jög (after labials and labialized velars), *-jed, *-jəb	脂 ^b	ei
*-jög (after initials other than labials and labialized velars)	之	eĩ
*-jud	微 ^c	ui

(The maintenance of the 脂^b : 微^c contrast after the change of final stops to glides is a problem. Following Li Fang-kuei's suggestion

Category	支 ^a	支 ^b	脂 ^a	脂 ^b	之	微 ^c
Example	枝	寄	葉	器	記	氣
Peking	tši C1	tši C1	tšhi C1	tšhi C1	tši C1	tšhi C1
Soochow	dži A2	tši C1	tšhi C1	tšhi C1	tši C1	tšhi C1
Wenchow	dzw B2	tsw C1	tshw C1	tshw C1	tsw C1	tshw C1
Meihsién	khi A1	ki C1	khi C1	khi C1	ki C1	khi C1
Canton	kei C2	kei C1	hei C1	hei C1	kei C1	hei C1
Amoy	ki C2	ki C1 ^L kia C1 ^C	khi C1	khi C1	ki C1	khi C1 ^L khui C1 ^C
Ch'aochow	ki B2	kia C1	khi C1	khi C1	ki C1	khi C1
Foochow	kei C2	kie C1	khei C1	khei C1	kei C1	khei C1
Nan-ch'ang	tšhi C2	tši C1	tšhi A2	tšhit D1	tši C1	tšhi B1

Chart 58

Modern-dialect Reflexes of the 支, 脂, 之, 微 Categories
Velar Initials

[superscript L = literary; superscript C = colloquial]

Category	支 ^a	支 ^b	脂 ^a	脂 ^b	微 ^c
Example	脾	皮	琵琶	悲	非
Peking	phi A2	phi A2	phi A2	pei A1	fei A1
Soochow	bi A2	bi A2	bi A2	pɛ A1	fɪ A1
Wenchow	bei A2	bei A2		pai A1	fei A1
Meih sien	phi A2	phi A2	phi A2	pi A1	fi A1
Canton	phei A2	phei A2	phei A2	pei A1	fei A1
Amoy	pi A2	phi A2 ^L phe A2 ^C	pi A2	pi A1	hui A1
Ch'aochow	phi A2	phue A2	phi A2	pui A1	hui A1
Foochow	pi A2	phi A2 ^L phuei A2 ^C	pi A1	pi A1	hi A1
Nan-ch'ang	phi A2	phi A2		pɛi A1	fui A1

Chart 59

Modern-dialect Reflexes of the 支, 脂, 微 Categories

Labial Initials

[superscript L = literary; superscript C = colloquial]

[Note that after labial initials Peking and Soochow show a double development: some words in the 支^a, 支^b, and 脂^b categories have a lower vowel (Peking -ei, Soochow -ɛ); others have a high vowel (Peking and Soochow -i). (Words of the 脂^a category have only -i; cf. II.B.)]

[The Final Stops in Tushan, mimeographed], that in some environments *-g passed through a back-glide stage, we impute the later difference between these categories to the following end-glide, not the nuclear vowel. That is, *kjæg → *kjëi, with a back glide; *pjæg → *pjëd → *pjëi, with a front glide.)

Stages on the Way to Merging

The vowels implicit in the Ch'ieh-yün's classification were no longer widely distinguished in Lu Fa-yen's time. A variety of evidence supports this statement:

(1) In the preface to the Ch'ieh-yün Lu Fa-yen tells us that, in some dialects, the 支 and 脂 categories were in the process of merging (i.e. *-jâ had already changed to *-ji in some words). Yet all of the rime dictionaries that Lu Fa-yen consulted had an independent category, and in the rime practice of the fifth to sixth centuries 支 and 脂 contrasted. We infer that these rime dictionaries and this rime practice were based on the southern pronunciation of their time; to this day the Min dialects of Amoy and Foochow preserve a height distinction for the 支 : 脂 contrast (in both cases, mainly for words of the 支^b subcategory [cf. Charts 58 and 59]).

(2) The placing of the "a" and "b" subcategories in larger categories implies the merging, through fronting, of *â and *a (to *a or *e) and *ə and *i (to *e or *i).

(3) In Hsia-hou Yung's rime dictionary the 脂 and 之 categories were one (i.e. *-jid, *-jed, and *-jæg had all changed to *-ji). In

separating the 脂, 之, and 微 categories. Lu Fa-yén followed the classifications of Yang Hsiu-chih, Li Chi-chieh, and Tu T'ai-ch'ing.

(4) New fan-ch'ieh appeared, implying the disappearance of the *-jid (脂^a) : *-jed (脂^b) distinction. So, in one case, the Ch'ieh-yün separates a group of five words which have the same phonetic element into two subgroups on the basis of contrasting fan-ch'ieh. 鼻, 禿, 臍, with the fan-ch'ieh 匹四, implying Archaic *bjid (C), are in the 脂^a subcategory; 漚, 鼻, 臍, with the fan-ch'ieh 匹備, indicating Archaic *phjed (C), are in the 脂^b subcategory. From the rime practice of the Chou-Ch'in period we know that all of these words had the *-jed final: the fan-ch'ieh 匹四 apparently represents a new pronunciation, in which *-ə- had raised to *-i-. The phonological charts repeat the Ch'ieh-yün's classification, listing 鼻 in the fourth row and 漚 in the third row. Here Sino-Annamese, with the dental-initial equivalent of "a"-category labial-initial words for both 鼻 (Sino-Annamese ty) and 漚 (Sino-Annamese tuy), indicates an even later pronunciation.

(5) In a number of instances the Ch'ieh-yün classifies words with Archaic *-jed (e.g. 糞) in the 脂^a (*-jid) category, and puts words with Archaic *-jâ (e.g. 隳) in the 支^a (Archaic *-jig → *-ja) category. We also find examples which may reflect the *-g to *-d fronting: 鼻 and 瘕 (Archaic *pjig) are in the 脂^a (*-jid) category; 臆 (Archaic *gjəg) is in the 脂^b (*-jed) category. There are, however, counter-examples to these classifications and it may not be possible to determine

for every example whether we are dealing with an instance of sound change or an error in classification.

(6) There are no words with labial initials in the 徵^c (proto-Chinese *-jud) category for which Archaic rimes or phonetic elements suggest any other classification, nor are there any which we would expect to find in the 徵^c category but which the Ch'ieh-yün has in other categories. There are, however, two words with velar initials in the 徵^c category for which Archaic rimes indicate origins in *-jæg (諷 *ʔjæg [A]) and *-jâ (崎 *gjâ [A]) and which we would therefore expect to find in the 之 and 支^b categories. Three words which are in the Ch'ieh-yün's 支^b (*-jâ) category have phonetic elements which indicate that they should be in either the 脂^b or 徵^c categories (禡 *hjød/*hjud [A]; 蝗 *ŋjød/*ŋjud [B]; 禡鼻 *hjød/*hjud [B], this last example also listed in the 徵^c category.) One word, 鯨, which is listed in both the 之 and 脂^b categories could be derived from either proto-Chinese *gjød (C) or *gjüd (C). *-jød and *-jud had merged in the *-jød final in the north before the time of the Shih-ching; the phonetic elements which reflect this merging do not aid us in distinguishing between the 脂^b and 徵^c categories. Since, however, after both labial and velar initials the 徵^c category has more members than the 脂^b category, chances are that a word which could derive from either the 脂^b or the 徵^c category derives from the latter.

It is clear why words with velar, but not labial, initials were classified incorrectly with respect to the 徵^c category: in this

category the labialization of labial initials (*pj- → *pwj- → f-) gave positive identification to words with labial initials. For words with velar initials there was no such clue, and in its absence errors were made. We therefore infer that in words with labial initials only the initial allowed the error-free identification of words in the 微^c category, and that merging had reached the -i stage at least for the 支^b and 微^c categories; only then could *-jâ and *-jud be confused.

(7) For some words the Ch'ieh-yün lists alternant phonetic compounds, sometimes in the same category, sometimes in different categories. Such alternants may represent different dialect forms of one period; or again, they may be evidence of phonetic change, one alternant representing the early form, the other a later form. If we assume the second to be the case, it follows that some alternants imply more change than others, none perhaps more than the *-jâ : *-jud pairs, where we must infer that, since neither could have changed to the other at any earlier stage, both *-jâ and *-jud had changed to *-ji:

- (1) 'shore, bank': 崎 [支^b; *gjâ (A)]; 圻 [微^c; *gjud (A)]
 (2) 'an ant': 蟻 [支^b; *njâ (B)]; 螳 [支^b, with a phonetic element implying *njud (B) or 微^c]

If, for example, 'shore, bank' was proto-Chinese *gjâ, the phonetic compound implying proto-Chinese *gjud was used when the phonetic element 圻 had come to mean *-ji. To determine, however, which members of such pairs reflect more nearly the proto-Chinese forms would require textual evidence dating the

appearance of the characters.

From the Archaic origins suggested by the phonetic elements of other pairs we might infer less advanced stages on the way to an ultimate merging in -i: the phonetic elements indicating origins in *-jwâ and *-jwər for 'to open' (3 below) imply only the merging of *-jwâ and *-jwər at the *-jwâ stage (with a subsequent common history: *-jwâ → *-jwa → *-jwe → *-jwi); the phonetic elements indicating *-jâ and *-jig for 'a curved knife' (4) imply only the merging of *-jâ and *-jig at the *-ja stage (*-ja → *-je → *-ji):

(3) 'to open': 闕 [支^b; *hwjâ (B)]; 闕 [支^b; *hwjər (B)]

(4) 'a curved knife': 劊 [支^b; *kjâ (B)]; 劊 [支^b, with a phonetic element implying *kjig (B) or 支^a]

The late appearance of the characters 闕 for 'to open' and 劊 for 'a curved knife' would, however, belie such inferences of early merging: 闕 'to open' and 劊 'a curved knife' are found in the Shuo-wen, a dictionary of the second century A.D.; 闕 'to open' and 劊 'a curved knife' are found only in the Ch'ieh-yün. By this time, 闕, 闕, 劊, and 劊 probably all had the *-i final. Here, however, we may confidently reconstruct the proto-Chinese forms: *hwjâ for 'to open', *kjâ for 'a curved knife'.

Members of a pair may originally have been words similar in both form and meaning which sound change made homonymous and which semantic broadening reduced to one word (in 5 below through elimination of a specialized meaning):

- (5) 'a flag': 旗 [之 ; *gjəg (A)]; 'a flag with small bells': 旂 [微^c; *gjud (A)] → *gji (A) 旗, 旂
 'a flag' (when flags with bells were no longer used)
- (6) 'hunger': 飢 [脂^a; *kjid (A)]; 'hunger preceding the harvesting of crops': 饑 [微^c; *kjud (A)] → *kji (A) 飢, 饑 'hunger'

III. Finals of the First Division.

First-division finals are characterized by the absence of any medial glide. There are nineteen initials which appear before such finals: *t, *th, *d, *ts, *tsh, *dz, *s, *n, *l, *p, *ph, *b, *m, *k, *kh, *ŋ, *h, *ʔ. In a subset of these initials which includes the velars where is a plain : labialized contrast before those endings which derive from *-â- or *-ə- not followed by *-u-, *-m, or *-p. In the first division, however, unlike the third, labialized labial initials do not contrast with plain labial initials. There are four apparent exceptions to this rule among the finals *-əi and *-wəi: *bəi (A) : *bwəi (A); *bəi (B) : *bwəi (B); *məi (B) : *mwəi (B); *məi (C) : *mwəi (C). Lu Fa-yen's motivations in providing for these nonexistent contrasts, or at best random variations, are fairly clear. Four of the eight words in the *bəi, *məi categories are also found in the *bwəi, *mwəi categories, represented by different graphs:

*bəi-lwəi	蓓蕾	*bwəi-lwəi	痱瘡	'flower buds; small pimples'
*məi	黧	*mwəi	黧	'moldy and black'
*məi	甲冑	*mwəi	甲冑	'tortoise shell'
*məi	胓	*mwəi	胓	'flesh along the spine'

Some of these words were evidently no longer in use at Lu Fa-yen's time; it was because of earlier spellings (fan-ch'ieh) or sound glosses (chih-yin) that he assigned the same word to different categories. The word for 'flesh along the spine', for instance, occurs both in Li-chi and in Ch'u-tz'u. The fan-ch'ieh spelling 亡代, probably indicating a northern

pronunciation, is given in a commentary on Li-chi; a sound gloss which probably indicates a southern pronunciation and which says that this word is pronounced either 梅 (*mwei A) or 妹 (*mwei C) is found in a commentary on Ch'u-tz'u. Apparently on the basis of the fan-ch'ieh 𠄎 (*mēi), Lu Fa-yen treated this word as a member of the category which includes the word 𠄎 (*dēi); on the basis of the sound gloss, he had to treat it as a fellow member of 梅 and 妹 (*mwei).

Charts 60 and 61 show the Ch'ieh-yün's classification of the first-division categories.

A. Finals with Labial Endings.

Ch'ieh-yün--Shih-ching Discrepancies.

There is a basic discordance in the Ch'ieh-yün's classification of first-division words with the labial endings *-m/*-p and the inferences we draw about the finals of these words from Shih-ching rimes: words in both Archaic *-əm (e.g. 南 , 含) and Archaic *-âm (e.g. 栴 , 函) are found in the Ch'ieh-yün's 覃 *-əm category, while words with Archaic final *-âm are listed in both the 覃 *-əm (e.g. 栴 , 函) and the 談 *-âm (e.g. 甘) categories; words in both Archaic *-əp (e.g. 納 , 合) and Archaic *-âp (e.g. 𠄎) are found in the Ch'ieh-yün's *-əp category, while words with Archaic final *-âp are listed in both the 合 *-əp (e.g. 𠄎) and the 盍 *-âp (e.g. 雜 , 盍) categories.

We resolve this seeming paradox by recognizing (1) the double development before labial endings of pre-Archaic *-u- (← *-əu-), to *-â- in Shih-ching Archaic, to *-ə- in the precursor of southern Ancient

	A	B	C	D
*-u	模	姥	暮	
*-əi	咍	海	代	
*-wei	灰	賄	隊	
*-əm, *-əp	覃	感	勘	合
*-ən, *-ət	痕	恨	恨	沒
*-wən, *-wət	魂	混	恩	沒
*-əŋ, *-ək	登	等	嶝	德
*-wəŋ, *-wək	登			德
*-uŋ, *-uk	東	董	送	屋
*-əu	侯	厚	候	

Chart 60

The Ch'ieh-yün's First-Division Categories: High Vowels.

The initials which occur in some of these categories are highly restricted.

Before *-ən, *-ət, the only initials are: *th-, *-k-, *ŋ-, *ʔ-, *h- (A); *k-, *kh-, *h- (B); *k-, *ŋ-, *h- (C); *h- (D). Before *-wəŋ, *-wək, the only initials are: *k-, *h-, *h- (A); *k-, *h- (D).

	A	B	C	D
*-â	歌	哥	箇	
*-wâ	歌	哥	箇	
*-âi			泰	
*-wâi			泰	
*-âm, *-âp	談	敢	闕	盍
*-ân, *-ât	寒	旱	翰	木
*-wân, *-wât	寒	旱	翰	木
*-âŋ, *-âk	唐	蕩	宕	鐸
*-wâŋ, *-wâk	唐	蕩	宕	鐸
*-əuŋ, *-əuk	冬		宗	沃
*-âu	豪	皓	号	

Chart 61

The Ch'ieh-yün's First-Division Categories: Low Vowels.

[Note: The 歌 category is the only first-division category which has an Archaic correlate with an open-syllable ending (*-â).]

Chinese and (2) the existence in pre-Archaic Chinese of a front *-a- which had merged with *-ə- in southern Ancient Chinese (cf. Charts 64-67).

That is:

Pre-Archaic Chinese	Shih-ching Archaic	Ch'ieh-yün (Southern Ancient)
*-âm	*-âm	*-âm
*-am	*-âm	*-əm
*-um	*-âm	*-əm
*-əm	*-əm	*-əm

A word with Archaic *-âm/*-âp in the Ch'ieh-yün's *-əm/*-əp categories might, then, derive from either pre-Archaic *-um/*-up or *-am/*-ap. Phonetic elements help us choose between the two possible sources.

Words which in Archaic Chinese had *-əm or *-əp and which the Ch'ieh-yün classifies as *-âm or *-âp we assume to be in the vanguard of the later merging of the *-əm : *-âm, *-əp : *-âp categories in *-âm, *-âp. One word of particular interest in this respect because of its assumed Sino-Tibetan cognates is 三 'three', which has the *-əm final in Shih-ching Archaic, where it rimes with 參 *tshəm. (The character 參 is used in a variant writing of 'three'.) On the basis of Tibetan gsum 'three', we choose proto-Chinese *sum over the alternative *səm as the source of Archaic *səm 'three'. In the Ch'ieh-yün, however, while 參 *tshəm is in the 覃 *-əm category, 三 'three' has joined the words in *-âm in the 談 category. The validity of the Ch'ieh-yün's classification is supported by the modern Wu dialects (Charts 62 and 63), which oppose 參 and 三 'three'. In these dialects, members of the 覃 and 談, 合 and 盍 categories have

Category	*-âm 𣎵	*-em 𣎵
Example	*thâm A 𣎵	*them A 𣎵
Archaic	*thâm	*them
	*sâm A 三	*tshem A 𣎵
	*səm	*tshem
1. Sung-chiang	the AI se AI	the AI tshe AI
2. Chia-ting	the AI se AI	thie AI tshie AI
3. City of Shanghai	the AI se AI	thø AI tshø AI
4. Hai-men	the BI se AI	thie AI tshe AI
5. Ch'ang-chou	the AI se AI	thv AI tshv AI
	the CI	
6. Ch'ang-shu	the AI se AI	thø AI tshø AI
7. Wu-hsi	the AI se AI	tho AI tsho AI
8. Soochow	the AI se AI	thø AI tshø AI
9. Wenchow	tha AI sa AI	thø AI tshø AI
10. Shao-hsing	thã AI sã AI	thø AI tshø AI

Chart 62

𣎵 and 𣎵 Reflexes of the 𣎵 and 𣎵 Categories in Modern Wu Dialects.

Category	*âp 去 盍			*-ep 合		
	*tâp D 搭	*thâp D 塌	*lâp D 月	*têp D 答	*nep D 納	*dzêp D 雜
Archaic	*têp	*thâp	*lâp	*têp	*nep	*dzêp
1. Sung-chiang	tɛʔ D1	thɛʔ D1	lɛʔ D2	tɛʔ D1	nɛʔ D2	zɛʔ D2
2. Chia-ting	taʔ D1	thaʔ D1	laʔ D2	tɛʔ D1	nɛʔ D2	zɛʔ D2
3. City of Shanghai	tɛʔ/taʔ D1	thaʔ D1	laʔ D2	tɛʔ/taʔ D1	nɛʔ/naʔ D2	zɛʔ/zaʔ D2
4. Hai-men	taʔ D1	thaʔ D1	laʔ D2	taʔ D1	nɛʔ D2	dzɛʔ D2
5. Ch'ang-chou	taʔ D1	thaʔ D1	laʔ D2	taʔ D1	nɛʔ D2	zaʔ D2
6. Ch'ang-shu	taʔ D1	thaʔ D1	laʔ D2	taʔ ^C D1	nɛʔ D2	dzɛʔ D2
7. Wu-hsi	taʔ D1	thaʔ D1	laʔ D2	tɛʔ ^L D1	nɛʔ D2	zaʔ D2
8. Soochow	taʔ D1	thaʔ D1	laʔ D2	taʔ D1	nɛʔ D2	zɛʔ D2
9. Wenchow	ta D1	tha D1	la D2	tø D1	nø D2	zø D2
10. Shao-hsing	tɛʔ D1	thɛʔ D1	lɛʔ D2	tɛʔ D1	nɛʔ D2	dzɛʔ D2

Chart 63

Reflexes of the 去 and 合 Categories in Modern Wu Dialects.

[Superscript C = colloquial; superscript L = literary]

merged except in the position following dental initials, and apparently even here merging was accomplished in some words, notably 'three'.

Evidence from Phonetic Compounds

Phonetic compounds show quite clearly the three sources of the 覃 category, in pre-Archaic *-əm, *-am, and *-em, a double source for the 合 category, in *-əup, *-əp, and the single source of the 談, 盪 categories, in *-âm, *-âp:

I. *-m endings.

1. Pre-Archaic *-am; Shih-ching *-am.

Phonetic element: 𩇛

I 覃 : 𩇛 ; II 咸 (*-ram): 𩇛

III 鹽¹ (*-jam): 𩇛 ; IV 添 (*-iam): 𩇛

2. Pre-Archaic *-âm; Shih-ching *-âm.

Phonetic element: 𩇛

I 談 : 𩇛 ; II 銜 (*-râm): 𩇛

III 鹽² (*-jâm): 𩇛

3. Pre-Archaic *-əum; Shih-ching *-âm.

Phonetic elements: 𩇛 𩇛

I 覃 : 𩇛 ; II 銜 (*-rəum → *-rum → *-râm, N): 𩇛

II 咸 (*-rəum → *-rum → *-rəm, S): 𩇛

III 鹽³ (*-jəum → *-jum → Archaic and Ancient *-jam, N): 𩇛 𩇛

III 嚴 / 凡^c (*-jəum → Ancient *-jum [→ *-jəm → *-jam],

S): 𩇛 𩇛 𩇛

4. Pre-Archaic *-əm; Shih-ching *-əm.

Phonetic elements: 音 咸

I 覃 : 暗 感 ; II 咸 (*-rəm): 循 咸

III 侵² (*-jəm): 音 鍼

II. *-p endings.

1. Pre-Archaic *-ap; Shih-ching *-ap.

Phonetic elements: 夾 逮

I 合 : No example; II 洽 (*-rap): 夾 逮

III 葉¹ (*-jap): 癒 捷 ; IV 帖 (*-iap): 頰 捷

2. Pre-Archaic *-âp; Shih-ching *-âp.

Phonetic element: 盍

I 盍 : 盍 ; II 狎 (*-râp): 韃

III 葉² (*-jâp): 盍

3. Pre-Archaic *-əup; Shih-ching *-âp.

Phonetic element: 奩

I 合 : 覆 踰 ; II 洽 (*-rəup → *-rup → *-rəp →

-rap, S): 踰 ; III 葉³ (-jəup → *-jup → Archaic and

Ancient *-jâp, N): 敏 ; III 業^c (*-jəup → Ancient *-jup

[→ *-jəp → *-jap], S): 覆 敏 輓

4. Pre-Archaic *-əp; Shih-ching *-əp.

Phonetic element: 合

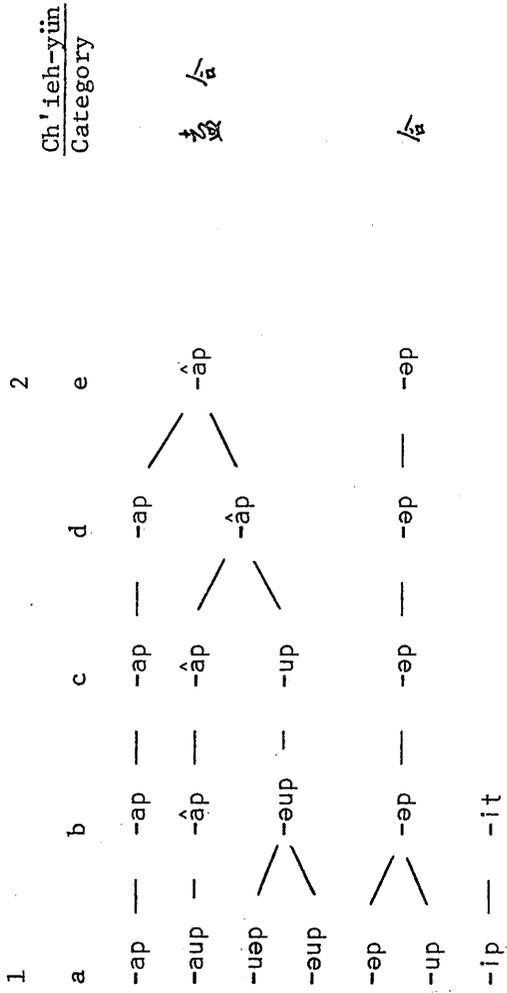
I 合 : 合 ; II 洽 (*-rəp): 洽 ; III 緝² (*-jəp): 合 羽

Phonetic compounds imply *-b endings for two words in the 灰 *-wei category (*-b → *-d → *-i):

1. 內 *nweb → *nwed → *nwei 'inside'; cf. 入 *njep 'to enter'
and 納 *nəp 'to take in, turn in'
2. 對 *tweb → *twed → *twei 'to reply'; cf. 答 *təp 'to
answer'

Chart 65

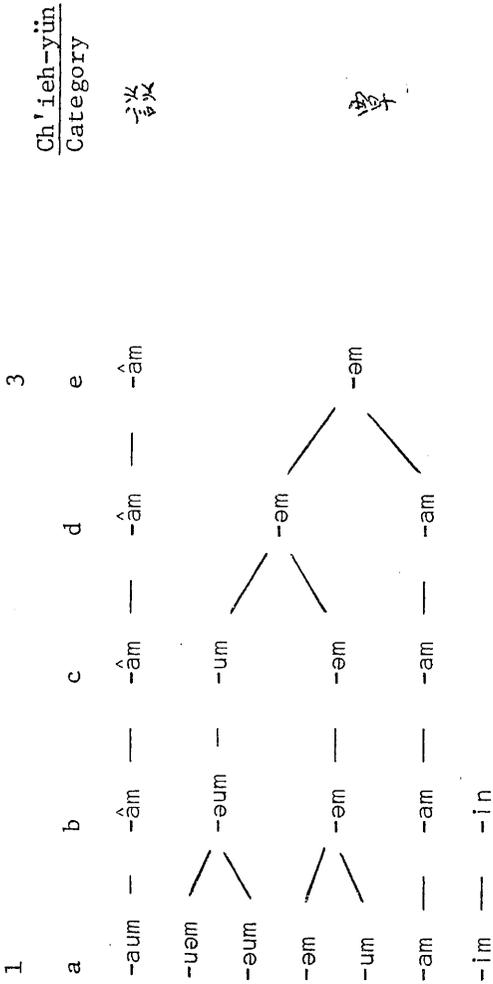
First Division: *-p Endings; Shih-ching-type Development



Changes:

- a. -p → -t after the front vowel -i-; au → â; ue → ê; u → ø
- b. ø → u
- c. u → â
- d. a → â

First Division: *-m Endings; Non-Shih-ching-type Development



ㄞ
ㄨ
ㄚ

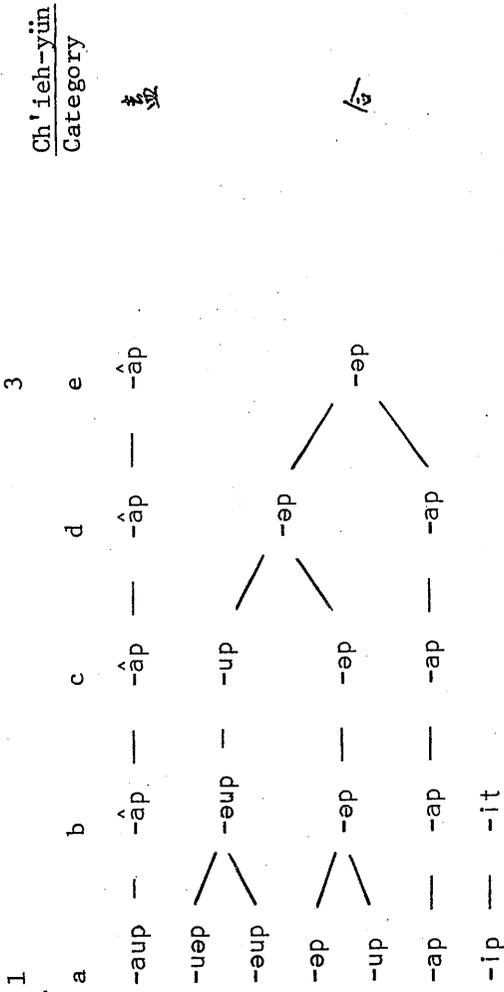
ㄞ
ㄨ
ㄚ

Changes:

- a. -m → -n after the front vowel -i-; au → â; uə → eu; u → ø
- b. eu → u
- c. u → ø
- d. a → ø

Chart 67

First Division: *-p Endings; Non-Shih-ching-type Development



Changes:

- a. -p → -t after the front vowel -i-; au → â; uê → eu; u → ê
- b. eu → u
- c. u → ê
- c. a → ê

B. Finals with Dental Endings.

Evidence from Phonetic Compounds.

There is no such discrepancy in Archaic rimes and Ch'ieh-yün classification before the dental endings *-n, *-t, *-d in the first division as before the *-m, *-p endings. On the basis of the categories with which the words in the first-division dental-ending categories share phonetic elements, however, we reconstruct the same vowels (except for *-i-, which is in the fourth division) as we did for the third-division categories with *-n, *-t endings. The northern pre-Shih-ching changes which we posited there are reflected here in phonetic compounds. By implication these changes swept through the entire Chinese-speaking area (cf. Charts 68-70); that is, no dialect was exempt from the *-u- to *-â- change in the first-division words with dental endings. It is partly because of this unanimity of change, partly because there was no *-j- glide to produce the Chinese/Sino-Annamese p- : f- or the Sino-Annamese t- : p- contrast for labial initials that there are so few clues to the diverse proto-Chinese origins of the first-division finals. If the clues are few, they are, however, also clear. Major patterns in the sharing of phonetic elements imply the following origins for the first-division categories with dental endings:

I. *-t endings:

1. Pre-Archaic *-at; Shih-ching *-at.

Phonetic element: 𪛗

I 末 : 𪛗

III 薛^a (*-jat): 薛

IV 屑 (*-iat): 屑

2. Pre-Archaic *-ât; Shih-ching *-ât.

Phonetic element: 廣

I 末 : 轄

; II 鑑 (*-rât): 廣

III 薛^b (*-jât): 諱

3. Pre-Archaic *-əut; Shih-ching *-ât.

Phonetic element: 發

I 末 : 撥

; III 月^c (*-jəut): 發

4. Pre-Archaic *-ət; Shih-ching *-ət.

Phonetic element: 出

I 沒 : 銜

II 黠 (*-rət): 出

III 質^b (*-jət): 出

5. Pre-Archaic *-ut; Shih-ching *-ət.

Phonetic element: 勿

I 沒 : 忽 ; III 物^c (*-jut): 勿

Where the elements shared with III^c are also shared by II or III^b we infer possible inception of a phonetic element in the pre-Archaic period but certainly productive use in the Archaic or post-Archaic period of merging of *-əu- → *-u- with *-â- and of *-u- with *-ə-:

6. *-əut → *-ut → *-ât.

Phonetic element: 曷

I 末 : 葛

; II 鑑 (*-rât): 曷

III 薛^b (*-jât): 曷

III 月^c (*-jəut → *-jut → *-jât): 𠵽

II. *-n endings:

1. Pre-Archaic *-an; Shih-ching *-an.

Phonetic element: 單

I 寒 : 單 ; III 仙^a (*-jan): 蟬 ; IV 先 (*-ian): 單

2. Pre-Archaic *-ân; Shih-ching *-ân.

Phonetic element: 般

I 寒 : 般 ; II 刪 (*-rân): 般

3. Pre-Archaic *-əun; Shih-ching *-ân.

Phonetic element: 番

I 寒 : 番 ; III 元^c (*-jəun): 番

4. Pre-Archaic *-ən; Shih-ching *-ən.

Phonetic element: 艮

I 痕 : 艮 ; II 山 (*-rən): 艮 ; III 真^b (*-jən): 艮

IV 先 (*-iən): 艮

5. Pre-Archaic *-un; Shih-ching *-ən.

Phonetic element: 隱

I 痕 : 隱 ; III 殷^c (*-jun): 隱

Phonetic elements which may span the *-əu- → *-u- : *-â-, *-u- : *-ə- mergings:

6. *-əun → *-un → *-ân.

Phonetic element: 爰

I 寒 : 爰 ; II 刪 (*-rân): 爰 ; III 仙^b (*-jân): 爰

III 元^c (*-jəun → *-jun → *-jân): 爰

7. *-un → *-en

Phonetic element: 分

I 痕 : 盆 ; II 山 (*-rən): 盼 ; III 真^b (*-jən): 貧
III 文^c (*-jun → *-jən): 分

III. *-d endings:

1. Pre-Archaic *-ad; Shih-ching *-ad.

Phonetic element: 帶

I 泰 : 帶 ; III 祭^a (*-jad): 滯 ; IV 齊 (*-iad): 帶

2. Pre-Archaic *-âd; Shih-ching *-âd.

Phonetic element: 勾

I 泰 : 勾 ; II 夬 (*-râd): 喝 ; III 祭^b (*-jâd): 竭

3. Pre-Archaic *-əud; Shih-ching *-âd.

Phonetic element: 市

I 泰 : 沛 ; III 廢^c (*-jəud): 肺

4. Pre-Archaic *-əd; Shih-ching *-əd.

Phonetic element: 隸

I 咍 : 隸 ; II 皆 (*-rəd): 隸 ; III 脂^b (*-jəd): 隸

5. Pre-Archaic *-ud; Shih-ching *-əd.

Phonetic element: 已

I 咍 : 配 ; III 微^c (*-jud): 妃

Phonetic elements which may span the *-əu- → *-u- : *-â-, *-u- : *-ə-

mergings:

6. *-əud → *-ud → *-âd.

Phonetic element: 歲

I 泰 : 歲 ; III 祭^b (*-jâd): 歲

III 廢^c (*-jəud — *-jud — *-jâd): 歲

7. *-ud → *-əd.

Phonetic element: 非

I 咍 : 非 ; II 皆 (*-rəd): 非 ; III 脂^b (*-jəd): 非

III 微^c (*-jud — *-jəd): 非

Modern Reflexes of the Ch'ieh-yün Contrasts

Words which contrast in the Ch'ieh-yün's first-division *-n, *-t categories contrast in most modern dialects; traces of the contrast before *-d endings are found after dental initials in the Wu dialects (Chart 71).

First Division: *-n Endings

		2-3						Ch'ieh-yün
								Category
1		a	b	c	d	e	f	
	-an	-an	-an	-an	-an	-an	-an	
	-aun	-ân	-ân	-ân	-ân	-ân	-ân	寒
	-uen							
	-eun	-eun	-eun	-eun	-un	-ân	-ân	
	-un	-un			-en	-en	-en	
	-en	-en			-en	-en	-en	痕

[-in: fourth division]

Changes:

- a. au → â; ue → eu
- b. u → e
- c. eu → u
- d. u → â
- e. a → â

First Division: *-t Endings

	2-3		f		Ch'ieh-yün Category		
1	a	b	c	d	e	f	
	-at	-at	-at	-at	-at	-at	
	-aut	-âat	-âat	-âat	-âat	-âat	未
	-uet	-eut	-eut	-ut	-âat		
	-ut	-ut	-et	-et	-et	-et	没
	-et	-et	-et	-et	-et	-et	

[-it: fourth division]

Changes:

- a. au → â; ue → eu
- b. u → e
- c. eu → u
- d. u → â
- e. a → â

Chart 70

First Division: *-d Endings

	2		3	Ch'ieh-yün Category				
1	a	b	c	d	e	f	g	
	-ad	-ad	-ad	-ad	-ad	-ad	-ad	
	-aud	-âd	-âd	-âd	-âd	-âd	-âi	泰
	-ued	-eud	-eud	-ud	-âd			
	-ud	-ud	-ed	-ed	-ed	-ed	-ei	咍
	-ed	-ed						

[-id: fourth division]

Changes:

- a. au → â; ue → eu
- b. u → e
- c. eu → u
- d. u → â
- e. a → â
- f. -d → -i

Category	*-ai 泰		*-ei 咍	
Example	*tshai C 蔡	*thai C 泰	*tshai C 菜	*thai C 態
1. Sung-chiang	tsha C1	tha C1	tshe C1	the C1
2. Chia-ting	tsha C1	tha C1	tshe C1	the C1
3. City of Shanghai	tsha C1	tha C1	tshe C1	the C1
4. Hai-men	tsha C1	tha C1	tshɛɪ C1	thɛɪ C1
5. Ch'ang-chou	tsha C1	tha C1	tshæ C1	tha B1
6. Ch'ang-shu	tsha C1	tha C1	tshe C1	the C1
7. Wu-hsi	tsha C1	tha C1	tshɛ C1	tha C1
8. Soochow	tsha C1	tha C1	tshɛ C1	thɛ C1
9. Wenchow	tsha C1	tha C1	tshɛ C1	thɛ C1
10. Skao-hsing	tsha C1	tha C1	tshɛ C1	thɛ C1

Chart 71

Reflexes of the 泰 and 咍 Categories in Modern Wu Dialects.

[Superscript C = colloquial; superscript L = literary]

C. Finals with Velar Endings.

Before dental and labial, i.e. front, endings we have seen three changes involving the back vowels:

1. *-u- → *-ə- [fronting and lowering]
- 2.a. *-əu- → *-u- [raising]
- 3.a. *-u- → *-â- [fronting and lowering]

Before the velar, i.e. back, endings *-ŋ, *-k, *-g, there is, not unexpectedly, evidence for the reverse of these changes; in the pre-Ancient period, for example, we see the reverse of changes 2 and 3 above before *-g endings. That is:

- 2.b. *-u- → *-əu-, e.g. *kug → *kəug → *kəu [lowering]
- 3.b. *-â- → *-u-, e.g. *kâg → *kug → *ku [backing and raising]

(See Charts 73-75 for all of the changes affecting the first-division finals with velar endings.)

After *-ə-, *-g was fronted to *-d, which then changed to *-i; we infer this sequence of changes from the appearance in one category, ㄨㄛ^4 , of words from *-əd and *-əg. (There is no need, and no basis, for assuming a front-glide : back-glide contrast as we did in the third division, with its two categories, ㄨㄛ and ㄨㄛ^b , for words with *-jəg, *-jəd, *-jəb finals.) In another prevelar environment, however, between *-w- and *-ŋ, *-ə- was backed to *-u- in post-Ancient Chinese, in a reverse of change 1 above, i.e. *kwəŋ → *kwuŋ → *kuŋ. Only Standard Cantonese has maintained the *-wəŋ : *-uŋ distinction in, for example, ㄨㄛ^4 *hwəŋ,

Mandarin huŋ A2, Cantonese wəŋ A2 : 紅 *huŋ, Mandarin huŋ A2, Cantonese huŋ A2. The changes leading from *-wəŋ to *-uŋ may have begun in the pre-Archaic period; examples of such contrasts are infrequent and occur in only one tonal category (A). The complete list of these contrasts in the Ch'ieh-yün is as follows:

*kwəŋ A	肱 弘	*kuŋ A	公 蚣
			工 功 莊 江 鉅 頓 攻
*hwəŋ A	蒙 儻 蒙	*huŋ A	烘 魚
*hwəŋ A	弘 弘	*huŋ A	洪 洪 藻 洪 洪
			紅 訶 虹 鴻 紅 肱 翮 絳 降

Examples of contrast are no more numerous before the *-k ending. The *-wək : *-uk distinction has, however, been preserved in most modern dialects, in Mandarin, for example, through both a lower vowel and retention of the -w- glide in the *-wək member of these pairs:

*kwək D, Mand. kuo	國	*kuk D, Mand. ku	穀 穀 谷
*hwək D, Mand. huo	或 惑	*huk D, Mand. hu	斛 斛

Of the changes which affected finals with dental or labial endings only one appears to have eventually spread to finals with velar endings, that is, the *-əu- to *-u- raising. In most areas, the *-əuŋ : *-uŋ, *-əuk : *-uk distinctions were lost during the Han Dynasty, first we may assume through the *-əu- to *-u- change; this was in some cases followed by the lowering of *-u- to *-o- before the velar ending (cf. Wenchow).

All of the height contrasts of the first division (cf. Charts 60 and 61), except for *-əuŋ : *-uŋ and *-əuk : *-uk, are attested in modern dialects. Most dialects have separate reflexes for *-â and *-u, *-ən and *-ân, *-əŋ and *-âŋ, and *-əu and *-âu; Chart 72 shows the development of these finals from Archaic Chinese through Ancient Chinese to modern Cantonese.

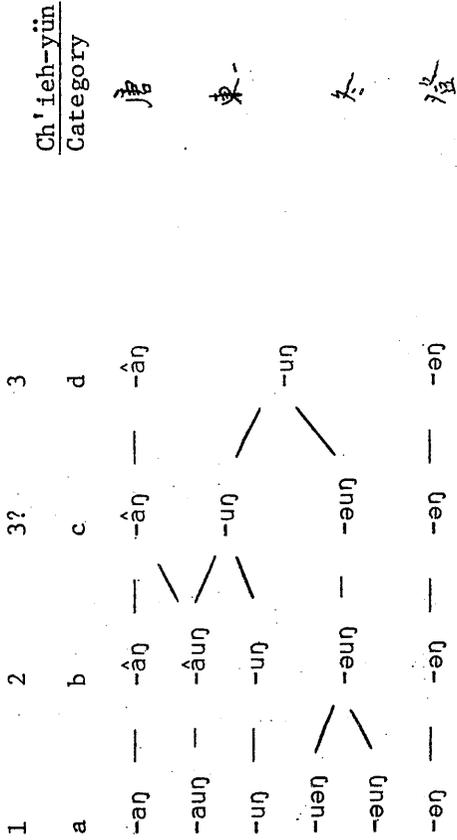
Archaic	Ancient	Cantonese		Archaic	Ancient	Cantonese
*kâg	*ku	ku 姑				
*kwâg	*ku	ku 孤		*kâ	*kâ	ko 歌
*kən	*kən	kan 根		*kân	*kân	kon 干
*həŋ	*həŋ	haŋ 恒		*hân	*hân	hoŋ 行
*kug	*kəu	kau 钩		*kâug	*kâu	kou 高
				*kəug	*kâu	kou 皋

Chart 72

Cantonese Reflexes of First-Division Height Contrasts

Chart 73

First Division: *-0 Endings



[-iŋ: fourth division]

Changes:

- a. ə → əu; a → â; au → âu
- b. âu → â, u
- c. əu → u in most, if not all, dialects: merging of the 東, 冬 categories was the rule by the Han Dynasty.

Chart 74

First Division: *-k Endings

1	2	3?	3	Ch'ieh-yün Category
a	b	c	d	
-ak	-âk	-âk	-âk	𠄎
-auk	-âuk	-uk	-uk	屋
-uk	-uk	-uk	-uk	沃
-uək	-euk	-euk	-euk	德
-ək	-ək	-ək	-ək	

[-ik: fourth division]

Changes:

- a. uə → eu; a → â; au → âu
- b. âu → â, u
- c. eu → u in most, if not all, dialects: merging of the 屋, 沃 categories was the rule by the Han Dynasty.

Chart 75

First Division: *-g Endings

1	2	3	Ch'ieh-yün Category			
a	b	c	d	e	f	
-ag	-ag	-ag	-ag	-ug	-u	模
-ug	-ug	-ug	-eug	-eug	-eu	侯
-ueg	-eug	-aug	-aug	-aug	-âu	豪
-eug	-aug	-aug	-aug	-ed	-ei	咍
-aug	-aug					

[-ig: fourth division]

Changes:

- a. ue → eu; a → â; au → âu
- b. eu → âu
- c. u → eu
- d. â → ù; -g → -d after e
- e. -d → -i; -g → -∅

IV. Finals of the Fourth Division.

The Archaic correlates of fourth-division finals have either the simple vowel *-i- or a vocalic cluster beginning with *-i-: before dental and labial endings, *-iə-, *-ia-; before the velar endings *-k and *-g, *-iəu-, *-iauw-. Before the *-ŋ ending, only *-i- occurs.

When the fourth-division finals are preceded by *-w- (Chart 78), the only initials which occur are the velar and glottal ones: *k, *kh, *ŋ, *h, *h, *ʔ. When *-w- is absent (Charts 76 and 77), there are nineteen possible initials: *t, *th, *d, *ts, *tsh, *dz, *s, *n, *l, *p, *ph, *b, *m, *k, *kh, *ŋ, *h, *h, *ʔ.

We know from the dictionaries which Lu Fa-yen used in his compilation of the Ch'ieh-yün that merging of the fourth-division categories with certain third-division categories had reached an advanced stage by the sixth century (Chart 79). Lu's separation of 仙 (pre-merger *-jan) and 先 (*-ian), 昔 (*-jik/*-jek/*-jak) and 錫 (*-ik/*-iak), (*-jai) and 齊 (*-iai), 宵 (*-jau) and 蕭 (*-iauw) is in accord with Lü Ching's dictionary, his separation of 清 (*-jiŋ/*-jeŋ/*-jaŋ) and 青 (*-iŋ/*-iaŋ) with that of Hsia-hou Yung's dictionary. Only the decision to separate 鹽 (*-jam) and 添 (*-iam), 葉 (*-jap) and 帖 (*-iap) appears to be Lu's own.

A number of intermediate changes must have taken place between Archaic Chinese and the stage in which these third and fourth-division categories finally merged. Among these changes was the fronting of *-ə- to *-a- after *-i-: Archaic *-iəŋ, for example, rimed with Archaic *-jen, but like *-ian,

merged only with *-jan, not *-jən.

The final merging of the third and fourth-division categories was brought about by the change or loss of the medial. There may, for example, have been a lessening in the degree of stricture, changing *-j- to *-i-; in the case of *-iŋ/*-iaŋ : *-jiŋ/*-jeŋ/*-jaŋ, *-ik/*-iak : *-jik/*-jek/*-jak, it may have been the loss of *-j- which precipitated merging in dialects where front vowels were raised between *-j-/*-i- and the velar endings *-ŋ, *-k (i.e. Development C dialects; cf. II.D.: Vowel-lowering before *-ŋ, *-k).

The merging of the third and fourth-division categories in modern dialects is almost total. Whatever may be said, for example, of lowered front vowels in the third-division 清 and 昔 categories is equally true of the fourth-division 青 and 錫 categories: compare Charts 50-51 and the word 青 in such Development B dialects as Shuangfeng (tšhiõ [A1]), Nan-ch'ang (tšhiaŋ [A1]), Meihsien (tshiaŋ [A1]), Foochow (tshiaŋ [A1]), and Go-on (šo). In only one development in some modern Wu dialects are words of these categories still distinguished. In an all-too brief report on this phenomenon in the dialect spoken in the district of I-wu in the province of Chekiang, Chin Yu-ching says that after the dental affricates or fricative words which had Ancient fourth-division finals with the labial or dental endings *-m, *-p, *-n, *-t (i.e. *-iam, *-iap, *-ian, *-iat) have modern -ie, while words with the corresponding third-division finals (*-jam, *-jap, *-jan, *-jat) have -ie [Yi-wu-hua li Hsien Shan Liang-she San-szu-teng-tzu te Fen-pieh, Chung-kuo Yü-wen 128.61 (1964)]. The Chin-hua dialect shows a similar contrast in words whose initials are either dental affricates,

fricatives, nasals, or laterals, and whose endings are either labial or dental: words with fourth-division finals have modern -ia; words with third-division finals have -ie. [See Yüeh-chai's extensive report on this dialect: Chin-hua Fang-yin yü Pei-ching Yü-yin te Tui-chao, Fang-yen yü P'u-t'ung-hua Chi-k'an 5.25-98 (1958).]

The almost universal merging we see today was probably arrived at by different routes and at different times. We conclude, for example, that the Ch'ieh-yün's and Hsia-hou Yung's 青 : 清 distinction represented a dialect or dialects characterized as Development A (e.g. pre-Wenchow) in our discussion of third-division categories with *-ŋ, *-k endings, where, for example, the 清 category and the 庚₁ category showed a vowel-height contrast in the Ch'ieh-yün system, with the vowel of the 清 category not yet lowered to *-a- (清 *-jeŋ : 庚₁ *-jaŋ); the merging shown in Lü Ching's dictionary would, then, represent a Development C dialect (e.g. pre-Wenchow) in which the vowel of the 清 category (*-jiŋ) never lowered, but in which the raising of *-a- to *-i- (in, for example, the 庚₁ *-jraŋ category) between *-j-/*-i- and *-ŋ, *-k could have taken place by this time.

Sino-Annamese testifies, on the whole, to a dialect, or what is more likely, a tradition in which the *-j- : *-i- distinction was maintained, where for example corresponding to *bjan we find Sino-Annamese tien and where corresponding to *bian we find Sino-Annamese bien (see Chart 80 for these and other examples, and Chart 21 for the derivation of Sino-Annamese dental initials from labials followed by *-j-). There are, however, a few

cases where Sino-Annamese has the dental initial and where merging by an *-i- to *-j- change is implied (Chart 80).

Fourth Division: Nonlabialized Initials; Dental and Labial Endings

		Ch'ieh-yün Category		
1	2	3		
a	b	c	d	e
-in	-in	-in	-in	-in
-ien	-ien	-ien	-ien	-ien
-ian	-ian	-ian	-ian	-ian
-it	-it	-iet	-iat	-iat
-iat	-iat	-iat	-iat	-iat
-id	-id	-ied	-iad	-iad
-iad	-iad	-iad	-iad	-iad
-im	-in	-im	-im	-im
-iem	-iem	-iem	-iam	-iam
-iam	-iam	-iam	-iam	-iam
-ip	-it	-ip	-ip	-ip
-iep	-iep	-iep	-iap	-iap
-iap	-iap	-iap	-iap	-iap

Changes:

- a. -m → -n after -i-
- b. -i- → -ie-
- c. -ə- → -a-
- d. -d → -i

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Chart 77

Fourth Division: Nonlabialized Initials; Velar Endings

1-2	a	b	c	d	e	f	Ch'ieh-yün Category
	-iŋ	-iŋ	-iŋ	-iəŋ	-iaŋ	[-iŋ]	青
	-ik	-ik	-ik	-iek	-iak		錫
	-ieuk	-ieuk	-ieuk	-iek	-iak	[-ik]	
	-iauk	-iauk	-iauk	-iak	-iak		
	-ig	-id					
	-ieŋ	-ieŋ	-ieŋ	-ieŋ	-ieŋ	[-iau]	蕭 開
	-iaŋ	-iaŋ	-iaŋ	-iaŋ	-iaŋ		

Changes:

- a. -g → -d after nonback vowels; → -∅ after back vowels.
- b. After two other vowels in a closed syllable, -u- → -∅-
- c. -i- → -ie-
- d. -ə- → -a-
- e. In Development C dialects [cf. II.D.], -a- → -i- between -i- and -ŋ, -k; -ii- → -i-

Fourth Division: Labialized Initials

1-2		3				Ch'ieh-yün Category
a	b	c	d	e	f	
-win	-win	-wien	-wian	-wian	[-wian]	ㄨㄢˊ
-wian	-wian	-wian				
-wit	-wit	-wiet	-wiat	-wiat	[-wiat]	ㄨㄢˊ
-wiat	-wiat	-wiat				
-wig	-wid	-wied	-wiad	-wiai	[-wiai]	ㄨㄢˊ
-wid	-wiad	-wiad				
-wio	-wio	-wio	-wian	-wian	[-wio]	ㄨㄢˊ
-wik	-wik	-wiek	-wiek	-wiek	[-wik]	ㄨㄢˊ

a. -g → -d after -i-

b. -i- → -ie-

c. -e- → -a-

d. -d → -i

e. In Development C dialects [cf. II.D.], -a- → -i- between
-i- and -ŋ, -k; -ii- → -i-

The Merging of Third and Fourth-division Categories in
the Rime Dictionaries Listed in the Preface to the Ch'ieh-yün

[to be continued]

Lü	(1) 添 (*-iam), 鹽 (*-jam); 帖 (*-iap), 葉 (*-jap)	帖 (D) = 葉 (D)
Hsia-hou	添 (B) = 鹽 (B)	添 (C) = 鹽 (C)
	添 (B) = 鹽 (B)	
	(2) 先 (*-ian), 山 (*-jan); 屑 (*-iat) 薛 (*-jat)	
Hsia-hou	先 (A) = 山 (A) 先 (B) = 山 (B)	先 (C) = 山 (C)
Yang	先 (A) = 山 (A) 先 (B) = 山 (B)	先 (C) = 山 (C)
Tu	先 (A) = 山 (A) 先 (B) = 山 (B)	先 (C) = 山 (C)
Li		屑 (D) = 薛 (D)
Lü	先 (A) ≠ 山 (A) 先 (B) ≠ 山 (B)	屑 (D) ≠ 薛 (D)
	(3) 青 (*-in/*-ian), 清 (*-jin/*-jen); 錫 (*-ik/*-iak), 昔 (*-jik/*-jek)	
Lü	青 (B) = 清 (B)	錫 (D) = 昔 (D)
Hsia-hou	青 (B) ≠ 清 (B)	
Li		錫 (D) = 昔 (D)

The Merging of Third and Fourth-division Categories in
the Rime Dictionaries Listed in the Preface to the Ch'ieh-yün

[continued]

	(4)	齋 (*-iai), 祭 (*-jai)		齋 (C) = 祭 (C)
Li				
Tu				
Lü				
	(5)	蕭 (*-iau), 宵 (*-jau)		蕭 (C) = 宵 (C)
Yang				
Hsia-hou				
Li				
Tu				
Lü				

		蕭 (A) = 宵 (B)		蕭 (C) = 宵 (C)
		蕭 (A) = 宵 (B)		蕭 (C) = 宵 (C)
		蕭 (A) = 宵 (B)		蕭 (C) = 宵 (C)
		蕭 (A) ≠ 宵 (B)		蕭 (C) ≠ 宵 (C)
		蕭 (A) ≠ 宵 (B)		蕭 (C) ≠ 宵 (C)

1. 先 (*-ian); 屑 (*-iat)

biên	邊	(*pian A)
miên	眠	(*mian A)
biên	遍	(*pian B)
biện	辯	(*bian B)
biên	遍	(*pian C)
phiên	片	(*phiau C)
miên	麵	(*mian C)
bé	閉	(*piat D)
phách	撒	(*phiau D)
biết	斃	(*biat D)
miệt	蕞	(*miat D)

2. 青 (*-in); 錫 (*-ik)

tính	並	(*bin B)	bình	萍	(*bin A)
tịnh	並	(*bin B)	minh	暝	(*min A)
dánh	名	(*min B)		茗	(*min B)
				暝	(*min C)
			minh	名	(*min B)
			bích	壁	(*pik D)
			mích	覓	(*mik D)
			mich	覓	(*mik D)

Chart 80

Sino-Annamese Correlates to Some Fourth-Division Words.

V. Finals of the Second Division.

Up to a point the arrangement of the second-division categories runs parallel to that of the first division. First there are three sets of paired categories, as in the first division, ending, as in the first division, in unrounded vowels followed by *-m or *-p, *-n or *-t, *-ŋ or *-k (Chart 81, series 1, 2, 3). The remaining categories diverge: there are two high-vowel members in the second-division categories with unrounded vowels followed by *-i (Chart 81, series 5), where the first division has one member; the categories of rounded vowels followed by *-ŋ or *-k (series 4), diphthongs in *-u (series 6), and simple-vowel finals (*-u : *-â, series 7) have just one member in the second division where the first division has a pair with a height contrast.

The Ancient Chinese initials which precede second-division finals are *p-, *ph-, *b-, *m-, *k-, *kh-, *g-, *ŋ-, *ʔ-, *h-, *h̥-, *n-, *l-, and the retroflex initials *ṭ-, *ṭh-, *ḍ-, *ṭʂ-, *ṭʂh-, *dẓ-, *ʂ-. The retroflex initials testify to the earlier form of these words, in which the vowel was preceded by *-r-; the development of retroflexives from dentals followed by *-r- dates no later than the Han Dynasty.

The latest realization of the *-r- must have been as a front sound, since after *-r- all vowels changed to a front *-a-; reconstruction of the front feature is supported by the palatalization of most velar initials, in many modern dialects, before this vowel. Palatalization is, however, a much later change than retroflexion, though it no doubt began before the Ancient Chinese period.

First-division Finals

Second-division Finals

	A	B	C	D
1. L *-âm, *-âp	銜	檻	鑑	狎
H *-əm, *-ep	咸	聿	隔	洽
2. L *-ân, *-ât (& *-wân, *-wât)	刪	潛	諫	鑑
H *-ən, *-ət (& *-wən, *-wət)	山	產	禫	點
3. L *-ân, *-âk (* *-wân, *-wâk)	庚 _二	梗 _二	敬 _二	陌 _二
H *-əŋ, *-ək (& *-wəŋ, *-wək)	耕	耿	諍	麥
4. L *-əuŋ, *-əuk	江	講	絳	覺
H *-uŋ, *-uk				
5. L *-âi (& *-wâi)			夬	
H *-əi (& *-wei)	佳	蟹	卦	
	皆	駭	怪	
6. L *-âu				
H *-əu	肴	巧	效	
7. L *-â				
H *-u	麻 _二	馬 _二	禡 _二	

Chart 81

The Ch'ieh-yün's Second-Division Categories

[L = low; H = high]

The change of *-i- to *-a- before *-g, which we have posited for third-division finals, may also have been at work here. The early manifestation of this change, before that of *-i- to *-a- after *-r-, but coinciding with that of *-g to *-d after *-i-, appears to be the explanation for the double development of *-rig to Ancient *-a and *-ai, a duality amply attested in modern dialects (Chart 82). Words in which *-rig had changed to *-rag (→ *-a) were invulnerable to the intersecting change of *-rig to *-rid (→ *-ai); words in which *-rig had changed to *-rid were invulnerable to the change of *-rig to *-rag.

*-g was lost after all vowels and after both plain and labialized initials. *-d changed to *-i. For the second-division loss of *-d, which was limited to the position following [^]*-a- and a labialized initial, we assume an intermediate change of *-d to *-g. For example:

Archaic		Ancient
*krâg		*ka (A)
*krig		*ka (A)
*khrâg		*khwa (C)
*kwrig		*kwa (C)
* <u>h</u> wrâd	→ * <u>h</u> wrâg →	* <u>h</u> wa (C)

Evidence from Phonetic Compounds

The phonetic elements shared by the contrasting categories of the second division with categories of other divisions vouch for the diverse origins of these categories. For words with velar endings, phonetic

Category	佳	佳	皆
Example	佳	街	階
Archaic	*krig	*krig	*krid

A. Dialects with
contrasting *-rig :
*-rid reflexes.

Peking	tšia	tšie	tšie
Wenchow	ko	ka	ka
Nan-ch'ang	ka	kai	kai
Amoy	ka	ke ^{L1} kue ^C	kai ^{L2}
Foochow	ka	ke ^C	kai ^{L2}

B. Dialects without
contrasting *-rig :
*-rid reflexes.

Soochow	tšio ^L	tšio ^L k ^C	tšio ^L k ^C
Shuangfeng	ka	ka	ka
Canton	ka:i	ka:i	ka:i

Chart 82

The Double Development of *-rig

[C = colloquial, L = literary, with 1 an earlier literary stratum than 2]

elements correspond to Archaic rimes:

I. *-ŋ endings.

1. *-rân.

Phonetic elements: 行 尚 長 方

II 庚: (*-rân): 衡 橙 閤

I 唐 (*-ân): 行 堂 張 旁

III 陽 (*-jân): 尚 長 方

2. *-riŋ.

Phonetic elements: 丁 生 聖 并 鎰

II 庚: (*-riŋ): 町 生 勤 悝 榮

II 耕 (*-riŋ): 訂 煙 嬖 嶸

III 清 (*-jiŋ): 訂 性 輕 并 營

IV 青 (*-iŋ): 丁 星 經 瓶 螢

3. *-rəŋ.

Phonetic elements: 澄 蕩

II 庚: (*-rəŋ): 澄

II 耕 (*-rəŋ): 橙 蕩

I 澄 (*-əŋ): 澄 蕩

III 蒸 (*-jəŋ): 澄 憎

4. *-rəuŋ.

Phonetic elements: 冬 農

II 江 (*-rəuŋ): 降 濃

I 冬 (*-əuŋ): 冬 農

III 東: (*-jəuŋ): 降 濃

5. *-ruŋ.

Phonetic elements: 平 章 工 共

II 江 (*-ruŋ): 邦 撞 江 巷

I 東 (*-uŋ): 蓬 童 工 烘

III 鍾 (*-juŋ): 奉 重 現 恭

II. *-k endings.

1. *-râk.

Phonetic element: 各

II 陌 (*-râk): 客 I 鐸 (*-âk): 洛 ; III 藥 (*-jâk): 略

Phonetic element: 獲

II 陌 (*-râk): 獲 ; II 麥 (*-râk): 獲 ; I 鐸 (*-âk): 獲 ;

III 藥 (*-jâk): 獲

2. *-rik.

Phonetic elements: 責 商

II 陌 (*-rik): 噴 禱 ; II 麥 (*-rik): 責 摘

III 昔 (*-jik): 積 適 ; IV 錫 (*-ik): 績 嫡

3. *-rək.

Phonetic element: 或

II 麥 (*-rək): 蝸 國 ; I 德 (*-ək): 或 ; III 職 (*-jək): 黑 或

4. *-râuk.

Phonetic elements: 暴 雀

II 覺 (*-râuk): 黠 確 ; I 鐸 (*-âuk): 爆 鶴 ;

I 沃 (*-əuk): 雀 ; I 屋 (*-uk): 曝

5. *-rœuk:

Phonetic element: 𪗇

II 𪗇 (*-rœuk): 𪗇 ; I 沃 (*-œuk): 𪗇

6. *-ruk:

Phonetic element: 豕

II 𪗇 (*-ruk): 豕 ; I 豕 (*-uk): 豕 ; III 𪗇 (*-juk): 豕

III. *-g endings.

1. *-râg.

Phonetic elements: 者 女 且

II 𪗇 (*-râg): 者 女 且 ; I 𪗇 (*-âg): 者 女 且

III 𪗇 (*-jâg): 者 女 且 ; III 𪗇 (*-jrâg): 者 且

2. *-rig.

Phonetic elements: 卑 圭 麗

II 𪗇 (*-rig): 卑 圭 麗 ; III 𪗇^a (*-jig): 卑 圭 麗

IV 𪗇 (*-ig): 卑 圭 麗

3. *-rœg.

Phonetic element: 矣

II 𪗇 (*-rœg): 矣 ; I 矣 (*-œg): 矣 ; III 矣 (*-jœg): 矣

4. *-râug.

Phonetic element: 高

II 𪗇 (*-râug): 高 ; I 𪗇 (*-âug): 高 ; III 𪗇^b (*-jâug): 高

5. *-rœug.

Phonetic elements: 5 琴

II 𪗇 (*-rœug): 琴 ; I 𪗇 (*-œug): 琴

III 𪗇 (*-jœug): 琴

Words in the Ch'ieh-yün categories with *-m, *-p, *-n, *-t endings which correspond to the first-division categories with Ancient *-â- have Shih-ching *-â- rimes. One group of these words shares phonetic elements with third-division "b" or "2" (never "a" or "1") category words; for this group we reconstruct pre-Archaic *-â-. Another group shares phonetic elements with third-division "c" or "3" category words, indicating pre-Archaic *-əu- (→ *-u- → *-â- in the Shih-ching system of changes).

In the categories corresponding to the first-division *-ə- categories there is, in addition to words with Shih-ching *-i- and *-ə-, a group of words which have an a-vowel in the Shih-ching. Phonetic compounds show this group to have a double origin. One subgroup has the same phonetic elements as do words of the third-division "c" or "3" categories, for which we have reconstructed pre-Archaic *-əu- → *-u-; *-u-, then, changed to *-â- in the dialect of the Shih-ching, to *-ə- in the dialect which was the source of the Ch'ieh-yün's classification (see Charts 84-91).

The other subgroup of words which have an a-vowel in the Shih-ching and are in the Ch'ieh-yün's 咸, 洽, 山, 黠 categories shares phonetic elements with the third-division "a" or "1" categories (i.e. *-ja-) or the fourth-division categories (i.e. *-ia-). Here we infer a front *-a- in the Shih-ching (e.g. proto-Chinese *-ram → *-ram; *-raum → *-râm). *-ə- merged with this *-a- before *-â- was fronted to *-a-.

In the second division, unlike the first or third divisions, the raising of *-əu- to *-u- before *-d preceded the first, universal, *-u- to *-ə- fronting (Chart 92). (When *-u- later changed to *-â- in the Shih-ching-type

development, there were thus no words with *-ud in the second division.) The merging of proto-Chinese *-rəud and proto-Chinese *-rud was so early that no phonetic compounds in the second-division 夬 category share phonetic elements with the third-division 廢 (*-jəud) category. A number of shared phonetic elements point, however, to *-rud as one source of the 皆 category (and one source of the Shih-ching *-rəd final). And, as before the *-m, *-p, *-n, *-t endings, the category which corresponds to the first-division *-ə- categories has an *-a- origin.

I. *-m endings.

1. Pre-Archaic *-ram; Shih-ching *-ram.

Phonetic element: 兼

II 咸 : 兼 ; III 鹽¹ (*-jam): 兼 ; IV 添 (*-iam): 兼

2. Pre-Archaic *-râm; Shih-ching *-râm.

Phonetic element: 𪚩

II 銜 : 𪚩 ; III 鹽² (*-jâm): 𪚩 ; I 談 (*-âm): 𪚩

3. Pre-Archaic *-rəum; Shih-ching *-râm.

(a) Northern classification:

Phonetic element: 奄

II 銜 : 奄 ; III 鹽³ (*-jəum): 淹

III 嚴凡^c (*-jəum): 奄 ; I 覃 (*-əum, S): 淹

(b) Southern classification:

Phonetic element: 僉

II 咸 : 僉 ; III 鹽³ (*-jəum): 僉

III 嚴凡^c (*-jəum): 僉

4. Pre-Archaic *-rəm; Shih-ching *-rəm.

Phonetic elements: 咸音甚

II 咸 : 咸 循 湛 ; III 侵 (*-jəm): 藏 音 甚

I 覃 (*-əm): 感 暗 湛

II. *-p endings.

1. Pre-Archaic *-rap; Shih-ching *-rap.

Phonetic element: 夾

II 洽 : 狹 ; III 葉¹ (*-jap): 狹 ; IV 帖 (*-iap): 狹

[The graphic representation of words of the 狎 category which share these phonetic elements may be assumed to postdate the *-â- to *-a- change.]

2. Pre-Archaic *-râp; Shih-ching *-râp.

Phonetic element: 厭

II 狎 : 厭 ; III 葉² (*-jâp): 厭

3. Pre-Archaic *-rəup; Shih-ching *-râp.

Southern classification:

Phonetic element: 奄

II 洽 : 踰 ; III 業^c (*-jəup): 賴 窶

I 合 (*-əup, S): 置 鞞

4. Pre-Archaic *-rəp; Shih-ching *-rəp.

Phonetic element: 合

II 洽 : 洽 ; III 緝 (*-jəp): 翕 ; I 合 (*-əp): 合

III. *-n endings.

1. Pre-Archaic *-ran; Shih-ching *-ran.

Phonetic element: 𦵏

II 山 : 𦵏 ; III 仙^a (*-jan): 𦵏 ; IV 先 (*-ian): 𦵏

I 寒 (*-an): 𦵏

The graphic representation of words in the 刪 category which share phonetic elements with categories III^a and IV must derive from the period after *-â- changed to *-a-. For example:

Phonetic element: 𦵏

II 刪 : 還 ; III 仙^a (*-jan): 𦵏羽 ; IV 先 (*-ian): 𦵏

Similarly, where words in the 山 category share phonetic elements with words in the III^a and III^b categories (*-jan, *-jân), we assume an *-a- vowel and extension of the phonetic element to words in the III^b category after *-jân had changed to *-jan. For example:

Phonetic element: 𦵏

II 山 : 𦵏 ; III 仙^a (*-jan): 𦵏 ; III 仙^b (*-jân → *-jan): 𦵏

2. Pre-Archaic *-rân; Shih-ching *-rân.

Phonetic element: 𦵏

II 刪 : 𦵏 ; III 仙^b (*-jân): 𦵏

3. Pre-Archaic *-ræun; Shih-ching *-rân.

(a) Northern classification:

Phonetic elements: 干 安

II 刪 : 𦵏 ; III 元^c (*-jæun): 𦵏 ; I 寒 (*-æun):

干 安

(b) Southern classification:

Phonetic element: 元

II 山 : 頑 ; III 元^c (*-jəun): 元 ; I 寒 (*-əun): 玩

4. Pre-Archaic *-rən; Shih-ching *-rən.

Phonetic element: 良

II 山 : 艮 ; III 真^b (*-jən): 銀 ; I 痕 (*-ən): 痕

5. Pre-Archaic *-rin; Shih-ching *-rin.

Phonetic element: 堅

II 山 : 堅 ; III 真^a (*-jín): 繫 ; IV 先 (*-in): 堅

No phonetic elements span the (*-əu- →) *-u- : *-â- merging; one element does, however, link *-u- and *-ə-:

6. *-u- → *-ə-:

Phonetic element: 分

II 山 : 盼 ; III 真^b (*-jən): 貧 ; III 殷^c (*-jun): 分

IV. *-t endings.

1. Pre-Archaic *-rat; Shih-ching *-rat.

Phonetic element: 截

II 點 : 齒截 ; III 薛^a (*-jat): 截 ; IV 屑 (*-iat): 截

2. Pre-Archaic *-rât; Shih-ching *-rât.

There is no phonetic element unique to the second-division 銜 category and the third-division 薛^b category. See 6. below.

3. Pre-Archaic *-rəut; Shih-ching *-rât.

(a) Northern classification:

Phonetic element: 月

II 信 : 朔 ; III 月^c (*-jəut): 月

(b) Southern classification:

Phonetic element: 友

II 點 : 板 ; III 月^c (*-jəut): 髮

III 物^c (*-jut): 紱 ; I 末 (*-əut): 跋

4. Pre-Archaic *-rət; Shih-ching *-rət.

Phonetic element: 乙

II 點 : 軋 ; III 質^b (*-jət): 乙

5. Pre-Archaic *-rit; Shih-ching *-rit.

Phonetic element: 吉

II 點 : 點 ; III 質^a (*-jit): 吉 ; IV 屑 (*-it): 結

Phonetic elements which span the (*-əu- →) *-u- : *-â-, *-u- : *-ə- mergings:

6. *-əu- → *-u- → *-â-.

Phonetic element: 曷

II 信 : 藹 ; III 薛^b (*-jât): 竭 ; III 月^c (*-jəut → *-jut → *-jât): 歇 ; I 末 (*-əut → *-ut → *-ât): 葛

7. *-u- → *-ə-.

Phonetic element: 出

II 點 : 臬出 ; III 質^b (*-jət): 拙 ; III 物^c (*-jut → *-jət): 屈 ; I 末 (*-ət): 拙

V. *-d endings.

1. Pre-Archaic *-rad; Shih-ching *-rad.

Phonetic element: 祭

II 皆 : 祭 ; III 祭^a (*-jad): 際 ; I 泰 (*-ad): 蔡

2. Pre-Archaic *-râd; Shih-ching *-râd.

Phonetic element: 曷

II 夬 : 喝 ; III 祭^b (*-jâd): 揭 ; I 泰 (*-âd): 藹

3. Pre-Archaic *-rêd; Shih-ching *-rêd.

No unique phonetic elements; see 6. below.

4. Pre-Archaic *-rud; Shih-ching *-rud.

Phonetic element: 威

II 皆 : 歲 ; III 微^c (*-jud): 威

5. Pre-Archaic *-rid; Shih-ching *-rid.

II 皆 : 皆 ?; III 脂^a (*-jid): 旨 ?; IV 齊 (*-id): 諧 ?

Spanning the *-u- : *-ø- merger are five phonetic elements. For example:

6. Phonetic elements:

II 皆 : 排 槐 ; III 脂^b (*-jêd): 悲 槐

III 微^c (*-jud): 非 鬼 ; I 灰 (*-wêd): 輩 魁

Evidence from Rime Practice

Phonetic elements reveal a richness of finals which goes beyond the limited contrasts of the Ch'ieh-yün; these contrasts are even fewer in the rime practice of the fourth to sixth centuries, which is essentially that of the Southern Dynasties. For example: though the 耕 category (← *-riŋ and *-rêŋ) shares phonetic elements with the categories (proto-Chinese *-iŋ), 青 (proto-Chinese *-eŋ), 登 (proto-Chinese *-jiŋ), and 蒸 (proto-Chinese *-jêŋ), it rimes only with 青 (*-iŋ → Ancient *-iaŋ) and 清 (*-jiŋ, which we may assume had changed by

this time to *-jaŋ in Development B, e.g. early Foochow). 庚_二 (← *-râŋ) shares phonetic elements with 唐 (proto-Chinese *-âŋ) and 陽 (proto-Chinese *-jâŋ), but rimes with words of neither of these categories, which had the *-â- vowel in Ancient Chinese; instead, it rimes with words of the same categories that 耕 does. (Note that while the first-division contrasts *-âm : *-əm, *-âp : *-əp, *-ân : *-ən, *-ât : *-ət, *-âŋ : *-əŋ, *-âk : *-ək, *-âi : *-əi, and *-âu : *-əu are either completely or partially preserved in modern dialects, there are no reflexes in these dialects for the posited distinctions 銜 : 咸 , 狎 : 洽 , 刪 : 山 , 鑑 : 點 , 庚_二 : 耕 , 陌_二 : 麥 , or 夬 : 佳 : 皆 . In Cantonese, for example, 銜 is ha:m¹¹; 咸 is also ha:m¹¹.)

Evidence from Earlier Rime Dictionaries

Though in his classification of some words Lu Fa-yen must have had to rely on early fan-ch'ieh and phonetic elements, his general basis for recognizing categories which had merged in the speech of his time was the practice of earlier rime dictionaries. It is apparent that his aim was to be all-inclusive; whenever any rime dictionary distinguished two categories where another rime dictionary recognized only one, the compilers of the Ch'ieh-yün listed the categories as contrasting. From the notes in the table of contents to Wang Jen-hsu's version of the Ch'ieh-yün it is clear, for example, that the acceptance of the three categories 佳 , 夬 , and 皆 , which had merged in a single final, *-ai, was a compromise, and one that resulted in the maximum number of distinctions. The basis for the establishment of the 佳 (*-ai ← *-rig) category is historically obvious;

all the members of this category derive from one final, *-rig, and have the same phonetic elements as do phonetic compounds representing words of the 齊 (fourth-division *-ig) category. In Lü Ching's dictionary, the 夬 (*-ai ← *-râd) category was, however, not separate from the 會 (隊) (*-wei ← *-wed) category of the first division; instead of accepting Lü Ching's arrangement, Lu Fa-yen followed Hsia-hou Yung. In Li Chi-ch'ieh's dictionary, the 夬 (*-ai ← *-râd) category and the 皆 (*-ai ← *-rid, *-rêd, *-rêg, *-rad) category were not separated; instead of accepting Li Chi-chieh's arrangement, Lu Fa-yen followed Hsia-hou Yung. In Hsia-hou Yung's dictionary, the 皆 (*-ai ← *-rid, *-rêd, *-rêg, *-rad) category was not separated from the 泰 (*-âi ← *-âd) category of the first division. Instead of following Hsia-hou Yung's arrangement, Lu Fa-yen followed Tu T'ai-ch'ing.

In recognizing two categories for 庚: (← *-rân) and 耕 (← *-riŋ, *-rêŋ), and for 陌: (← *-râk) and 麥 (← *-rik, *-rêk), Lu Fa-yen was again seeking to preserve all of the distinctions recognized by previous rime dictionaries (see Chart 83).

Li Chi-chieh's dictionary did not distinguish the labial-ending category 衞 from 威 or 狎 from 洽. The Ch'ieh-yün's treatment of these categories reflects that of Hsia-hou Yung's dictionary, which did separate them. In Lü Ching's dictionary, the 威 and 洽 categories are put together with the 鹽 (*-jam) and 葉 (*-jap), 添 (*-iam) and 帖 (*-iap) categories; the 衞 and 狎 categories are together with the 談 (*-âm) and 盍 (*-âp) categories. The Ch'ieh-yün distinguishes all these categories.

Archaic	*-riŋ, *-rəŋ	*-rân	*-iŋ	*-jiŋ
Ancient			*-iŋ/*-iaŋ	*-jiŋ/*-jeŋ/ *-jaŋ
Tone A	1. 耕	2. 庚	3. 青	4. 清
Tone B	1. 耿	2. 梗	3. 迥	4. 靜
Li	(1=2=3)	(1=2=3)	(1=2=3)	(4)
Tu	(1=2=3)	(1=2=3)	(1=2=3)	(4)
Lü	(1=3=4)	(2)	(1=3=4)	(1=3=4)
Hsia-hou	(1)	(2=4)	(3)	(2=4)
Tone C	1. 諍	2. 敬	3. 徑	4. 勁
Lü	(1=2=3=4)	(1=2=3=4)	(1=2=3=4)	(1=2=3=4)
Hsia-hou	(1)	(2=4)	(3)	(2=4)
Archaic	*-rik, *-rək	*-râk	*-ik	*-jik
Ancient			*-ik/*-iak	*-jik/*-jek/ *-jak
Tone D	1. 麥	2. 陌	3. 錫	4. 昔
Li			(3=4)	(3=4)
Hsia-hou		(2=3)	(2=3)	
Lü	(1=3)		(1=3)	(4)

Chart 83

The Merging of Second, Third, and Fourth-Division Categories
with *-ŋ, *-k Endings in Early Rime Dictionaries.

[Numbers in parentheses correlate with those in the headings for each tone; Li (1=2=3) under Tone B means, for example, that Li's dictionary had only one category for characters with finals of the categories 耿, 梗, and 迥, in Tone B.]

Li Chi-chieh' again recognized only one category for the second-division dental-nasal ending *-an and one for the dental-stop ending *-at. Hsia-hou Yung distinguished 刪 from 山, 鎔 from 點. Yang Hsiu-chih combined 山 with 仙 (*-jân) and 先' (*-ian). Lü Ching combined 刪 (B) with 寒 (*-ân; B). Lu Fa-yen's Ch'ieh-yün incorporated all of these categories of the early rime dictionaries.

Asymmetries in the Ch'ieh-yün's Classification

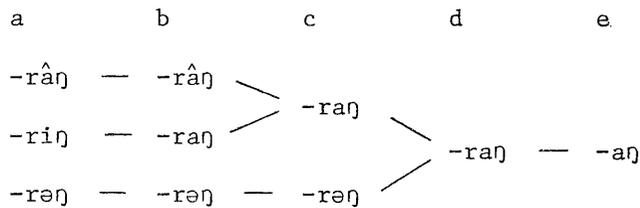
Words in Archaic *-rân belong unambiguously to the 庚₂ category; those in *-râk belong to the 陌₂ category. One complex of shared phonetic elements links words with Archaic *-rân and words of the first-division 庚 (*-ân) category and the third-division 陽 (*-jân) category; another links words with Archaic *-râk and words of the first-division 鐸 (*-âk) category and the third-division 藥 (*-jâk) category.

There are, however, words in the same 庚₂ category with *-rân words which have Archaic *-riŋ and which share phonetic elements with the fourth-division 青 (*-iŋ) category and the third-division 清 (*-jiŋ) category, or which have Archaic *-rəŋ and share phonetic elements with the first-division 登 (*-əŋ) category and the third-division 蒸 (*-jəŋ) category. And there are words in the 陌₂ category with *-râk words which have Archaic *-rik and share elements with the fourth-division 錫 (*-ik) category and the third-division 昔 (*-jik) category. It is not likely that Lu Fa-yen ignored phonetic elements and classified homonymous words at random--words with *-rân/*-râk are never found in the 耕 / 夔 categories--these

classifications imply, rather, different changes or different sequences of changes, as do the categories of the early rime dictionaries; type B below may be the sequence which led to the categories of Hsia-hou's dictionary (cf. Chart 83; note that Chart 93 offers just one of the possible sets of changes which may have led to the merging of the *-ŋ finals).

A.

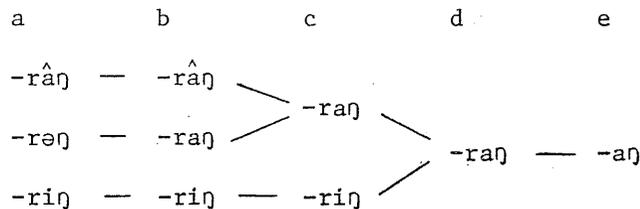
Sequence of changes implied by words in the 庚 (*-râŋ) category which share phonetic elements with the fourth-division 青 (*-iŋ) category or the third-division 清 (*-jiŋ) category.



a. i → a; b. â → a; c. ə → a; d. -r- → -∅-

B.

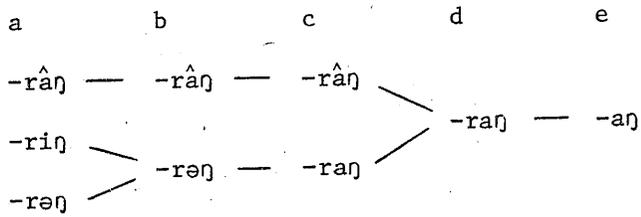
Sequence of changes implied by words in the 庚 (*-râŋ) category which share phonetic elements with the first-division 登 (*-əŋ) category or the third-division 蒸 (*-jəŋ) category.



a. ə → a; b. â → a; c. i → a; d. -r- → -∅-

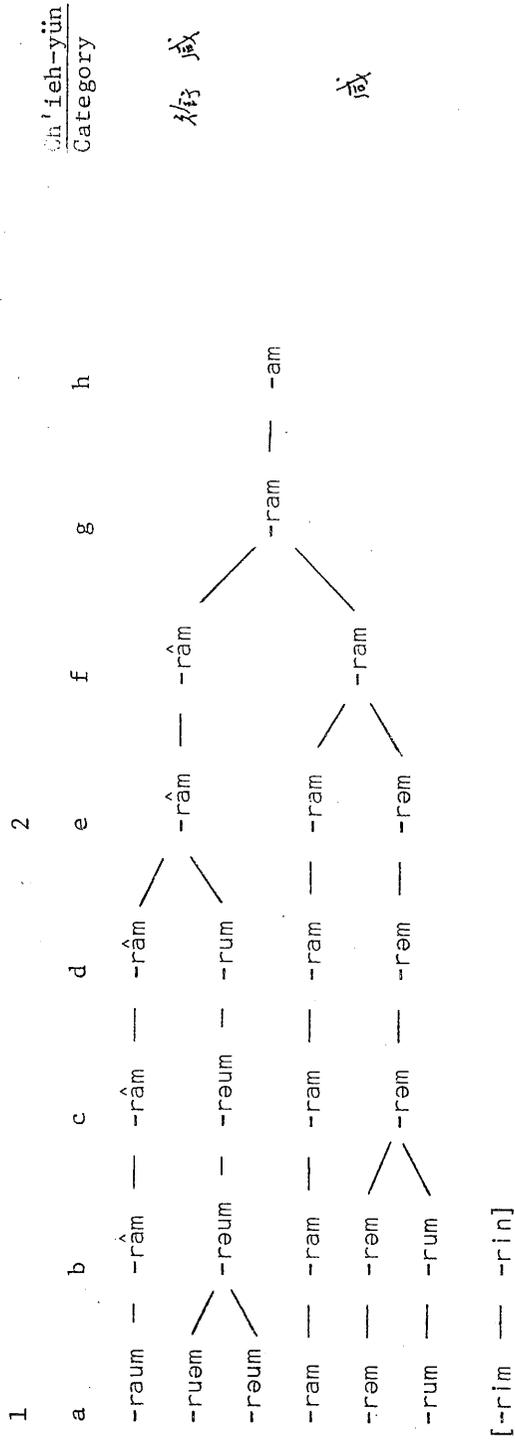
C.

Sequence of changes implied by words in the 耕 (*-riŋ, *-rəŋ) category which share phonetic elements with (1) the fourth-division 青 (*-iŋ) category or the third-division 清 (*-jiŋ) category; (2) the first-division 登 (*-əŋ) category or the third-division 蒸 (*-jəŋ) category.



- a. $i \rightarrow \epsilon$ [or $\epsilon \rightarrow i?$]; b. $\epsilon \rightarrow a$ [or $i \rightarrow a?$]; c. $\hat{a} \rightarrow a$;
 d. $-r- \rightarrow -\emptyset-$.

Second Division: *-m Endings; Shih-ching-type Development.



Ch'ieh-yün
Category

行 咸

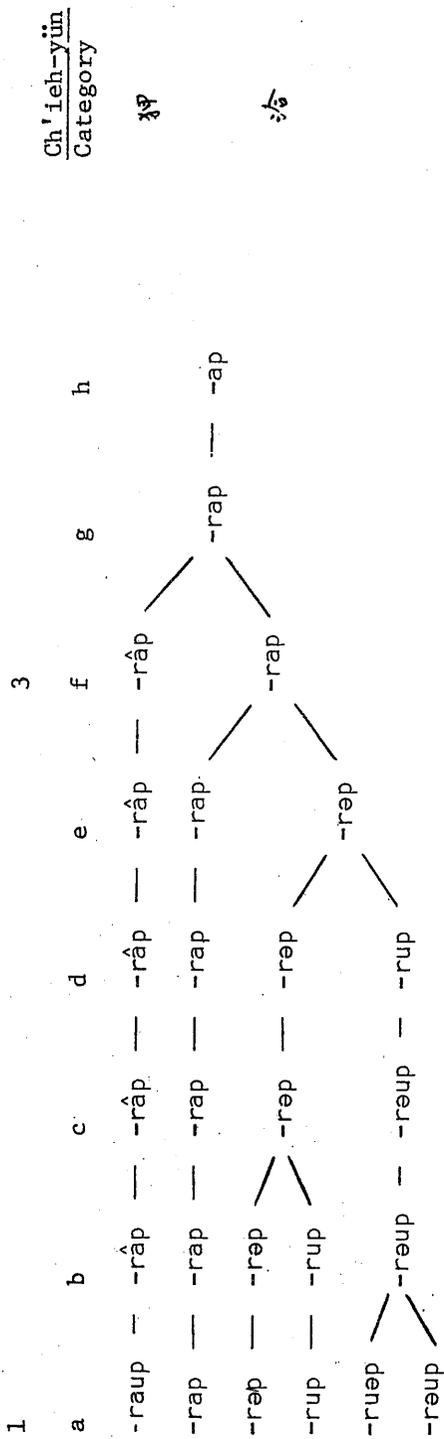
咸

Changes:

- a. au → â; ue → ê; -m → -n after -i-
- b. u → ø
- c. øu → u
- d. u → â
- e. ø → a
- f. â → a
- g. -r- → -∅-

Chart 87

Second Division: *-p Endings; Non-Shih-ching-type Development.



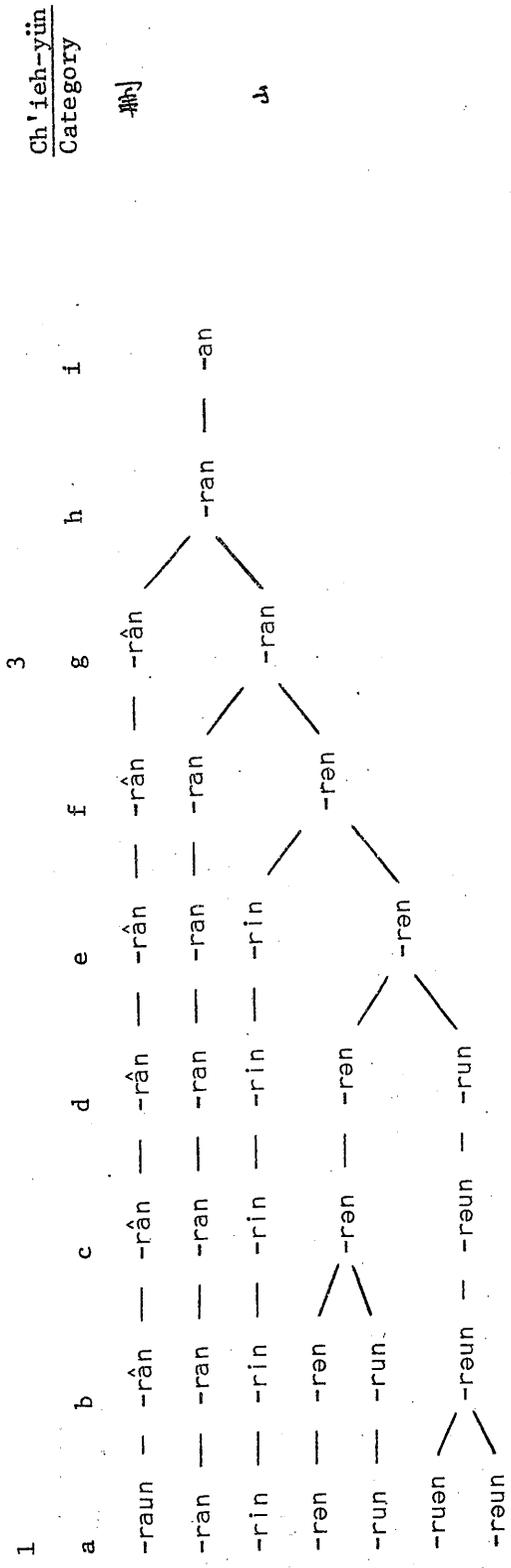
[-rip, -rit]

Changes:

- a. au → â; ue → eu; p → -t after -i-
- b. u → e
- c. eu → u
- d. u → e
- e. e → a
- f. â → a
- g. -r- → -∅-

Chart 89

Second Division: *-n Endings; Non-Shih-ching-type Development.

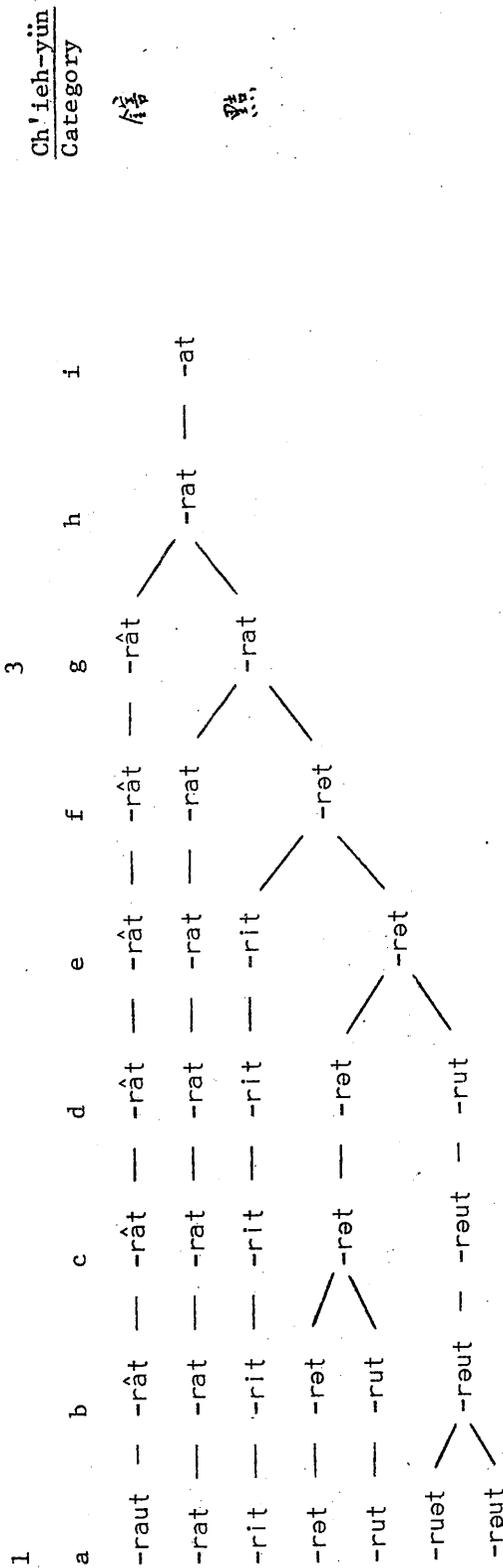


Changes:

- a. au → â; ue → eu
- b. u → e
- c. eu → u
- d. u → e
- e. i → e
- f. e → a
- g. â → a
- h. -r- → -∅-

Chart 91

Second Division: *-t Endings; Non-Shih-ching-type Development.

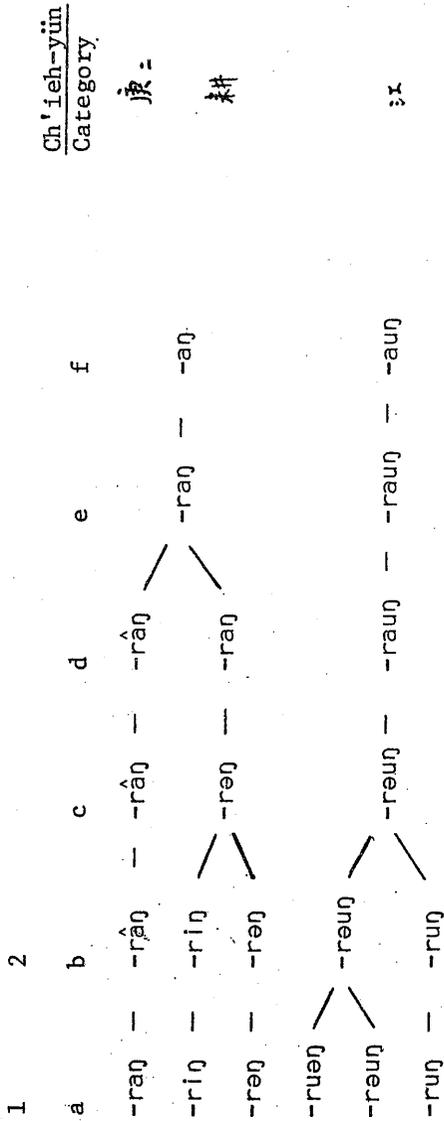


Changes:

- a. au → â; ue → øu
- b. u → ø
- c. øu → u
- d. u → ø
- e. i → ø
- f. ø → a
- g. â → a
- h. -r- → -Ø-

Chart 93

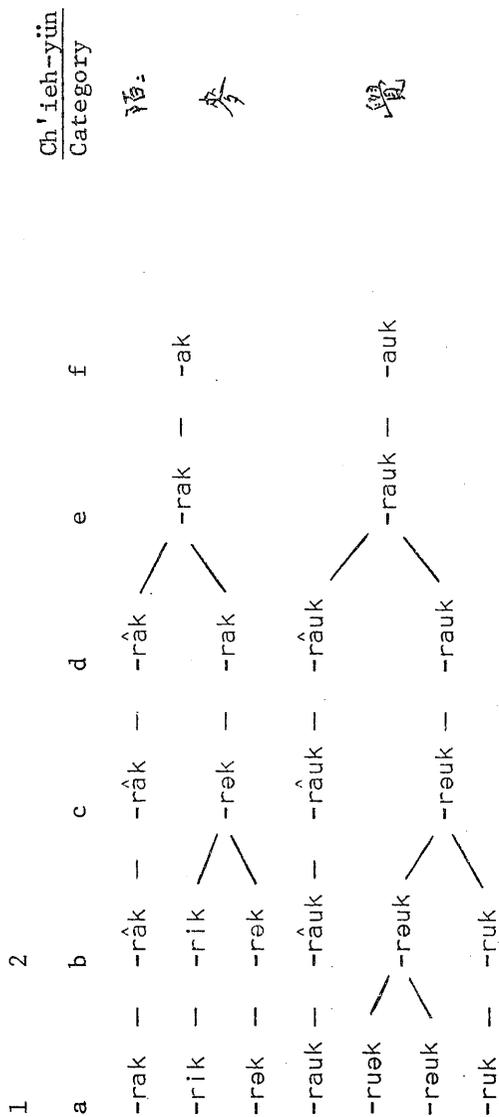
Second Division: *-ŋ Endings.



Changes:

- a. a → â, ue → eu [proto-Chinese *-rauŋ → pre-Archaic *-raŋ or *-ruŋ? cf. Archaic *-auŋ : Ancient *-âŋ and *-uŋ]
- b. u → eu (cf. *-ug → *-eug → *-eu); i → e
- c. e → a
- d. â → a
- e. -r- → -Ø-

Second Division: *-k Endings



Changes:

- a. a → â; ue → eu
- b. u → eu; i → e
- c. e → a
- d. â → a
- f. -r- → -Ø-

Chart 95

Second Division: *-g Endings.

1	2	a	b	c	d	e	f	g	h	Ch'ieh-yün Category
-rag	-râg	-râg	-râg	-râg	-râg	-râg	-rag	-ra	-a	(Archaic *-râg)
-rig	-rig	-rag	-rid	-rid	-rag	-rag	-rag	-ra	-a	(Archaic *-rig)
-reg	-reg	-red	-red	-red	-red	-red	-rad	-rai	-ai	(Archaic *-reg [& *-rid, *-red, *-rad])
-raug	-râug	-râug	-râug	-râug	-râug	-râug	-raug	-rau	-au	(Archaic *-râug, *-reug)
-ruog	-ruog	-reug	-reug	-reug	-reug	-reug	-raug	-rau	-au	
-rug	-rug	-rug								

Changes:

- a. a → â; ue → eu; u → eu
- b. i → a before -g while -g → -d after i and e
- c. i → e before -d
- d. e → a
- e. â → a
- f. -g is lost; -d → -i
- g. -r- → -∅-

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不准翻印

每册定價新臺幣捌拾元

著者	張琨 Betty Shefts CHANG
編輯者	中央研究院歷史語言研究所 臺北市南港區研究院路
發行者	中央研究院歷史語言研究所 臺北市南港區研究院路
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