

LATE MIDDLE CHINESE

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ABBREVIATIONS AND CONVENTIONS

GO	Goon
hP	hP'ags-pa
KO	Kan'on
Man.	Mandarin
SK	Sino-Korean
SV	Sino-Vietnamese

Reconstructed forms of Chinese syllables are given in the International Phonetic Alphabet. A distinction is made between underlying phonological representations placed between slant lines and approximate phonetic values placed in square brackets. Other Chinese and foreign readings for Chinese characters are given in italics according to the following conventions:

Mandarin—modified Wade-Giles romanization (occasionally with phonological representations between slant lines).

Sino-Japanese—transcribed *kana* spellings. Note that these are normalized according to the *gojūon* system, *i.e.* *si, zi, ti, tu, di, du, hu*, not *shi, ji, chi, ji, zu, fu*. Traditional *kana* orthography is followed, *i.e.* *kau, kahu* for modern *kō*; *keu, hehu* for modern *kyō*, etc. But such spellings as *kuwan, kiyau* are abbreviated to *kwan, kyau*. Note that *h* had the value of a labial stop [p] or fricative [ɸ]. The *kō otru* distinction in certain syllables in the Nara period is indicated where necessary by superscript numerals as in Wenck 1954-9. (The vowels in question are (a) *i* and *e* after velar and labial initials, (b) *o* after all initials except *h, b, w*. *o*² was probably an unrounded central vowel [ə]. According to Hattori 1959, p. 286, *i*¹ and *e*¹ were [ji] [je] respectively.)

Sino-Korean—The consonantal signs of the *hangul* alphabet are transcribed as follows: ㄱ k, ㅋ k', ㅇ ŋ, ㄷ t, ㅌ t', ㄴ n, ㅍ p, ㅍ p', ㅁ m, ㅅ c, ㅆ c', ㅈ s, ㅊ z, ㅎ h, ㅀ zero, ㅁ 1. The vowel signs are interpreted according to the following scheme based on presumed Middle Korean values (adapted from Ledyard 1956). *Yin* and *yang* designate the vowel harmony classes, presumed to mean palatal *v*. non-palatal. Modern values in McCune-Reischauer transcription are given in brackets:

		Neutral ji (i)			
Yang 、 ə (a)				Yin - i (ü)	
ʈ a	(a)	ʈ ja	(ya)	ʈ e	(ö)
ɮ o	(o)	ɮ jo	(yo)	ɮ u	(u)
		ɮ j (ae)		ɮ ij (üi)	
ɰ aj	(ae)	ɰ jaj	(yae)	ɰ ej	(e)
ɰ oj	(oe)			ɰ uj	(wi)
ɰ oa	(wa)			ɰ ue	(wö)
ɰ oaj	(wae)			ɰ uej	(we)

The vowels transcribed as *i* and *u* are presumed to have been phonetically a somewhat retracted front [ɪ] and a front rounded [y] respectively. The first elements *o* and *u*, in the combinations *oa*, *oaj*, *ue*, *uej* may have been either tense [u] [y] or lax [w] [ɥ]. (On this tense-lax distinction in medials see p. 232 below.)

Sino-Vietnamese—Quốc-ngũ romanization. For the phonetic values in Northern and Southern dialects see Henderson 1966. A phonological interpretation of the Vietnamese vowel system is given in Pulleyblank 1969.

hP'ags-pa—The letters of the hP'ags-pa alphabet are transcribed according to their Tibetan equivalents as follows: ༀ k, ༁ k', ༂ g, ༃ ḡ, ༄ č, ༅ č', ༆ j, ༇ ḡ, ༈ t, ༉ t', ༊ d, ་ n, ༌ p, ། p', ༎ b, ༏ m, ༐ ts, ༑ ts', ༒ dz, ༓ w, ༔ z, ༕ z, ༖ h, ༗ y, ༘ (not used for Chinese), ༙ l, ༚ ś, ༛ s, ༜ h, ༝ ḡ, ༞ i, ༟ u, ༠ e, ༡ o, ༢ -y-, ༣ -w-. The following additional letters, not found in Tibetan, are used for Chinese: ༤ f, ༥ x, ༧ -i- (the above, together with ༦ q, are part of the original hP alphabet, designed as a universal alphabet for the Mongolian empire); ༨ f', ༩ ś', ༫ y', ༬ h' (the above are special forms, used in the *Meng-ku tzu-yün* but seldom found on inscriptions, introduced to account for certain historical distinctions in Chinese which were no longer part of the living language in the Mongol period). On the meaning and value of the letter -j- and other questions of interpretation see Pulleyblank 1970.

BIBLIOGRAPHY ABBREVIATIONS

AM	<i>Asia Major</i>
AOH	<i>Acta Orientalia Academiae Scientiarum Hungaricae</i>
BEFEO	<i>Bulletin de l'École Française d'Extrême-Orient</i>
BIHP	<i>Bulletin of the Institute of History and Philology, Academia Sinica</i> 中央研究院歷史語言研究所集刊
BMFEA	<i>Bulletin of the Museum of Far Eastern Antiquities</i>

BSOAS	<i>Bulletin of the School of Oriental and African Studies</i>
CHHP	<i>Ch'ing-hua Hsüeh-pao</i> 清華學報
HJAS	<i>Harvard Journal of Asiatic Studies</i>
JAOS	<i>Journal of the American Oriental Society</i>
MS	<i>Monumenta Serica</i>
MTB	<i>Memoirs of the Research Department of the Tōyō Bunko</i>
TG	<i>Tōyō Gakuhō</i> 東洋學報
TP	<i>T'oung Pao</i>
YCHP	<i>Yen-ching Hsüeh-pao</i> 燕京學報

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rhyme tables, starting with the *Yün-ching*, have been used primarily as keys to the phonological system of the *Ch'ieh-yün*. This is indeed what they purport to be if taken at face value. Nevertheless the standard language of the latter part of the T'ang dynasty when the phonological categories underlying the rhyme tables were first devised was a very different and more evolved form of Chinese than the standard language which underlay the *Ch'ieh-yün*. The *Ch'ieh-yün* represented what we may call the "standard Mandarin" of the Northern and Southern Dynasties and probably reflected most closely the educated court speech of Nanking in the sixth century. By mid and late T'ang this form of speech was obsolete and had been replaced by a standard based on the dialect of the Sui-T'ang capital, Ch'angan. Since it was at this later time that the system of first thirty, then thirty-six initials, the four grades, the grouping of rhymes into tables, etc., were developed, it is natural to assume that these categories had relevance primarily to the later standard; and this is confirmed by the fact that the rhyming of ninth-century poets such as Li Ho and Po Chü-i who were uninhibited by *lü-shih* canons accords with the rhyme groups (*she* 韻) of the rhyme tables.¹

As will appear below, further confirmation comes from the way in which the systematic borrowings of Chinese made in mid and late T'ang by other East Asian countries—the Kan'on form of Sino-Japanese, Sino-Korean and Sino-Vietnamese—agree with the rhyme table categories and ignore distinctions made in the *Ch'ieh-yün* that are not preserved in the rhyme table categories. Modern dialects, too, seldom reflect distinctions that are not found in the rhyme table categories.

Rather than proceeding in one step to a complete reconstruction of the *Ch'ieh-yün* language using the rhyme tables merely as subsidiary evidence, as Karlgren attempted to do, we ought first to reconstruct the rhyme table language as a synchronic system. Only then will we be in a position to try to determine the nature of the distinctions made in the *Ch'ieh-yün* but not in the rhyme tables.

The new T'ang standard was, of course, descended from the same Old Chinese language as the *Ch'ieh-yün* standard and the phonological categories are therefore comparable. That is, we can in general say that category X of the later language corresponds to category Y of the earlier, or, as very often happens, that category X of the later language combines categories Y and Z of the earlier language. Very occasionally the situation is more complicated but in general we can treat the later language as if it had developed out of the earlier. While this may be a useful fiction for doing historical phonology, the actual phonetic history was undoubtedly much more complex. The immediately ancestral forms of the T'ang language

¹ See Pulleyblank 1968. A closely similar view on the nature of the *Ch'ieh-yün* is expressed in Chou Tsu-mo, 1966, pp. 434-73.

must have already been divergent from the *Ch'ieh-yün* standard even in Sui. When, for example, the phonetic realization of a category can be shown to have differed in the two standards, this need not, and probably often does not, mean a direct phonetic change from one to the other. In some cases a non-standard pronunciation originating in some part of China may have spread over both the old dominant dialect area and the new. In other cases there may simply have been a shift from one underlying dialect to the other.

Thus the fronting of the central medial /i/ to /i/, leading to the merger of *Ch'ieh-yün* rhymes like *yüan* 元 and *hsien* 仙, has affected nearly all parts of the Chinese language community.² Vestiges of the earlier distinction (no longer expressed as a contrast between /i/ and /i/) survive only in parts of the Min dialect area. We cannot tell whether the shift had originated already before T'ang in the Ch'ang-an region and spread to other parts of China from there under the influence of the new standard language, or whether it was an innovation of T'ang date which became part of the standard language as well as affecting other dialect regions. On the other hand, the pronunciation of nasal initials as prenasalized voiced stops in T'ang, which gave, for example, Kan'on *ba* in contrast to Go-on *me* for the word for "horse", was very likely a peculiarity of the Ch'ang-an dialect, no doubt pre-existing the T'ang period, but one that did not spread to other regions. A possible exception would be the Southern Min area, if Forrest is right in attributing the allophonic alternation between voiced stops and nasals found in that region exclusively to what he calls T'ang-Min, that is, the literary pronunciation of characters imported into the area during T'ang.³ On the other hand it may be that this feature of Southern Min and the prenasalized voiced stops of T'ang (which still survive in some Shansi dialects) both reflect a type of pronunciation which had once been more widespread and may have relevance, therefore to Old Chinese, or proto-Chinese.

Another case in point is the velar or uvular pronunciation of the "throat" initial /x/ which seems to have been characteristic of T'ang pronunciation, as in later Northern Chinese, in contrast to the laryngeal pronunciation [h] found in modern Southern dialects and probably also in the earlier standard language reflected in the *Ch'ieh-yün*. It is at least as probable that this was a pre-existing feature of Northern pronunciation as it is that it was the result of phonetic change between Sui and mid-T'ang. The same applies to the corresponding voiced initial.

Such hypotheses are difficult to verify in a concrete way in view of the extreme paucity of evidence about non-standard Chinese dialects before much more recent times. They are, however, possibilities that must be borne in mind when trying to reconstruct Old Chinese. There are certainly

² Pulleyblank, 1968, pp. 4-5.

³ Forrest, 1948, p. 249 ff.

some respects, as we shall see, in which it may be more satisfactory to assume direct development from Old Chinese to account for features of the T'ang standard language rather than to derive them from the earlier standard which underlay the *Ch'ieh-yün*. The main point that must be stressed here, however, is that the phonological analysis that went into the rhyme tables, into the innovations, that is, as opposed to what was inherited from the rhyme dictionaries, was based, and could only have been based, on a very different form of speech than that represented by the *Ch'ieh-yün*.

The strata of the rhyme tables

Our information about the early stages of the phonological studies that went into the construction of the rhyme tables is unfortunately very fragmentary, no doubt because it was the work of Buddhist monks rather than Confucian literati.⁴ The earliest extant rhyme table is the *Yün-ching*. In its present form it goes back to a recension made in Southern Sung, but there are good grounds for believing that it represents with reasonable fidelity a work of late T'ang times. An only slightly different version of the same tables is found in the *Ch'i-yin lüeh*, which forms part of Cheng Ch'iao's *T'ung-chih* of c. 1160.⁵ The *Yün-ching* seems to reflect a stage in the development of the tradition in which only thirty initials were recognized instead of the later thirty-six. This is shown by the fact that the labial fricatives are not explicitly distinguished from the corresponding occlusives out of which they had developed. Fragmentary evidence about the existence of such a stage is also contained in two Tun-huang manuscripts. One of these merely gives a list of thirty initials.⁶ The other lists the same thirty initials and in addition gives examples of the "four grades" and of how to assign characters to the correct initial and grade but does not contain (at least in the part that is extant) any actual table.⁷ In spite of its fragmentary character, this manuscript, which is attributed to the authorship of a Buddhist monk, Shou-wen, who was credited in later tradition with enlarging the list of initials from thirty to thirty-six, is extremely valuable for the proof it gives of the pre-Sung origin of "rhyme table" studies. It also demonstrates clearly that the "four grades" must have been based on recognizable phonological principles and were not merely an ingenious, but arbitrary, method of setting out the homophone groups of the rhyme dictionary on a grid.

⁴ On the prehistory of rhyme table studies see Chao Yin-t'ang, 1957 and Chang, 1938.

⁵ See "T'ung-chih ch'i-yin lüeh yen-chiu" in Lo, 1963.

⁶ British Museum S.512 with the title 歸三十字母例 published in Chiang Liang-fu, 1965.

⁷ Bibliothèque Nationale P.2012, published in Liu, 1925-35. See "Tun-huang hsieh-pen Shou-wen yün-hsüeh ts'an chüan pa" in Lo, 1963.

The full list of thirty-six initials was certainly in existence in Northern Sung times, since there are explicit references to it in contemporary sources.⁸ The *Ssu-sheng teng-tzu*, a rhyme table in the *Yün-ching* tradition which explicitly names the thirty-six initials and sets up the sixteen rhyme groups (*she* 攝) which are only implicit in the arrangement of the earlier table, is probably of Northern Sung date also, though the existing text is later.⁹ The *Ch'ieh-yün chih-chang t'u*, traditionally but falsely attributed to Ssu-ma Kuang, apparently comes from Southern Sung.¹⁰ Both the *Ssu-sheng teng-tzu* and the *Ch'ieh-yün chih-chang-t'u* show innovations which reflect Sung dynasty pronunciation while adhering in their main structure to the T'ang tradition. An important table of the same kind dating from the Yüan period is the *Ching shih cheng yin Ch'ieh-yün chih-nan* which formed the basis for one of the tables included in the *K'ang-hsi tzu-tien*.¹¹

Standing somewhat apart from the main tradition is the very interesting skeletal table which we owe to Shao Yung, the Northern Sung Taoist philosopher.¹² It is based on similar principles to the other tables but departs more radically from the *Yün-ching* tradition where this was no longer strictly applicable to contemporary speech.

Other sources

Other sources for the Late T'ang standard of Chinese besides the rhyme tables are: (1) the *fan-ch'ieh* glosses in Hui-lin's *I-ch'ieh-ching yin-i* of c. 810, based on one or more no longer extant dictionaries of the first half of the eighth century which reflected the current speech of Ch'ang-an rather than the still authoritative tradition of the *Ch'ieh-yün*;¹³ (2) the new method of transcribing Sanskrit which came into use in the eighth century, especially the very careful renderings of *dhāraṇi* by the tantric monk, Amoghavajra, and his school;¹⁴ (3) transcriptions of Chinese in foreign scripts, especially Tibetan, from the late T'ang period;¹⁵ (4) the rhyming of poets such as Li Ho and Po Chü-i;¹⁶ (5) the later, Kan'on, form of Sino-

⁸ Shen Kua, *Meng-ch'i pi-t'an*, ch. 15. The current editions of the *Yü-p'ien* as enlarged and revised in Northern Sung contain a list of the thirty-six initials, but it is only found in the so-called Yüan pen and is missing in the surviving Sung prints found in Japan. See Okai, 1935.

⁹ See Chao Yin-t'ang, 1957, p. 74 ff.

¹⁰ *Ibid.*, p. 92 ff.

¹¹ *Ibid.*, p. 82 ff.

¹² On Shao Yung's phonetic tables contained in his *Huang-chi ching-shih* 皇極經世 see Chou Tsu-mo, 1942 (1957) pp. 189-235; Li Jung, 1952, pp. 165-74.

¹³ Huang, 1931. It has recently been shown that the *Wu ching wen-tzu* 五經文字 by Chang Shen 張參, a commentary on the Five Classics completed in 776, uses sound glosses based on similar phonological categories to those used by Hui-lin. See Shao, 1964.

¹⁴ Maspero, 1920, p. 28 ff.

¹⁵ See Lo, 1933 and, more recently, Csongör, 1960.

¹⁶ Pulleyblank, 1968.

Japanese;¹⁷ (6) Sino-Vietnamese;¹⁸ (7) Sino-Korean¹⁹—all of these non-Chinese systems of pronouncing Chinese characters were based essentially on the T'ang standard pronunciation, though the Sino-Vietnamese, and to a lesser extent Sino-Korean, may also reflect certain non-standard dialect features.

A further important source of information for this study has been the orthography established for Chinese in the hP'ags-pa script.²⁰ Though this is much later than T'ang in date when the language had greatly altered, the system of "four grades" was still preserved after certain initials and the way in which these were represented provides important clues as to the original nature of the distinctions on which the grades were based.²¹

The categories of the rhyme tables

The farthest that the analysis of the phonological structure of Chinese had gone up to the time of the *Ch'ieh-yün* was: (a) to divide syllables by the *fan-ch'ieh* method into a rhyming part, or final, and a non-rhyming part, or initial, (b) to group together syllables with the same rhyming part into the "rhymes" of the rhyming dictionary, (c) to group together homophones, *i.e.* words which also had the same non-rhyming part, within each

¹⁷ Tōdō, 1957, pp. 90, 144 ff.

¹⁸ As in the case of Sino-Japanese there are at least two major layers of Chinese borrowings in Vietnamese: (a) standard Sino-Vietnamese, that is, the school tradition of pronouncing Chinese characters; and (b) an earlier layer of loanwords which are treated simply as Vietnamese words. Standard Sino-Vietnamese, like Kan'on and Sino-Korean, corresponds in the main to the mid and late T'ang pronunciation of Chinese that we are discussing in this article but shows certain conservative features, especially the distinction between palatal and retroflex sibilants and the retention of the palatal nasal, and certain features in the treatment of the rhymes which seem to link it with an early form of Cantonese (see below). The earlier layer of loanwords, like Go-on, corresponds in general to the *Ch'ieh-yün* itself, that is, to the standard "mandarin" of the pre-T'ang period. This will be demonstrated in a subsequent article.

¹⁹ In his very full treatment of Sino-Korean (1964-7) Kōno Rokurō concludes that Sino-Korean is composed of a number of layers based on different forms of Chinese. He acknowledges, however, that the dominant layer agrees with Hui-lin's system of *fan-ch'ieh*, *i.e.* with the late T'ang standard under discussion here. In fact it seems to me that the correspondence is even greater than Kōno suggests and that there are only a very few traces of earlier and later strata.

²⁰ The problems of the hP'ags-pa alphabet as applied to Chinese have been discussed by a number of scholars, including Dragunov, Lo Ch'ang-p'ei, Ligeti, Poppe, Clauson, M. Hashimoto, P. Denlinger, M. Nakano, and others. A contribution on the subject will appear shortly as Pulleyblank, 1970.

²¹ In contrast to Karlgren's original study on the *Ch'ieh-yün* little reference is made in this paper to modern dialects of Chinese other than Mandarin. This is not because I regard such evidence as unimportant in principle for the reconstruction of Middle and Old Chinese pronunciation but it seems to me doubtful to what extent dialects outside the Mandarin area can be regarded as directly descended from the T'ang standard with which I am directly concerned here. Furthermore we know comparatively little in detail about the evolution of non-Mandarin dialects and even their present-day phonology is in need of much more analysis than it has yet received.

"rhyme",²²(d) to distinguish the four tones. There was no explicit recognition, let alone classification, of initial consonants as such. Still less was there any analysis of medial semivowels or of the features that distinguished different rhymes from one another (apart from tone). It was the Buddhist phonologists of the T'ang period, clearly under Indian influence, who went beyond this and first devised in the rhyme table a means of classifying distinguishing characteristics of Chinese syllables without resorting to an alphabet.

The failure to go the whole way and use an alphabet when they had at hand the Sanskrit example (prestigious to them if not to Confucian literati) is a little puzzling at first sight but is probably to be explained (apart from the sheer inertia of the existing Chinese writing system) by the nature of the Indian alphabet which they had as a model. Since the Indian consonantal signs contained an inherent vowel, they were looked on as syllables, comparable to words represented by single Chinese characters. The thing that interested the Chinese phonologists was not that polysyllabic words could be written by stringing together meaningless phonetic signs so much as the way in which the Indian signs (=syllables) could be arranged and classified among themselves on a phonetic basis. The problem for Chinese presented itself to them not in terms of finding a new set of phonetic symbols but rather in terms of classifying the existing symbols on a phonetic basis. Though the inspiration was certainly Indian, the way in which this was done was in the end typically Chinese. There was little explicit phonetic description, nothing at all comparable to the elaborate and sophisticated description of speech processes which we find in the Indian tradition. Instead there was classification in terms of complementary, often though not exclusively binary, sets of oppositions—"open mouth" *v.* "closed mouth", "inner" *v.* "outer", "clear" *v.* "muddy", the four "grades", the four "tones", etc.—the whole being presented on a grid with vertical and horizontal axes. One is inevitably reminded of the ancient cosmological speculations based on the principles of *yin* and *yang* and the Five Elements, and indeed the Sung Taoist, Shao Yung, sought to combine rhyme table phonology with cosmology. Though their non-alphabetic way of expressing their analysis has grave disadvantages, at least for those who no longer have the key of the living language through which to interpret it, it is certainly of interest and

²² Since homophones were grouped in this way under a single *fan-ch'ieh* spelling, the *Ch'ieh-yün* and such rhyme dictionaries provide in principle complete syllabic inventories of varieties of the language they refer to. That is, they separate everything that is phonologically distinct and only what is phonologically distinct. The significance of this does not emerge from Karlgren's discussions of the *Ch'ieh-yün* and the fact that he was prepared to give identical reconstructions to separate homophone groups suggests that he did not appreciate it. This applies particularly to the so-called *ch'ung-niu* pairs such as 驚 /miət/ and 驚 /mɛt/ both reconstructed by Karlgren as *miēt*, or 器 /k'iaj/ and 器 /k'iaj/, both reconstructed as *k'ji*, though in each case the *Ch'ieh-yün* puts them in separate homophone groups and the rhyme tables put one in Grade III and the other in Grade IV.

may even, when properly understood, have insights to offer for modern western linguists, who sometimes get entangled by unconscious preconceptions induced by the Græco-Roman alphabetic tradition.

The initials

As far as the initials were concerned, the Chinese phonologists distinguished first thirty, then thirty-six, of these, classifying them into five main categories based on place of articulation, obviously in imitation of the *vargas* of the Indian alphabet. The terms used to label these categories—*ya* “back tooth” for velars, *she* “tongue” for dental or alveolar stops and nasal, *ch'un* “lip” for labials, *ch'ih* “front tooth” for sibilants, *hou* “throat” for gutturals—are, however, not borrowed as a group. Still more clearly of purely Chinese origin are the subclasses of certain types of initials—“heavy” and “light” “lip sounds”, “tongue head” and “tongue up” sounds, “front tooth head” and “true front tooth” sounds. So too are the terms “clear” “second-clear” “muddy” “not-clear-not-muddy” (or “clear-muddy”) used to classify the initials in the other dimension. The standard list of thirty-six initials together with the reconstructed values that are here proposed is set out in the accompanying table.

	Second		Not Clear		Clear	Muddy
	Clear	Clear	Muddy	Not Muddy		
Back-tooth: 牙音	青 見 k	次清 溪 k'	濁 群 kf	不 疑 ŋ	清	濁
Tongue (a) tongue-head: 舌音 舌頭	端 t	透 t'	定 th	泥 n		
(b) tongue-up: 舌上	知 tr	徹 tr'	澄 trh	*娘 nr		
Lip (a) heavy: 唇音 重	幫 p	滂 p'	並 ph	明 m		
(b) light: 輕	*非 f	*敷 f'	*奉 fh	*微 v		
Front-tooth (a) head: 齒音 齒頭	精 ts	清 ts'	從 tsh		心 s	邪 sh
(b) true: 正齒	照 tsr	穿 tsr'	*牀 (t)srh		審 sr	禪 srh
Throat: 喉音	影 ʔ	曉 x	匣 xh	喻 ɣ		
Half-tongue: 半舌音	來 l					
Half-front-tooth: 半齒音	日 r					

*Initials not included in the earlier list of thirty.

“Clear” and “muddy”

It is usually assumed that the terms “clear” and “muddy” (originally derived from ancient musical theory²³) mean “unvoiced” and “voiced” respectively and this is roughly correct. The fact that the nasals and liquids, which were certainly voiced sounds, are referred to as “not-clear-not-muddy” or “clear-muddy”, however, suggests that something more was meant.²⁴ It is undoubtedly significant that it is just at this period that we get the first evidence for the loss of voicing which has affected the “muddy” initials in all modern dialects except Wu. Kan'on renders the “muddy” initials as unvoiced in contrast to the earlier Go-on which renders them as voiced, e.g.: 乾 /kʰian/ GO *gen*, KO *ken*; 貧 /pʰian/ GO *bin*, KO *hin*. Tibetan transcriptions also sometimes render these initials as unvoiced.²⁵ It seems probable therefore that they were not fully voiced stops, affricates and fricatives, but, like the corresponding phonemes in modern Wu dialects, unvoiced consonants accompanied by a voiced aspiration which spread through the rest of the syllable giving it a “muddy” quality.²⁶ The nasals and liquids, on the other hand, were fully voiced sounds but were not accompanied by this “muddy” acoustic quality. This also accounts for the fact that in the new system of transcribing Sanskrit that appears in the eighth century the “muddy” initials were used for Sanskrit voiced aspirates, while, as we have seen above, the nasals (realized as prenasalized voiced stops) were used for Sanskrit unaspirated voiced stops, e.g. 婆 /pʰuai/ for San. *bha*, but 麼 /muai/ = [mba] for San. *ba*.²⁷

In writing /kʰ/, etc., for the “muddy” initials of late T'ang Chinese I am not, therefore, simply proposing a phonemic analysis as was done by Samuel Martin.²⁸ By contrast I write the unvoiced aspirates as unitary phonemes since they did not show any comparable tendency to separate into discrete components.

By Northern Sung a further stage had been reached in the evolution towards modern Mandarin. In Shao Yung's phonetic tables the muddy stops and affricates are divided in two according to tone.²⁹ In level tone they

²³ See T'ang Lan, 1948.

²⁴ The term “not-clear-not-muddy” (*pu ch'ing pu cho*) is found in the *Yü-p'ien* as well as in the *Ssu-sheng teng-tzu* and the *Ch'ieh-yün chih-chang-t'u*. Shen Kua uses the term *p'ing* 平 “even” for this category, thus separating it from the “clear” “muddy” dichotomy (*Meng-ch'i pi-t'an*, 15). Chang Lin-chih uses the term *ch'ing-cho* “clear-muddy” in the preface material to his edition of the *Yün-ching*. It is only when we come to Huang Kung-shao's *Ku-chin yün-hui* in the early Yuan period that we find the term *ts'u-cho* “second muddy”, formed on analogy with *ts'u-ch'ing* “second clear”. See Wang Li, 1935.

²⁵ Lo, 1933, p. 70; Csongor, 1960, p. 109.

²⁶ Chao Yuanren, 1928, pp. xii, 27-28.

²⁷ Maspero, 1920, pp. 27, 29.

²⁸ Martin, 1953, p. 16.

²⁹ See n. 12.

are considered to be the "muddy" counterparts of the "clear" voiceless aspirates. In oblique tones they are the "muddy" counterparts of the voiceless unaspirated stops and affricates. This corresponds to the situation in modern Mandarin in which the "muddy" stops and affricates appear as aspirates in level tone (*i.e.* lower level tone=Peking tone 2) but as non-aspirates in other tones. Assuming that in Northern Sung "muddy" still represented a distinctive voice quality which we can represent as /h/, this development can be represented as follows:

T'ang	Sung	Yüan to present
kʰ	k'ʰ (level tone)	> k'
	kʰ (oblique tones)	> k

An alternative explanation of Shao Yung's terminology would, of course, be to suppose that the distinction of "clear" and "muddy" was already by his time merely based on pitch register—"clear" tones commencing high and "muddy" tones commencing low. At any rate it is important to note that the "clear" "muddy" distinction was still treated as belonging to the initial, while the traditional tone distinctions (*p'ing, shang, ch'ü, ju*) were treated as belonging to the final.

Shao Yung also makes a distinction between "clear" and "muddy" liquids and nasals. Words in the rising tone with these initials were classed as "clear", in other tones they were "muddy". "Muddy" nasals and liquids, that is, nasals and liquids accompanied by voiced aspiration, [mʰ] [lʰ], etc., are described for modern Wu dialects,³⁰ but I have not been able to obtain unequivocal information as to whether there is ever a distinction correlated to tone between "clear" and "muddy" realizations of these phonemes. It is important to note, however, that Shao Yung's distinction between "clear" and "muddy" nasals and liquids, whatever it may have meant in phonetic terms at the time, is reflected in the development of the tones in modern Mandarin. Words with nasal and liquid initials in the old rising tone have retained the rising tone (=tone 3 in Pekingese) while words with "muddy" initials in the old rising tone have gone over to departing tone (=tone 4 in Pekingese).³¹

Note that besides the "muddy" stops and affricates, there were also "muddy" fricatives—/fʰ/ /sʰ/ /sʰ/ /xʰ/—which have subsequently lost their voicing and given voiceless initials in modern Mandarin. They were in contrast to fully voiced, lax, fricatives or continuants /v/ /r/ /ɣ/, which behaved like the nasals and /l/ in the subsequent development of the language, including their correlations with tone. More will be said about these phonemes below.

³⁰ Chao Yuanren, 1928, p. 28. This was brought to my attention by Professor F. K. Li.

³¹ Li Jung, 1952, p. 172.

Retroflex stops

The phonetic values to be assigned to many of the initials are well established and require no further comment, but a number of points in my reconstruction need to be justified by further arguments. The "tongue" initials are divided into two subgroups. The "tongue-head" subgroup, placed in Grades I and IV in the tables, cause no difficulty. They are simply dental oral and nasal stops as in Mandarin. The "tongue up" initials, placed in Grades II and III in the tables, were reconstructed by Karlgren as palatals. I have instead reconstructed them as retroflex, written as clusters /tr/ /tr'/, etc. Apart from Lo Ch'ang-p'ei's arguments based on the Chinese representation of Indian retroflex initials³² and other arguments from the point of view of Old Chinese reconstruction,³³ there is very clear evidence from Sino-Vietnamese which has been strangely neglected in this connexion. The regular Vietnamese representation of the initial which I reconstruct as /tr/ in Chinese is *tr* in Quóc-ngũ' spelling, *e.g.* 知 /triəj/ SV *tri*; 站 /tram/ SV *tram*; 中 /triəuŋ/ SV *trung*, etc. The corresponding "muddy" initial is represented in the same way (with a difference of tone register): 茶 /trfiəi/ SV *trà*, 陳 /trfiən/ SV *trân*. This characteristic of Sino-Vietnamese is obscured in Karlgren's list of dialect forms³⁴ because instead of giving the standard orthography for his Vietnamese forms he gives a phonetic rendering based on Hanoi pronunciation, in which retroflex *tr* and palatal *ch* have merged. The orthographic distinction is, however, still clearly maintained in South Vietnamese pronunciation, where *ch* is a palatal stop [c] and *tr* is a retroflex affricate [tʃ].³⁵

Chinese /tr'/ appears in Vietnamese as *s*, *e.g.* 馳 /tr'iaj/ SV *sí*; 丑 /tr'iauw/ SV *sá'u*. Vietnamese *s* has also merged with the originally palatal initial *x* in Hanoi speech but the two are kept distinct in the south, where *s* is retroflex [ʃ].

It is important to note that Vietnamese, which maintains the Sui and early T'ang distinction between palatal and retroflex sibilants, treats the latter in the same way as the "tongue up" series which we have been discussing. Thus we have 阻 /tsrəi/ SV *tró*, 沙 /srai/ SV *sa*, 叉 /tsr'ai/ SV *sa* etc. (all Grade II words in the rhyme tables), contrasting with 支 /tsriəj/ (</tsj'-/=[tɕ-]) SV *chi*; 詩 /sriəj/ (</sj'-/=[c-]) SV *thi*; 昌 /tsr'iaŋ/ (</tsj'-/=[tɕ'-]) SV *xu'o'ng* (all Grade III words in the rhyme tables). Nothing could demonstrate the retroflex character of the "tongue up" series more clearly than the fact that Vietnamese treats it uniformly as retroflex, while it faithfully reflects the original Chinese distinction between palatal and retroflex in the sibilant series.

³² Lo, 1931.

³³ Pulleyblank, 1962.

³⁴ "Dictionnaire" in Karlgren, 1915-24, pp. 703-898; also in Karlgren, 1937.

³⁵ Henderson, 1966, p. 166.

The initials /tr/ /tr'/ /trfi/ had merged with the corresponding sibilants /tsr/ /tsr'/ /tsrfi/ by Southern Sung. The two series are not distinguished in hP'ags-pa spelling or in the *Chung-yüan yin-yün*. Their identity is implied in a remark in the prefatory material in Chang Lin-chih's edition of the *Yün-ching* in which he says: "It is like this [*i.e.* a case of 'tongue' sounds containing 'front tooth' sounds, or *vice versa*] in the *Yün-ching* when 章昌 張偃 are separated in two places under 'tongue' and 'front tooth' sounds."³⁶ In Late T'ang these words had been /tsriain/ /tsr'iaij/ /traiij/ /tr'iaij/ but by Southern Sung they had become /tsraij/ and /tsr'iaij/ and the fact that the *Yün-ching* separated the two types was inexplicable in terms of current pronunciation. On the other hand, there is no need to assume from the fact that /tr/ and /tsr/ are not distinguished in Tibetan transcriptions in Late T'ang that a merger had already taken place in northwestern dialects. The retroflex glide in Chinese /tr/ was no doubt phonetically quite different from the trilled *r* of Tibetan, which therefore would have lacked appropriate means to distinguish Chinese [tr] and [tʂ].

The retroflex nasal

In the original list of thirty initials initial *niang*, the nasal of the "tongue up" series, was not included. In one arrangement we find it replaced by initial /r/ (</nj/), in the other by initial /l/. This would tend to support the view of Y. R. Chao that there was in fact no phonemic distinction between initial *niang* and the corresponding initial of the "tongue head" series, *ni* /n/. Professor Chao argued that the two initials were in complementary distribution, the implication being that they were only separated by the rhyme table phonologists in order to make the system symmetrical. He notes further that there is no trace of a corresponding distinction in any modern dialect.³⁷ This is satisfactory and convincing so long as we accept Karlgren's reconstructions for the grades. The distinctions between his 難 *nān* (Grade I) and 㗎 *nan* (Grade II) or 碾 *nian* (Grade III) and 年 *nien* (Grade IV), are maintained even if one suppresses the diacritic on *n* and treats it as phonemically identical with *n*. According to my reconstruction of the Grades, however, the rhyme part of both members of these two pairs will be the same irrespective of Grade, /ai/ and /ian/.

One way out would be to suppose that there was no distinction in such cases at the time of the *Yün-ching*. One could argue that an earlier distinction based on the rhyme had existed at the time of the *Ch'ieh-yün* but that it had disappeared and was only maintained artificially in the rhyme tables. This is indeed what I suppose in the case of initial /l/, reconstructing, for example, /lian/ for both 連 (Grade III) and 蓮 (Grade IV), and treating the rare cases of /l/ in Grade II as analogous to Grade I. In the same way we could, for

³⁶ *Yün-ching*, preface (p. 7).

³⁷ Chao Yuanren, 1940, p. 210.

example, treat both 碾 (Grade III) and 年 (Grade IV) as /nian/ and both 難 (Grade I) and 㗎 (Grade II) as /nan/ without involving any conflict with later developments, since in both cases the words in question are homophonous (apart from tone) in modern dialects. There is, however, one case where this would give rise to serious difficulty. 挪 /nai/ (Grade I) quite regularly gives Mandarin *no*², like 羅 /lai/ Man. *lo*²; but 拏 (Grade II) gives Man. *na*², like 茶 /trfi/ Man. *ch'a*². Obviously one must reconstruct some distinction in the *Yün-ching* language to account for this. On the analogy of the other "tongue up" initials the distinction ought to be based on the presence of a retroflex glide after the initial in the words placed in Grade II, *i.e.* with initial *niang*, and this is what I suppose.

There are a number of arguments arising from the ancient evidence which support this reconstruction. In pre-T'ang Buddhist transcriptions a similar distinction is made between the characters used for Indian dental and retroflex nasals to that which we find in the case of the stops. That is, Indian retroflex *n* is regularly transcribed by words which are later ascribed to initial *niang*, while Indian dental *n* is transcribed by words later ascribed to initial *ni*. This distinction survives into the new T'ang system of transcription also. Thus we find /nrai/ used for Sanskrit *ṇa* and *na* in transcriptions of the Sanskrit alphabet dated 724, 771 and 788-810.³⁸ Another tell-tale clue comes from Tibetan transcriptions of Chinese. There we usually find Chinese initial *ni* /n/ represented as *hid* (implying [nd]) or as *n*, when the syllable ends in a nasal, occasionally as *in*. Initial *niang* /nr/ is much less common but we do find it in the two words 女 /nrɿɿ/ and 尼 /nrɿɿ/. Both are written *hji*.³⁹ This corresponds exactly to the way in which the retroflex stops are represented: *č* = /tr/, *č'* = /tr'/ or /trfi/, *ǰ* = /tr/ or /trfi/. One may surmise, therefore, that *hji* stands for /nr/ = [ndɿ]. Note that dental stops are never written with Tibetan affricates even when followed by /i/, *e.g.* 地 /tɕiɿ/ Tib. *di*.

Sino-Vietnamese and Kan'on do not distinguish initials *ni* and *niang*. This is mostly true also of Sino-Korean, but a distinction does appear in the /aw/ rhyme group: 獠 腦 /naw/ (Grade I) SK *no*, but 撓 淖 鬧 /nraw/ (Grade II) SK *njo*.⁴⁰ Note that it is only in this rhyme group that Sino-Korean distinguishes Grade II from Grade I with velar and labial initials (see below). With the retroflex stops we similarly find 刀 /taw/ SK *to*, but 嘲 /traw/ SK *tjo*. We may therefore suppose that *nj*- can stand for /nr/, like *tj*- for /tr/, the palatal glide in Korean doing duty for the retroflex glide in Chinese.

³⁸ Lo, 1931 (1963), p. 27.

³⁹ Csongor, 1960, p. 112.

⁴⁰ Kōno, 1964-7, *shiryō on'in hyō*, pp. 129, 132. Exceptionally we also find *no* (Grade II) and *njo* or *no* (Grade I).

Finally we must consider the evidence of the *Meng-ku tzu-yün*. The hP'ags-pa alphabet contains both dental *n* and palatal *ñ*, derived from the corresponding Tibetan letters. Both are used for Chinese. *ñ* is used exclusively for initial *niang* but not for all words which originally had this initial. The cases are (giving only one of the homophones in each case): 醜 *ñuy*, 娘 *ñay*, 尼 *ñi* (distinguished from 泥 *ni*), 譏 *ñue* (distinguished from 矮 *nue*), 女 *ñju*, 紐 *ñiw*, 魁 *ñem* (distinguished from 念 *nem*), 質 *ñim*. With the exception of *ñem* and *ñay* these are all words with close vowels. Conversely there is only one case, 緜 *nin*, of a word with initial *niang* before a close vowel spelt with *n*. *ñay* is something of a special case, since in this rhyme /ia/ (Grade III) was in many cases reduced to /ja/ or /a/ (see below), so that *ñ* could simply stand for /nj/ < /ni/ without implying anything about the original value of initial *niang*. Otherwise there would seem to be grounds for supposing that there was still a distinction, though on the point of disappearing, between /nj(i)-/ < /nri-/, represented by *ñ*, and /ni-/, represented by *n*. If all cases of initial *niang* had been distinguished from initial *ni*, one might regard it as merely an artificial device to preserve a theoretical distinction from the rhyme table tradition, like the use of *ç* for initial *ch'uang* (see below). This does not seem to be the case, however.

If there was really a distinction between /nj/ and /n/ in the thirteenth century, it must have been on the point of disappearing, since there is no trace of it in the *Chung-yüan yin-yün*.

To sum up: there seems to be quite clear evidence on which to base a reconstruction of a distinct retroflex value for initial *niang*, like that of the rest of the "tongue up" series. I write it correspondingly as /nr/. By the Mongol period it was on the point of disappearance. Judging by the hP'ags-pa evidence, it went through the stages /nr/ > /nj/ > /n/ in Grade III, i.e. before /i/. In Grade II, when followed directly by /a/, it probably simplified directly to /n/.

One of the arguments used for eliminating *niang* as a distinct initial is that it is not clearly distinguished from *ni* in the *Ch'ieh-yün fan-ch'ieh*. This is a problem that lies outside the present discussion but it must be pointed out that this applies to the "tongue up" series as a whole, not merely the nasal.

Labial fricatives

It has been well demonstrated that by mid-T'ang the new series of labial, or dentilabial, fricatives which the rhyme table phonologists called the "light lip sounds" had developed out of the corresponding bilabial stops and nasals under certain circumstances. They are separate in Hui-lin's *fan-ch'ieh*. Sino-Vietnamese distinguished them. The fact that Kan'on and Sino-Korean do not can be explained by the lack of appropriate means in

these languages. Amoghavajra's transcriptions often use initial *wei* /v/ for Sanskrit *v*, as in 尾麼隸 /vjiaj-muai-liaj/ *vimala*.⁴¹ As early as the middle of the seventh century we find 縛 /fhai/ < /biai/ used for *va* instead of 婆 /phuai/ < /bai/ which had been usual earlier. In the absence of an appropriate syllable with initial /v/ in Chinese, 縛 or 縛 continued to be used for *va* in the eighth and ninth centuries, sometimes with the special *fan-ch'ieh* 無可 /v(uəi-k'ai)/ to ensure the pronunciation.⁴²

Karlgren's explanation of this "dentilabialization" was that it occurred when labial initials were followed by combined palatal and labial medials. This seems to be essentially correct, though he was unable to carry it through with complete consistency in his own Ancient Chinese reconstruction. A full discussion of the problem belongs to the reconstruction of *Ch'ieh-yün* Chinese and lies outside the scope of the present article. The hypothesis which I wish to put forward can, however, be briefly set out as follows. One of the far-reaching changes which affected Chinese in the early T'ang period was the fronting of medial /i/ to /i/. When labial initials had occurred in front of /i/, they had been accompanied by a certain degree of non-distinctive labialization of the vowel. When /i/ fronted to /i/, this labialization became distinctive, giving /iu/ (phonetically [y]), and giving rise to contrasts such as 反 /piuan/ (< /p^wian/) *v*. 變 /pian/. An opposition based on labialized *v*. non-labialized vowels after labial initials was not otherwise present in the phonological system and was therefore inherently unstable. The tension was resolved by replacing the stops in /piu/, /p'iu/, /pfiu/ /miu/ by fricatives, after which /iu/ rapidly simplified in various ways.

It has usually been assumed that there must have been a stage of affrication between the stops and the fully developed fricatives. There is no direct evidence to support this and, if so, it was probably a fleeting unstable transition. One thing that points to this conclusion is that already in Hui-lin's glosses there is no distinction between /f/ < /p/ and /f/ < /p'.⁴³ We should expect a distinction to have been preserved in the case of affricates. /pf/v./pf'/ would be parallel to /ts/v./ts'/. In the case of fricatives, however, while an opposition between [f'] and [f] is, no doubt, phonetically possible, it would have been unsupported by any similar opposition in the system, such as [s'] *v*. [s] and would therefore, we may suppose, have been quite unstable. Shao Yung in the eleventh century agrees with Hui-lin in having only one "clear" labial fricative and this is also true in the *Meng-ku*

⁴¹ Maspero, 1920, p. 39.

⁴² See the table appended to Lo, 1931 (1963).

⁴³ It should be noted that the sound glosses of the *Wu-ching wen-tzu* (see n.13 above) agree with those of Hui-lin in distinguishing the "light" and "heavy" labials but disagree to the extent that they keep apart initials *fei* = /f/ < /p/ and *fu* = /f/ < /p'.

tzu-yün, though both traditional initials are listed in the prefatory material.⁴⁴ The distinction between initials *fei* and *fu* seems therefore to have been theoretical from the start, invented to accommodate the *fan-ch'ieh* distinction found in the *Ch'ieh-yün*. I therefore ignore it and write simply /f/ for both.

The reason why the "light" labials were omitted from the list of thirty initials was no doubt because the phonologists who were responsible for this were still too much under the authority of the *Ch'ieh-yün* tradition, and were unwilling to split up initials which formed a single category in the *fan-ch'ieh*. Lo Ch'ang-p'ei suggested that another factor may have been the absence of labial fricatives (except, of course, *v*) in Sanskrit or Tibetan to serve as a model.⁴⁵ Whatever the reason, it is nevertheless clear in the Shou-wen fragment from Tun-huang that, although only one set of labial initials was explicitly named, the fricatives were in practice present and recognized in the language. One section in the manuscript is devoted to "distinguishing cases where the initial (*sheng*) and rhyme (*yün*) are alike but the place where they go is not the same". The examples listed are all of initial /f/: first, sets to be assigned by their *fan-ch'ieh* to initial /p/; then, homophonous sets to be assigned to initial /p'/.⁴⁶

Corresponding to the assumption that the stops went through a process of affrication before becoming fricatives, is the view that has been commonly held that the corresponding nasal first became a dentilabial [m] before losing its nasality and becoming [v]. One additional reason that made this hypothesis seem necessary was the assumption that the "muddy" stop would have become a voiced fricative [v]. If, however, we reconstruct the latter as /ff/, a tense, voiceless, fricative accompanied by voiced aspiration, there is no obstacle to assuming a completely denasalized lax voiced fricative /v/ for the fourth member of the series. The evidence in favour of loss of nasalization at an early stage is in fact quite strong. Sino-Vietnamese has *v*. Tibetan transcriptions sometimes have *hb*, which might suggest the

⁴⁴ hP'ags-pa uses a special sign for *f* consisting of a ligature of *h* and subscript *w* (clearly distinguishable in careful writing from the combination *h+w*). A further modification of this sign, which I designate as *f'*, is used in the *Meng-hu tzu-yün* to distinguish the old "muddy" initial *feng* /ff/. There was undoubtedly no actual difference in pronunciation of the two *fs* by this time, though in level tone words with *f'* would have been distinguished in pitch from words with *f*. In the body of the dictionary words with initials *fei* and *fu* are combined without discrimination under *f*, while words with initials *feng* are placed separately under *f'*. In the list of the thirty-six initials at the beginning of the dictionary, however, initial *fei* is given as *f'*, initial *fu* as *f* and initial *feng* as *f'*! Even if this is a deliberate attempt to distinguish the three initials and not merely a result of corruption in the transmission of the text, it certainly cannot be taken as evidence that there were really three distinct *fs* in Chinese in the Mongol period.

⁴⁵ Lo, 1933 (1963), p. 203.

⁴⁶ Chou Tsu-mo, 1966, pp. 505-6.

persistence of nasalization, but also have simply *b*.⁴⁷ The use of *v* for Sanskrit *v* has already been mentioned. Kan'on and Sino-Korean, lacking the means to represent voiced labial fricatives, do not provide relevant information. hP'ags-pa has *w*-, probably meaning [v] or [β]. Initial /v/ was still distinct at that period from labiovelar [ɣw/], as in 𑖦 *way* [vaŋ] vs 𑖧 *way* [waŋ]. This distinction is still maintained in Hsian, which has [vaŋ] and [uaŋ] for these two words.⁴⁸

Retroflex sibilants

The "front-tooth" or sibilant initials are divided into two groups which are distributionally exactly parallel to the two types of "tongue" initials. Moreover, as mentioned above, the retroflex "tongue" initials merged with the corresponding "true front tooth" initials during the course of the Sung dynasty. It is natural to suppose therefore that they were also phonologically parallel, that is, the "front-tooth head" initials were dental sibilants and the "true front tooth" initials were retroflex sibilants. Karlgren, basing himself on the *fan-ch'ieh* of the *Ch'ieh-yün*, splits the true "front-tooth" series into two, distinguishing a palatal series, placed in Grade III in the tables, and a retroflex series, placed in Grade II. This is undoubtedly correct as far as the *Ch'ieh-yün* language is concerned and the failure of the rhyme table phonologists to distinguish the two series has been taken as a flaw in their analysis, resulting, it has been suggested, from the absence of such a distinction in Sanskrit or Tibetan (but Sanskrit *does* distinguish palatal *ś* from retroflex *ṣ*, though not corresponding affricates). What has not been envisaged is that there might have been a linguistic change later than the *Ch'ieh-yün* bringing about a merger of the two series. Yet this is certainly what must have happened.

The nature of the change that brought the two series into complementary distribution and created the condition which made the merger possible, if not inevitable, is not difficult to determine. It was the loss of medial /i/ after the retroflex series as it existed, distinct from the palatals, in the *Ch'ieh-yün* language.⁴⁹ In the rhyme tables the *Ch'ieh-yün* retroflexes

⁴⁷ Csongor, 1960, p. 111.

⁴⁸ *Han-yü fang-yin tzu-hui*, 1962, p. 239.

⁴⁹ Downer, 1957 argued that "medial i" (= Karlgren's *i*) could be eliminated after (original) retroflex initials not only in the rhyme tables, but also in the *Ch'ieh-yün*. In so far as his arguments are applicable to the rhyme tables they coincide with or supplement those given here. He did not, however, draw the conclusion that the *Ch'ieh-yün* retroflex and palatal initials were in complementary distribution nor did he refer to the fact that they were identified as one set of initials in the rhyme tables. As far as the *Ch'ieh-yün* itself is concerned, his argument runs into various difficulties, the most serious of which is that words with retroflex initials in certain "mixed Grade III" rhymes have to be written as if they belonged in corresponding Grade I rhymes in spite of their placing

always appear in Grade II which, as we shall see, means that they were not followed by /i/. In rhymes which contain only Grade II words this creates no problem. There are, however, also such words in rhymes which, for all other initials are characterized by /i/. In such cases Karlgren reconstructed "Grade III" type rhymes, which for him meant presence of the glide *i* rather than the vowel /i/, in Grade II, assuming that the constructors of the tables had shifted these words out of Grade III, where they belonged, into Grade II just as a matter of convenience. The hP'ags-pa spellings clearly show that such words had no medial /i/ in the Mongol period. Thus we have *š'hiŋ* 生, Grade II, *v.* 聲 *š'iy*, Grade III, where the spelling *-hi-* is a device to represent a central vowel [ə], as in 僧 *shiy* /səŋ/, Grade I. This is, of course, several centuries later than the rhyme tables, but there is earlier evidence pointing in the same direction. Sino-Vietnamese, which maintains the distinction between palatal and retroflex initials very clearly, usually has vowels after the latter which are appropriate to Grade I rather than Grade III. Thus we have: 疏 SV *so'* (Grade II) (where *o'* is structurally /əi/), *v.* 書 SV *thu'* (Grade III); 數 SV *sô* (Grade II), like 古 SV *cô* (Grade I), *v.* 殊 SV *thù* (Grade III); 森 SV *sâm* (Grade II) *v.* 深 SV *thâm* (Grade III); 牲 SV *sân* (Grade II) *v.* 身 *thân* (Grade III), *cf.* 根 SV *cân* (Grade I); 色 SV *sác* (Grade II) *v.* 式 SV *thú'c* (Grade III), *cf.* 僧 SV *tăng* (Grade I). Similar evidence comes from Sino-Korean though rather less consistently: 森 SK *sam* (Grade II) *v.* 深 *sjim* (Grade III); 色 SV *səjk* (Grade II) *v.* 式 SV *sjik* (Grade III); 史 *sə* (Grade II) *v.* 詩 SK *si* (Grade III) (see p. 239 below); 搜 SK *su* (Grade II) *v.* 收 SK *sju* (Grade III); 所 SK *so* (Grade II) *v.* 書 SK *sje* (Grade III). Standard Kan'on generally treats such Grade II words as if they had palatal vowels but this may reflect a good deal of normalization based on *fan-ch'ieh*. In some rhymes we frequently find "commonly used readings" (*kanyōon*) which do not have *-y-*: 側測仄 *soku* (*v.* KO *syoku*), 崇 *su*, *suu*, *sou* (*v.* KO *syuu*), 數 *suu* (*v.* KO *syu*). In other rhymes even standard Kan'on omits *-y-* at least in some words: 莊壯狀 *sau* (Grade II) *v.* 章賞 *syau* (Grade III); 芻 *Kanyōon suu*, KO *su*.

The Hui-lin *fan-ch'ieh* still keep the retroflex and palatal initials strictly apart and use Grade III finals with the former, though there is a

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in the dictionary and their *fan-ch'ieh* spellers. Since this is a matter of *Ch'ieh-yün* reconstruction, the details need not be discussed here.

Mineya 1953 makes an essentially similar proposal when he says that the "dorsals" of the *Ch'ieh-yün* had shifted to "apicals" by the time of the *Yün-ching*: *tə* > *tʃ*, *tə'* > *tʃ'*, etc. His interpretation of the distinction between Grade IV and Grade III also anticipates mine. In both cases his solutions are simpler and more clear-sighted than those adopted by other Japanese scholars who have written since. Even in 1964, for example, Tōdō, though recognizing their complementary distribution, still treated the palatals and supradentals of the *Ch'ieh-yün* as distinct even for the Mongol period. I did not, unfortunately see Mineya's article until after the manuscript of this article was complete.

tendency to prefer other Grade II words for this purpose. This may indicate a transitional stage in the eighth century in which a conservative form of speech, distinguishing palatal and retroflex initials and using the latter before finals with /i/, coexisted with the new style. But it need not be taken as contradicting our interpretation of the rhyme tables. The hP'ags-pa evidence shows absolutely clearly that at that stage there was only one set of initials and the distinction marked by the Grade depended on the vocalism.

The evidence from the foreign borrowings of mid and late T'ang justifies us in assuming that that was also the situation for the constructors of the rhyme tables.

The complementary distribution which came about between the palatal and retroflex initials by the loss of /i/ after the latter might be compared to the situation in Mandarin where the complementarity of the palatal and retroflex initials has been taken advantage of both in the Wade romanization and in the more scientific Gwoyeu romatzyh. In Mandarin this complementarity does not involve phonetic merger but it evidently did so in late Middle Chinese. Evidence for phonetic merger is inevitably more difficult to find than for complementary distribution but there are some quite clear indications. The loss of /i/ after retroflex initials, that is, after the original palatals in Grade III, has been a development in the history of Mandarin since the seventeenth century, but a relic of the earlier situation is still found in the artificial stage pronunciation used in Peking opera. Thus, we find [tʃi] in 知 *v.* [tʃʌ] in 之 and [tʃɥ] in 圭 *v.* [tʃu] in 助. Even here the distinction is found only in these rhymes but it no doubt correctly reflects what was once more widespread.⁵⁰

There was therefore already at the outset pressure on the earlier true palatals to merge with the retroflex series once the two sets were in complementary distribution.

The fact that Sino-Vietnamese, while giving evidence for the loss of /i/ after the old retroflex series, maintains the distinction between palatal and retroflex in the initials no doubt indicates that the two processes were not simultaneous. The fact that Sino-Vietnamese also still maintains the palatal nasal, SV *nh-*, in contrast to Kan'on, Sino-Korean and the Tibetan inscriptions of late T'ang, all of which show no trace of nasality in their representations of this initial, shows that in this respect Sino-Vietnamese must have been based on a more conservative dialect.

Amoghavajra's new system of transcribing Sanskrit provides evidence to confirm that the *Ch'ieh-yün* series of palatal initials had ceased to be distinctly palatal in articulation by mid-T'ang. From the earliest Buddhist transcriptions of the second and third centuries down to early T'ang this series had been consistently used to represent Indian palatals. In the

⁵⁰ Chao Jung-lang, 1969.

eighth century, however, we find dental sibilants being used instead. Thus, for *ca* and *cha* Amoghavajra has 左 /tsai/ and 磋 /ts'ai/. Lo Ch'ang-p'ei noted this characteristic of T'ang transcriptions and associated it with the similar practice in Tibetan of using signs for dental affricates to transcribe Sanskrit palatals, rather than the signs for the Tibetan palatals, even though these were derived from the Indian signs for palatals. He conjectured that in both cases the practice may have been based on a Central Asian pronunciation of Sanskrit palatals as dental affricates.⁵¹ No such "Central Asian" pronunciation has, however, been independently demonstrated to exist and it seems better to look for the explanation internally in terms of Chinese and Tibetan phonetics respectively. T'ang was, after all, the period when direct Indian influence on Chinese Buddhism was at its height and Amoghavajra must have been well versed in correct Sanskrit pronunciation. It seems better to assume that the dental affricates were preferred because their sharper acoustic impression was more appropriate to representing true palatal sounds than that of the former Chinese palatals which had become retroflex.

In the case of the palatal Sanskrit *ś*, which unlike the stop (or affricate) series, *c*, *ch*, etc., contrasted with retroflex *ṣ* and dental *ś*, the Chinese transcriptions continue to use the old palatal, as in 捨 /sriai/ [sia] < /sj-/ [s-] for *śa*. This at least shows that the underlying pronunciation of Sanskrit was one in which the three-way distinction of palatal, retroflex and dental was preserved in the fricative, so presumably also in the other initials.

In short, there seems to be no good reason not to accept the evidence of the rhyme table system of initials at face value and to reconstruct a single retroflex series of initials for both Grade III and Grade II. At very least this could be regarded as an acceptable phonemic solution.

Initial *ch'uang* 牀

Ch'uang 牀, the third of the "true front-tooth" initials, requires special consideration. According to its position in the tables it ought to be reconstructed as a "muddy" affricate /tsrɦ/. This corresponds to Karlgren's reconstruction as *dž'* (Grade II), *dž'* (Grade III). Initial *ch'uang* is, however, one of those that did not appear in the first list of thirty initials. There is strong evidence to suggest that it was not actually phonemically distinct from initial *ch'an* 禪, the "muddy" fricative of the same series, which I reconstruct as /srɦ/ (= Karlgren's *ž*).

Initial *ch'an*, with the exception of one word 俟 in rising tone and the rare word 蔡 occupying the corresponding position in level tone, only appears in Grade III. That is, it goes back to a *Ch'ieh-yün* palatal initial. Initial *ch'uang*

appears both in Grade II and Grade III and goes back, therefore to two *Ch'ieh-yün* initials, one retroflex, the other palatal. As far as the Grade III parts of the two *Yün-ching* initials are concerned, there is very clear evidence that they had completely merged and were pronounced as fricatives in T'ang. They are not distinguished in any modern dialect. Sino-Korean represents them uniformly as *ɾ*. Vietnamese represents them as *th*, the same as for the "clear" (voiceless) fricative. If one of them had been an affricate we should have expected it to appear as *ch-*, like the voiceless palatal affricate. (Vietnamese represents the "clear" "muddy" distinction like modern Cantonese, by tone register, not in the initial itself.) Tibetan transcriptions also have *ʃ* for both. Kan'on, of course, offers no evidence, since it never distinguishes affricate from fricative.

The matter is complicated, however, by the treatment of initial *ch'uang* in Grade II. The modern treatment of this in Mandarin would in most cases be consistent with the idea that it had always been an affricate. It appears as an aspirated affricate where there was anciently level tone, and as a non-aspirated affricate corresponding to ancient oblique tones: e.g. 乍 Mand. *cha*⁴, 棧 Mand. *chan*⁴, 助 Mand. *chu*⁴. The ancient evidence is not so consistent, however. Vietnamese most often has *s*, implying a fricative, as in: 牀 *sàng*, 乍 *sə*, 崇 *sung*, 岑 *sâm*, 讓 *sâm*, 撰 *soan*, 棧 *sən*, 霹 *sàn*, 柴 *sai*, 鋤 *sù* 難 *sò*, 愁 *sâu*, 驟 *sâu*, 士 *sí*, 事 *sù*; but exceptionally shows an affricate, as in: 狀 *trəng*, 寨 *trəi*, 助 *trə*. Sino-Korean mostly has *c-* or *c'-*, implying an affricate, as in 棧 *can*, 狀 *can*, but also has some forms with *s*, implying a fricative: 蹟 *səjk*, 牀 *san*, 巢 *so*, 鋤 *se*, 事 *sə*. Tibetan transcriptions provide very little material but they too show both affricate and fricative: 士 *ši*, 事 *še*, 寺 *ši*, 床 *č'o*, 狀 *čon*, *šon*.

The best way to account for this apparently contradictory evidence seems to be to assume that *ch'an* and *ch'uang* constituted phonemically one initial pronounced as a fricative when it appeared before /i/ or /iu/ but with a tendency to an affricate pronunciation in other environments. This allophonic difference was not distinctive because it was either a free variation or entirely conditioned by environment. Later, when the "muddy" retroflex stop /trɦ/ became assimilated a new phonemic distinction emerged between /tsrɦ/ and /srɦ/ before /i/ and the pronunciation of the already existing "muddy" retroflex initial in Grade II became stabilized as an affricate.

It should be noted that the modern reflexes of the Grade III part of both *ch'an* and *ch'uang* show an aspirated affricate corresponding to ancient level tone and a fricative corresponding to ancient oblique tones, e.g. 盛 *ch'eng*² "to fill", *sheng*⁴ "full" (initial *ch'an*); 乘 *ch'eng*² "to ride", *sheng*⁴ "vehicle" (initial *ch'uang*). This represents a compromise between the treatment of "muddy" stops and affricates, which have aspirated and unaspirated stop or affricate, and "muddy" fricatives like /xɦ/ /fɦ/ /sɦ/ which normally have fricatives only. This suggests that the free variation

⁵¹ Lo, 1931 (1963), pp. 54-64.

between fricative and affricate pronunciation may have extended to Grade III as well as Grade II. Note that /sʰ/ > /tsʰ/ in level tone is also found as in: 詞 Man. ts'ʷ².

To return to the problem of the separation between the two initials which was introduced in the later list of thirty-six and the way in which they were distributed in the rhyme tables, the allophonic distinction between a tendency to affricate pronunciation in Grade II and fricative pronunciation in Grade III would have led to an uncertainty as to whether to place such words in the third or fifth column of the "front-tooth" initials. At the same time it would have been noted that the Grade III type was spelled with two distinct sets of *fan-ch'ieh* and that there were sometimes minimal pairs in the same rhyme. The arbitrary compromise was to place the Grade II words (except for the one case where there was a contrast here too) in column three and the majority type of Grade III words in column five, with the residue of Grade III words as defined by the other *Ch'ieh-yün fan-ch'ieh* class in column three. There was of course no *fan-ch'ieh* evidence to link this type of words, assigned thus to initial *ch'uang*, with the Grade II part of the same initial. It is perhaps no accident that *ch'uang* is the only one of the "true front-tooth" initials which was named by a word from Grade II. All the others are named by Grade III words.

Unfortunately this arbitrary division of what was phonemically only one initial in T'ang was done in such a way as to reverse the correct assignment of the earlier, distinct, voiced palatal affricate and fricative as distinguished in the *Ch'ieh-yün fan-ch'ieh*.⁵² Evidence for this conclusion, which does not directly concern the present discussion, has been given elsewhere. It was also the view arrived at by Lu Chih-wei.⁵³

Also only of marginal concern is the Grade II part of initial *ch'an* found only in the word 侯 Mand. *ssu*⁴ and in the corresponding level tone homophone group (see above). It is quite likely that this does provide evidence of a voiced retroflex fricative with very restricted distribution contrasting with the corresponding affricate in the *Ch'ieh-yün* but there is no reason to suppose that the distinction survived into mid T'ang. The divergence in Mandarin between 侯 *ssu*⁴ and the theoretically homophonous 士 *shih*⁴ is not significant. Loss of retroflexion by *Ch'ieh-yün* retroflex initials is found in other cases in this rhyme, as in 厠 *ts'ʷ*⁴, 滄第 *tsu*³, 潘 *tsu*¹. The variant treatment in different words is just another of the fairly numerous cases in which we have to assume a mixture of dialects in the formation of present-day Pekingese.

Gutturals

The four "throat" initials were reconstructed by Karlgren as a glottal

stop (?), voiceless and voiced velar fricatives (*x*, and *ɣ*), and zero, i.e. "smooth vocalic ingress" (*ϕ*). My reconstruction agrees with this except that (a) the "muddy" fricative, *hsia*, which has become an unvoiced initial in most dialects, is treated as /xʰ/, a combination of tense, voiceless velar or uvular fricative and voiced aspiration, (b) the "zero" initial *yü* is assumed to be a lax, voiced, velar or uvular fricative /ɣ/ as in modern Mandarin.

In my previous discussion of the *Ch'ieh-yün* reconstruction I argued in favour of regarding the fricatives of the "throat" series of initials as laryngeal, /h/ and /hʰ/ as in modern Wu dialects.⁵⁴ This is undoubtedly correct as far as the *Ch'ieh-yün* standard is concerned. For the late T'ang standard, however, there is good reason to assume a more advanced place of articulation, as in modern northern dialects. Karlgren laid much emphasis on the fact that Kan'on renders both *hsiao* and *hsia* by *k-*, an argument that must be given some weight even though, in the absence of exact equivalents, any way of representing these sounds in Japanese was bound to be a compromise. Go-on, it should be noted, also represents the voiceless member of the pair by *k-* but frequently represents the voiced member as zero. A really conclusive argument is not easy to find, but the assumption that northern Chinese already had an uvular or velar articulation for these phonemes in T'ang has the advantage of making it unnecessary to suppose any unconditioned and merely phonetic change at a subsequent (undetermined) date. Since these phonemes were at least partly derived from velar initials in Old Chinese (/g/ > /xʰ/, /ŋh/ > /x/), there is no need even to assume that the northern mode of articulation was descended directly from the southern, even though the latter is attested earlier. Both may represent independent development from Old Chinese.

As far as initial *ying* is concerned, Karlgren's reconstruction of a glottal stop is undoubtedly correct, in spite of objections that have been raised in various quarters.⁵⁵ Karlgren based his conclusion (a) on the fact that the Chinese phonologists aligned it with the other voiceless stops and (b) on its behaviour as a voiceless initial in the development of the tones. The force of the second of these arguments has recently been questioned on the grounds that the split into upper and lower tone registers was conditioned by the presence of an initial voiced consonant, giving rise to a low tone. In the absence of any consonantal initial therefore, it is argued, the tone would have remained high. But if a syllable begins with a vowel, it automatically begins with a voiced sound, which ought to have the same effect on tone as a voiced consonant. Moreover it will not do, as has been suggested, to make the contrast between initials *ying* and *yü zero v. /j/*, since, as will be shown below, there was a contrast between these two initials in both Grade III and

⁵² Pulleyblank, 1962, p. 67.

⁵³ Lu Chih-wei, 1963, p. 363, n. 1.

⁵⁴ Pulleyblank, 1962, p. 66.

⁵⁵ See especially Hope, 1953 and Yen, 1966.

Grade IV, *i.e.* between /ʔi/ (Grade III) and /ʔji/ (Grade IV) as well as between /ɣi/ (Grade III) and /ɣji/ (Grade IV).

If one wished to postulate a "zero" initial, it would clearly have to be initial *yü*, as Karlgren argued. Here again it is better to assume, as the Chinese phonologists did, a voiced "throat" initial standing in contrast to the other "throat" initials in manner of articulation, rather than a true "zero" which would have to contrast equally with all other consonants. The phonetic, as well as phonological, reality of such a lax velar or uvular continuant as an initial in modern Mandarin has been well demonstrated, by Y. R. Chao and F. K. Li.⁵⁶ The structure of our alphabet, which, unlike Indian or Semitic alphabets, treats vowels and consonants as units of the same kind strung linearly after one another, predisposes us to assume that there must be the possibility of beginning a syllable with either vowel or consonant, but (leaving aside the question of whether this is the best way to analyse the phonology of any language) there are certainly languages, of which Tibetan and Mandarin Chinese are examples, in which syllables must all have a consonantal initial. As a matter of convenience one might choose to represent initial *yü* by the absence of any initial in alphabetic representation, but for analytical purposes it is better to indicate it explicitly.

Initial *yü* corresponds to two separate *Ch'ieh-yün* initials as shown by *fan-ch'ieh* spellings, one placed in Grade III, the other in Grade IV. The Grade III initial is in complementary distribution to initial *hsia* in the *Ch'ieh-yün* and there are even one or two cases in which it is spelled with the same type of *fan-ch'ieh* initial speller. It has therefore been argued that it should be reconstructed as /ɣ/ or /h/ (depending on one's reconstruction for *hsia* in the *Ch'ieh-yün*) in contrast to initial /j/ (= Karlgren's *ɨ*) for the Grade IV part of initial *yü*.⁵⁷ This is no doubt correct for the *Ch'ieh-yün*, but for the rhyme tables one should, to be consistent, treat Grades III and IV as belonging to the same initial with the same type of contrast between the grades as for other initials. I therefore write /ɣi-/ (Grade III), /ɣji-/ (Grade IV). As far as Grade III is concerned, the presence of a velar or uvular element is supported not merely by such theoretical arguments as those given above, but also by direct evidence such as Sino-Vietnamese *h* in 矣 *hi*, 有 *hũ'u*, 雄 *hũng* and the coalescence with *ŋ*- in *k'ai-k'ou* in hP'ags-pa. In Grade IV /ɣji-/ was, one may suppose, phonetically [j], without any overt acoustic impression of velar or uvular friction. One can, however, perhaps give a phonetic meaning to /ɣj/ as opposed to /j/ alone, which one would reconstruct for the *Ch'ieh-yün*. The use of this initial in early Buddhist transcriptions based on Prakritic forms strongly indicates that it was not at that time a frictionless glide in

⁵⁶ Chao Yuanren, 1948 and Li Fang-kuei, 1966.

⁵⁷ Ko, 1932, Chao Yuanren, 1942, Lo, 1951.

Chinese but a lax voiced alveolo-palatal fricative [ʒ].⁵⁸ It had a similar (if not identical) origin in Old Chinese to the palatal (Grade III) part of initial *ch'uang* and there is some reason to think that the latter may not have really been phonemically distinct from it.⁵⁹ In this case we must assume that as the distinctive set of palatal initials was lost, /j/ was mostly given a new phonemic identification as the palatalized form of initial /ɣ/ but in some cases developed a tenser onset and went over to /zj/ > /sjh/ > /srh/, merging with the earlier voiced palatal affricate /tsjh/ > /srh/ (initial *ch'an*).

Phonetically the contrast between a palatal fricative, represented simply as /j/, and a frictionless glide, represented as /ɣj/, is paralleled by the contrast between labial [v] (or [β]) and labiovelar /ɣw/ (= [w]) which we find in the Mongol period, when /ɣiu-/ became /ɣw/ under certain circumstances. Though I write the former as /v/, it is in complementary distribution to /ɣw/ and could as well be written /w/, as it is in the hP'ags-pa spelling.

In the *Ch'ieh-yün*, as we have seen, the Grade III part of initial *yü* was in complementary distribution with initial *hsia*. This is no longer completely true in the rhyme tables. Already in the *Yün-ching* we find 雄, which according to the *Ch'ieh-yün* should have initial *yü*, Grade III, (cf. Kan'on *yuu*), placed under initial *hsia* in Grade III, implying a reading /xɦiəuŋ/ which in fact corresponds to the Modern Mandarin reading *hsiung*². Shao Yung gives a similar treatment to this word. In the opposite direction Shao Yung places 交, which according to the *Ch'ieh-yün* should have initial *hsia*, in such a way as to imply a reading /ɣjaw/. This again agrees with the Mandarin reading *yao*², contrasting with the expected *hsiao*². In Grade IV, of course, initials *yü* and *hsia* were regularly in contrast—/ɣji-/ v. /xɦji-/. In the *Ch'ieh-yün* no such contrast had existed because "pure" Grade IV rhymes did not at that period have a medial before the vowel nucleus.

The distinction between initials *ying* and *yü* disappeared between Late T'ang and Yüan times, except in so far as it was reflected in the distinction between upper and lower level tones (Peking tones 1 and 2). In other tones they coalesced, as we can see from the *Chung yüan yin-yün*. The way in which they coalesced in the *ju-sheng* shows that the change was /ʔ/ > /ɣ/. We can tell this because in the *Chung yüan yin-yün* the *ju-sheng* are distributed among the other tones in a quite regular manner depending on the Middle Chinese initial: (a) words with "clear" initials (unvoiced stops, etc.) are in rising tone, (b) words with "muddy" initials (/kɦ/, etc.) are in lower level tone, (c) words with "clear-muddy" initials (nasals and liquids) are in departing tone. The latter category includes both *ying* and *yü*. This shows that, although in the original division of the tones into upper and lower

registers, initial *ying* behaved like a "clear", unvoiced initial, before the disappearance of the *ju-sheng* it had become a lax, voiced initial.

The disappearance of /ʔ/ was, it would appear, accompanied by another change, whether as cause or effect it would be difficult to determine; namely, a relaxing of tension in the pronunciation of the other unvoiced, unaspirated stops, thus bringing about a lenis-fortis contrast in both stops and fricatives—k [g̊]: k'::: ɣ:x, p[b̊]: p'::: v:f, etc. The lenis quality of the unaspirated stops in modern Mandarin contrasts with their more fortis quality in the Wu dialects and this is no doubt related to the fact that a phonemic initial glottal stop survives in the latter. The same feature accounts for the fact that Mandarin voiceless unaspirated initials are sometimes treated as voiced by foreigners and are so written in some systems of romanization. If we suppose that the situation was already the same in the Yüan period, it will help to account for the fact that the hP'ags-pa alphabet uses the signs for Tibetan *b, d, g* for Chinese /p/ /t/ /k/.

To postulate a change of /ʔ/ to /ɣ/ between T'ang and Yüan solves another puzzle about the hP'ags-pa alphabet. It has seemed strange that if initial *ying* was, as Karlgren said, a glottal stop, it should have been represented in this alphabet not by the sign derived from Tibetan glottal stop, but by the voiced ɦ (*ɦa-č'ung*) (in contrast, it may be noted, to the Tibetan transcriptions of Chinese in the T'ang period which show the expected correspondence of Tibetan glottal stop for Chinese glottal stop). But if the glottal stop of Middle Chinese had been lost by this period this representation becomes quite natural. The fact that the Tibetan sign for glottal stop is, on the contrary, used for initial *yü* in certain circumstances is quite parallel to the use of the signs for unvoiced stops for the Chinese "muddy" initials and, no doubt, to be explained in the same way, as a theoretical distinction, not based on actual pronunciation but introduced to account for the traditional categories found in the rhyme tables.⁶⁰ Note that in the *Meng-ku*

⁶⁰ The curious paradox by which hP represents Chinese /k/ by *g*, /k'/ by *k'*, but the old, voiced, "muddy" initial /kɦ/ by *h* has long exercised scholars. It is indeed hard to find any convincing explanation if we take the spellings at face value and assume that they were really intended to represent a three-way distinction in Chinese pronunciation. There is in fact abundant evidence, notably from the *Chung-yüan yin-yün* and from the transcriptions of foreign words in Yüan, that the old "muddy" initials had already disappeared in Northern Chinese at this period. It has been suggested that the hP spellings were based on a different, more conservative dialect, but it is noteworthy that in other particulars, such as (a) the treatment of *ju-sheng*, (b) the treatment of Grade II of the *keng* rhyme group with velar initials (see below), hP agrees closely with the *Chung-yüan yin-yün*, indicating a closely related underlying dialect. It seems to me probable therefore that the hP three-way distinction in stops was artificially based on Chinese phonological tradition and had no basis in living speech at that time. In Tibetan itself only the voiced stops and affricates (*g, ɟ, d, b, dz*) and the corresponding voiceless aspirates (*k', ɕ', t', p', ts'*) occur freely as absolute initials. The voiceless non-aspirates (*k, ɕ, t, p, ts*) mostly occur with prefixes except in enclitic particles, onomatopoeic and foreign words. Moreover in Lhasa and other dialects the voiced consonants

⁵⁸ Bailey, 1946.

⁵⁹ Pulleyblank, 1962, p. 68.

tsu-yün a distinction is also made between two kinds of initial *y*, corresponding to what had earlier been /ʔj/ and /ɣj/ respectively. The distinction is just a slight modification of the *y* sign and, though some inscriptions seem to observe it, others do not.

Initial *jih* 日

This initial was a palatal nasal in the *Ch'ieh-yün* and is so represented in Sino-Vietnamese, which as we have seen, was based on a dialect in which the old series of palatal initials was fully preserved. In northern Chinese, however, it is abundantly clear that initial *jih* had lost its nasalization in mid and late T'ang. This, combined with the general shift of palatal to retroflex which occurred at this period, would have resulted in a lax, voiced retroflex glide /r/, the value which this initial has in modern Mandarin. Such a value agrees well with the rest of the foreign evidence. Kan'on has *z*-, Tibetan has *z*-, with no indication of nasality through prefixed *h*, hP'ags-pa also has *z*, Sino-Korean now has zero but formerly used an obsolete letter of which the value was almost certainly *z*. The fact that none of these languages used their own "r" initials is not very significant. Compare the way in which Mandarin /r/ has been represented in European romanizations. On the other hand the fact that the rhyme table phonologists aligned it with initial /l/ is very suggestive.

In T'ang this initial occurred only in Grade III, that is, before /i/, a legacy of its origin as a palatal. By the Mongol period this was no longer true. The loss of /i/ after retroflex initials in the /-ain/ rhyme resulted in /rain/ for words like 讓, spelt *ʒan* in hP'ags-pa.

II

The four grades

In addition to the thirty-six initials, the full definition of the non-rhyming part of the syllable involved, for the rhyme table phonologists, two additional categories: (a) the opposition between "open mouth" (*k'ai-k'ou*) and "closed mouth" (*ho-k'ou*), (b) the four grades (*ssu teng*). It is unanimously agreed that the first of these distinctions depended on the absence or

Continued from previous page—

have become unvoiced and may already have done so by the Yüan period. The use of the signs for voiced stops and voiceless aspirates for the two types of Chinese initial is therefore understandable. The left over signs for voiceless stops were available and were used for the obsolete class of "muddy" initials, but they would have been actually read as voiceless aspirates or non-aspirates. The use of *ç* for initials *ch'uang* and *ch'eng* is a particularly clear example of the artificiality of the hP representation of "muddy" initials, for it stood not only for [ʧ] and [ʧ'] but also for [ʃ] in such words as 質, spelt *çi*, and 士, spelt *çhi*. See p. 233 above.

presence of lip-rounding.⁶¹ It is also apparent that the second had to do mainly with palatalization. There is, however, not merely a two-way distinction of palatal *v.* non-palatal, like that of labial *v.* non-labial, but a four-way set of contrasts. Neither the *ho-k'ou k'ai-k'ou* distinction nor the four grades affected the rhyme, either schematically in terms of the rhyme groups (*she*) or in the actual rhyming practice of poets.

In a later form of rhyme table that was applied to early forms of Mandarin the problem is much simpler. Labialization and palatalization each comprise a two-way contrast and together they constitute a four-way set of distinctions, called *hu* 呼 or "voices": (1) *k'ai-k'ou* "open mouth", (2) *ch'i-ch'ih* 齶齒 "[tongue] level with the teeth", i.e. palatalized, (3) *ho-k'ou* "closed mouth", i.e. labialized, (4) *ts'o-k'ou* 撮口 "compressed mouth", i.e. combined palatalization and labialization. This can be illustrated by Mandarin sets like:

<i>k'ai-k'ou hu</i>	恩 <i>en</i>	根 <i>ken</i>	安 <i>an</i>	干 <i>kan</i>
<i>ch'i-ch'ih hu</i>	因 <i>yin</i>	斤 <i>chin</i>	燕 <i>yen</i>	間 <i>chien</i>
<i>ho-k'ou hu</i>	溫 <i>wen</i>	袞 <i>kun</i>	灣 <i>wan</i>	官 <i>kuan</i>
<i>ts'o-k'ou hu</i>	筮 <i>yün</i>	君 <i>chün</i>	冤 <i>yüan</i>	卷 <i>chüan</i>

Hartman's interpretation of Mandarin vowels in terms of three vowel phonemes differing only in tongue height which may be preceded by the semivowels /j/ /w/ and /jw/ and modifications of his scheme by other scholars since are essentially adaptations of this traditional Chinese type of analysis.⁶²

To extend this kind of interpretation to the system of four grades of the T'ang and Sung periods we obviously need at least one additional type of distinction so as to double the number of possible contrasts from four to eight. Karlgren's solution to the problem was partly in terms of different types of palatal and labial semivowel—"consonantal" *yod*, which he wrote as *j v.* "vocalic" *i*, and "consonantal" *w v.* "vocalic" *u*—partly in terms of differences in the following main vowel. Clearly this second kind of discrimination is unsatisfactory if we accept that the grades did not affect the rhyme.

This point was, however, obscured for him, and the problem of reconstruction enormously complicated by his failure to separate clearly enough the two types of language involved, that which underlay the

⁶¹ In some works this opposition is called "heavy" vs. "light", rather than "open mouth" vs. "closed mouth". See Lo 1932. Like "clear" and "muddy", these were originally ancient musical terms and they were applied in a variety of ways in the early stages of Chinese phonological studies. (T'ang 1948). There seems to be a correlation between "light" and "heavy" meaning labialized and non-labialized syllables and "light" and "heavy" used to distinguish the labial fricatives from the stops.

⁶² Hartman 1944. See also Hockett 1947 and 1950, Rygaloff in *T'oung Pao* 1955, Martin 1957, Pulleyblank 1969.

Ch'ieh-yün and that which underlay the rhyme tables, and the consequent assumption that *within the rhyme table scheme* room must be found for all the *Ch'ieh-yün* rhyme distinctions. By introducing this earlier, quite different, rhyming standard into the discussion, the relation between rhyme group and rhyme is lost.

In the end Karlgren failed to set up any clear phonological criteria for the four grades that would apply throughout the system and was reduced to assuming that the arrangement of words in the rhyme tables was in many cases merely an ingenious, but essentially arbitrary, way of accommodating the material of the rhyme dictionary in tabular form. Thus, any *Ch'ieh-yün* rhyme which contained words placed in Grade III was classed by him as a "Grade III rhyme" and all words in such rhymes, of whatever initial, were furnished with the *yod -i-* which was the mark of Grade III, even when they might in fact appear in Grades II or IV in the actual rhyme tables. One of the most curious paradoxes was that, though *-i-* was regarded as the special mark of Grade III, initial *i-* itself appeared always and exclusively in Grade IV, having as its Grade III counterpart a "yodized" *yod ji-*, whatever that might mean in phonetic realization. It is small wonder that under the influence of such theories the rhyme tables have had a rather low reputation as works of phonological analysis. They deserve much better.

Though Karlgren's system of the rhyme tables as a whole must be judged a failure, his distinction between "consonantal" and "vocalic" medials was, I believe, on the right track. If we confine our attention strictly to the rhyme tables and ignore the additional distinctions which are needed for a complete reconstruction of the *Ch'ieh-yün*, this distinction between lax, "consonantal" /j/ and /w/ on the one hand and relatively tense, "vocalic" /i/ and /u/ on the other is all that is necessary. The application of the distinction is naturally not quite the same as proposed by Karlgren.

In the first place one must divide the four grades into two subsets: (A)- I and II, (B)- III and IV. Subset (B) is characterized by having "vocalic" medial /i/ in *k'ai-k'ou*, corresponding to the later *ch'i-ch'ih* category, and "vocalic" /iu/ (phonetically [y]) in *ho-k'ou*, corresponding to the later *ts'o-k'ou* category. Subset (A) is characterized by the absence of /i/ and corresponds to the later *k'ai-k'ou hu* and *ho-k'ou hu* categories. Within the subsets the difference between the grades varies according to the class of initial as shown in the following table, where: K=/k, k', kf, ŋ, ʔ, x, xh, ɣ/; T=/t, t', th, n, ts, ts', tsh, s, sh/; P=/p, p', ph, m/; F=/f, fh, v/; L=/l, r/.

		<i>k'ai-k'ou</i>				<i>ho-k'ou</i>			
(A) -Ø-	I.	K-	T-	P-	L-	Ku-	Tu-	Pu-	Lu-
	II.	Kj-	Tr-	Pj-	L-	Kw-	Trw-		
(B) -i-	III.	Ki-	Tri-	Pi-	Li-	Kiu-	Triu-	*Fiu-	Liu-
	IV.	Kji-	Ti-	Pji-	Li-	Kjiu-	Tiu-		

*Fiu_a-> Fa-, Fiu_ə-> Fu_ə-, except that Fiu_{-j}-> Fji_{-j}

Detailed justification and exemplification of this scheme will be given below. Before proceeding to this, however, some further theoretical points need to be considered.

Nei "inner" and wai "outer"

Hartman needed three central vowel nuclei for Mandarin which he wrote /i, e, a/ but which, in terms of their phonetic values when not preceded by semivowels, would be better described as /i, ə, a/. There was, however, a high degree of complementarity between the high and mid-vowels and a number of attempts have been made since to reduce the nuclei from three to two. If this is done, we are left with only a single binary contrast in the vertical dimension in the centre of each syllable. This corresponds to a distinction in the old rhyme tables between "inner" and "outer" rhyme groups. Each of the rhyme groups (*she*) was characterized as one or the other and, though there seems to have been some confusion in the tradition, Lo Ch'ang-p'ei showed very convincingly that the distinction originally was based on relative closeness or openness of the main vowel.⁶³ Typically the rhyme groups fall into pairs, one "inner" and one "outer", for example, the two groups with final /-n/, *chen* 陳 and *shan* 山, the two groups with final /-m/, *shen* 深 and *hsien* 咸, or the two groups with final /-w/, *liu* 流 and *hsiao* 效. In all these groups the contrast of relative closeness and openness still appears in modern Mandarin, as will be seen from the following examples (in which the numbers at the left stand for the grades of the rhyme tables):

	<i>chen</i> (inner)	<i>shan</i> (outer)	<i>shen</i> (inner)	<i>hsien</i> (outer)	<i>liu</i> (inner)	<i>hsiao</i> (outer)
I	根 <i>ken</i>	干 <i>kan</i>		含 <i>han</i>	樓 <i>lou</i>	老 <i>lao</i>
II	臻 <i>chen</i>	山 <i>shan</i>	參 <i>ts'en</i>	斬 <i>ch'an</i>	搜 <i>sou</i>	稍 <i>shao</i>
III	斤 <i>chin</i>	建 <i>chien</i>	金 <i>chin</i>	檢 <i>chien</i>	流 <i>liu</i>	僚 <i>liao</i>
IV	緊 <i>chin</i>	見 <i>chien</i>	浸 <i>chin</i>	尖 <i>chien</i>	謬 <i>miu</i>	眇 <i>miao</i>

By making the difference of grade depend exclusively on medials preceding the nucleus we can define the difference between "inner" and "outer" rhyme groups for both Late Middle Chinese and modern Mandarin in terms of contrasting close and open nuclear vowels which we shall write as /ə/ and /a/.

Tense and lax semivowels

With the centre of each syllable now defined as consisting of either close /ə/ or open /a/ we can redefine "vocalic" /i/ and /u/ as semivowels,

⁶³ Lo 1933 (1).

since they cannot occur independently as syllabic nuclei. The difference between /j/ and /i/ or /w/ and /u/ will now be regarded not as "consonantal" *v.* "vocalic", but as one of relative tensity, lax /j/ and /w/ *v.* tense /i/ and /u/.⁶⁴

We shall further require a rule that, except under conditions to be defined further below, tense semivowels raise a following nucleus and also tend to bring about some degree of fronting or back-rounding as the case may be. Thus /ia/ will be phonetically [iə] or [iɛ] while /iə/ will be realized as a monophthong [ɪ] or [i]; /ua/ will be phonetically [uə] or [uɔ] while /uə/ will be phonetically [ʊ] or [u]. The lax semivowels have no such effect.

In Mandarin the distinction between /i/ and /j/ or /u/ and /w/ before the nucleus is mostly at a subphonemic level. Thus we have /ian/ [iɛn] and /iən/ [in] but no contrasting /jan/ /jən/; we have /wan/ and /wən/ but no contrasting /uan/ [uən] and /uən/ [un]; we have /jaw/ and /jan/ but no /iaw/ or /iaŋ/, and so on. The distinction becomes marginally contrastive, however, in the case of /iəw/ [iu], tones 1 and 2, *v.* /jəw/ [iou], tones 3 and 4, since the distinction is maintained when tone 3 is changed to tone 2 before another tone 3: 油井 *yu²-ching³* [iu¹ tɕiŋ³] "oil wells" *v.* 有井 *yu³ ching³* [iou¹ tɕiŋ³] "there are wells". Similarly /uəj/, in tones 1 and 2 contrasts subphonemically with /wəj/ in tones 3 and 4 and can come into distinctive contrast under conditions of tone sandhi.⁶⁵

In Middle Chinese and early Mandarin there are regular phonemic distinctions based on the contrast between /i/ and /j/ or /u/ and /w/.

Tense semivowels after the nucleus

A further extension of the theory of tense and lax semivowels can be made by allowing for both types after the nucleus as well as before it. Lax /j/ or /w/ form phonetic diphthongs /əj/ [əi], /aj/ [ai] /əw/ [əu], /aw/ [au]. Tense /i/ and /u/, on the other hand, will form what are phonetically front or back-rounded monophthongs /əi/ [e], /ai/ [æ], /əu/ [o] /au/ [ɔ]. Such syllables do not occur in Mandarin but /ai/ /əu/ and /au/ occur as the principal vowels of certain rhyme groups in Late Middle Chinese, as will be shown below.

The advantage of this type of analysis is that it enables us to define the close-open distinction in the same way in the case of front or back vowels as in the case of central vowels and to attribute frontness or back-roundness to the same elements in all cases.

It will be noted that the close front and back-rounded vowels [i] or [ɪ] and [u] or [ʊ] are considered to be not merely closer than mid and open [e] [æ] [o] [ɔ] but also structurally different, in that they have the semi-vocalic element which comports fronting or back-rounding in front of the

nucleus instead of after it. This is paradoxical in terms of orthodox western phonetic theory but is in accordance with traditional Chinese practice. Sets like /ən/ /iən/ (= [in]) /wən/ /iuən/ (= [yn]) have been, and are, considered to rhyme, the contrasts in "voice" (*hu*) being attributed to the initial, non-rhyming, part of the syllable. Such an analysis, moreover, has analogies in Sanskrit phonology where the vowels *e* and *o* are considered to be *a+i* and *a+u* and alternate with *ay* and *av* in sandhi, whereas the vowels *i* and *u* alternate directly with *y* and *v*.

The semivowel i

To complete the theory of vowel structures which is here being applied to Chinese we must postulate a third tense semivowel /i/.⁶⁶ In front of the nucleus it is realized as high central or back unrounded [i] or [ɪ] as in Mandarin 師 /sriə/ 思 /siə/. In Mandarin it occurs only after dental and retroflex sibilants and before a close nucleus and this is true also in Late Middle Chinese. In early Middle Chinese as represented by the *Ch'ieh-yün*, however, it must be reconstructed more generally before both /ə/ and /a/, giving structures like those represented in Vietnamese by *u'* [ɪ] and *u'a* or *u'o'* [wə]. Moreover, both in Mandarin and in Late Middle Chinese, we shall wish to postulate it after the nucleus in certain cases. Like the combinations of /ə/ or /a/+/i/ or /u/, the combinations /əi/ and /ai/ will be phonetically monophthongs, the semivocalic element comports length and some degree of retraction; as in such syllables as Mandarin 歌 /kəi/ [kɤ], 大 /tai/ [tɑ]. Postulating such structures enables us to account for the (now obsolescent) distinction between 歌 /kəi/ [kɤɪ] and 根 /kəi/ [kɤɪ] which has troubled investigators since Hartman, and such other marginal contrasts as that between /təmpuəɬaj/, allegro form of 他們不來 and /təmpuəɬaj/, 德不來.⁶⁷

In Late Middle Chinese we shall wish to reconstruct /i/ as a final in rhyme groups which do not end in a consonant or lax semi-vowel and also before final /ŋ/ and /k/. Since there is never a contrast between /a/ or /ə/+*φ* and /a/ or /ə/+/i/ or between /aŋ/ /ak/ /əŋ/ /ək/ and /aiŋ/ /aik/ /əiŋ/ /əik/, it is not necessary to postulate such structures to provide for phonemic contrasts. To assume them will, however, enable us to account in the simplest manner for differences in the way in which these rhyme groups are represented in the ancient non-Chinese evidence and for the divergent ways in which they developed between T'ang and Yüan.

The first peculiarity of such rhyme groups to be noted is the rule that /ai/ and /əi/ were not raised by a preceding tense /i/ or /u/, hence: /iai/ /iaɪŋ/ /iaik/ are to be understood as [ia] [iaŋ] [iak] in contrast to /ian/ /iam/

⁶⁴ The scheme that is outlined here for analysing vowel systems is applied to Vietnamese and Mandarin in Pulleyblank 1969.

⁶⁵ See Chao Yuanren 1968, p. 54.

⁶⁶ See Pulleyblank 1969.

⁶⁷ Chao Yuanren 1968, p. 54.

/iaw/ /iaj/ = [iɛn] [iɛm] [iɛu] [iɛi]; and /iəi/ /iəiŋ/ /iəik/ are to be understood as [iɾ] [iɾŋ] [iɾk] in contrast to /iən/ /iəm/ /iəw/ /iəj/ = [in] [im] [iw] [ij].

Secondly, between T'ang and Yüan there was dissimilation between tense semivowels on both sides of the nucleus. In the case of the /ain/ group this led to the weakening or loss of prenuclear /i/ /u/ or /iu/: /kiaŋ/ > /kjaŋ/, /sriain/ > /sraŋ/, /ɣiuain/ > /ɣwaŋ/, etc. In other cases the postnuclear /i/ was lost. Details will be discussed below.

III

The sixteen rhyme groups

The remaining category of the rhyme table phonologists to be discussed is that of the sixteen rhyme groups (*she*). These are not explicitly named in the *Yün-ching* but the fact that they correspond to the actual rhyming categories of poets such as Li Ho and Po Chü-i shows that they were a linguistic reality in the late T'ang language.⁶⁸ Moreover they can be shown to be implicitly present in the way in which the *Ch'ieh-yün* rhymes are arranged in the forty-three tables of the *Yün-ching*.

Although it may take several tables to constitute a rhyme group, these tables are always found adjacent to one another and are frequently linked by having part of one rhyme in one table and part in another. The simplest linkage of this kind occurs when a *k'ai-k'ou* table is followed by a corresponding *ho-k'ou* table. But more elaborate linkages occur in which the Grade III part of a rhyme is in one table and the Grade IV part in another. For example, in the four tables (two for *k'ai-k'ou* and two for *ho-k'ou*) which together correspond to the *shan* rhyme group the rhymes are arranged as follows:

	Tables 21 and 22	Tables 23 and 24
Grade I	—	寒 (<i>k'ai</i>) 桓 (<i>ho</i>)
Grade II	山	刪
Grade III	元	仙
Grade IV	仙	先

What this undoubtedly means is not that in some subtle way the Grade IV part of rhyme 仙 was considered to correspond to rhymes 山 and 元, while the Grade III part corresponded to rhymes 寒 桓 刪 and 先, but that the rhymes placed in the same grade in adjacent tables were equivalent to one another: 山 = 刪, 元 = 仙₃, 仙₄ = 先.

These are all equivalences that are also found in the Hui-lin glosses and which must be assumed to apply to the late T'ang language on which the first rhyme tables were based. In the later style of Sung rhyme tables such equivalent rhymes were combined in a single table.

The earliest explicit naming of the sixteen rhyme groups is found in the *Ssu-sheng teng-tzu* by which time certain of the groups were already combined as a result of mergers that had taken place between late T'ang and Northern Sung. This in itself shows that the rhyme groups must have already been traditional.

The sixteen rhyme groups are as follows. The numbering and reconstructed values are mine:

Outer		Inner	
I	果 } /ai/	III	遇 /əi/
II	假 } /ai/		
IV	蟹 /aj/	V	止 /əj/
VI	效 /aw/	VII	流 /əw/
VIII	宕 /aiŋ/ /aik/	IX	曾 /əiŋ/ /əik/
X	梗 /aiŋ/ /aik/		
XI	江 /auŋ/ /auk/	XII	通 /əuŋ/ /əuk/
XIII	山 /an/ /at/	XIV	臻 /ən/ /ət/
XV	咸 /am/ /ap/	XVI	深 /əm/ /əp/

Any syllable can now be given a complete reconstructed value by combining (a) the initial, (b) the medials as defined by the grade according to the table on p. 231, (c) the rhyme as shown above, (d) the tone. The only special rule to be noted is that in Group V, *k'ai-k'ou*, words with originally retroflex and dental sibilant initials in Grades II and IV very early had a special development in which /əj/ or /iəj/ was replaced by /iə/, e.g.: 師 /srəj/ > /sriə/, 思 /siəj/ > /siə/.

In the case of the /aj/ /aw/ /an/ /ən/ /əw/ groups, words in Grade I, *k'ai-k'ou*, i.e. where no medial intervened between the initial and the rhyme, still have the same values in modern Mandarin, e.g. 改 /kaj/, 高 /kaw/, 干 /kan/, 根 /kən/, 狗 /kəw/. Allowing for the change of final /m/ to /n/, the same is true of the /am/ group. The ancient evidence also consistently supports these reconstructed values and they can be accepted without further discussion. Though there was no Grade I in the /əm/ group, the analogy of the /ən/ group is sufficient to assure the basic reconstruction of the rhyme here also.

In the case of the /əj/ group both the ancient and modern evidence might justify a reconstruction with a pure high front vowel /iə/ = [i] for Grades III and IV, *k'ai-k'ou*, instead of the diphthong implied by /iəj/. This would make it slightly easier to account for the development of the /iə/ rhyme noted above: /srə/ > /sriə/ > /sriə/, /siə/ > /siə/. The *Meng-ku tzu-yün* appends words in *-hiy* = /əj/, which had developed out of /əik/, to the *-ay* rhyme, as if they did not rhyme with *-i*, and spells *ho-k'ou* words *-ue*, even though it places them in the *-i* rhyme. On the other hand the *Chung-yün*

⁶⁸ Pulleyblank 1968.

yin-yün, based on actual rhyming practice, puts them all together. On the whole it seems best to reconstruct /iəj/ even though actual pronunciation may have tended to a monophthong, or perhaps have had a free variation between a monophthong [i] and a diphthong [iɪ]. The problem is not unlike that of long [i:] or [iɪ] in English.

The reasons for reconstructing /aiŋ/ /aik/ and /əiŋ/ /əik/ instead of simply /aŋ/ /ak/ and /əŋ/ /ək/ have been touched on above. They will be dealt with more fully below in connexion with the discussion of medials /j/ and /ju/.

Besides the /aiŋ/ and /əiŋ/ rhyme groups there were three others in which the modern correspondences would lead us to reconstruct velar finals. The foreign equivalences and other evidence make it clear that one of these, an "outer rhyme group", had a front vowel and the other two, one "outer" and one "inner", had back-rounded vowels. Since they constituted separate rhyme groups it is also clear that the fronting and back-rounding were different in kind from that which occurred within other rhyme groups at a subphonemic level under the influence of medials. In accordance with the principle enunciated on p. 37 above I reconstruct these rhyme vowels as /ai/, /au/ and /əu/, where the combinations of central nucleus and tense semivowel imply, not phonetic diphthongs, but front or back monophthongs [æ] [ɔ] [o].

The evidence for the palatal character of the *keng* rhyme group which I reconstruct as /aiŋ/ /aik/ is very clear and M. Hashimoto has proposed to explain it not by a front vowel, but by palatal final consonants /ɲ/ /ç/. The most striking evidence in favour of this comes from Sino-Vietnamese which has final *-nh*, *-ch*, instead of the usual *-ng* and *-c*, corresponding to this rhyme group. According to Professor Eugénie Henderson Vietnamese *-nh* and *-ch* are not strictly a palatal nasal and stop, but are fronted velars which she writes as [ŋ] [ç].⁶⁹ The vowels in front of them are diphthongized: *-anh* [ɛiŋ], *-ənh* [ɛiŋ], *-inh* [iŋ]. It may well be that in Middle Chinese also there was a palatal glide before the final consonant which would justify a reconstruction /aiŋ/ [æiŋ] /aik/ [æik]; and further that in Old Chinese there was a distinct set of palatal final consonants (though even there one might prefer to treat them as combinations of /ŋ/ and /k/ + /j/). As far as Middle Chinese is concerned, however, it is simpler to regard such palatalization of the final consonants as non-distinctive.

By Northern Sung the /aiŋ/ and /əiŋ/ groups had merged and they are combined in the same table in the *Ssu-sheng teng-tzu* and the *Ch'ieh-yün chih-chang-t'u* as well as by Shao Yung. This implies a closing up of /aiŋ/ to /əŋ/ at the same time as /əiŋ/ simplified to /əŋ/ also. The peculiarities in the development of Grade II in this rhyme group are discussed below.

The finals in /auŋ/ /auk/ /əuŋ/ /əuk/ may also have had non-distinctive labialization of the final consonants corresponding to the palatalization in the /aiŋ/ /aik/ group, and it is further probable that, at least in part, these finals go back to final labiovelars in Old Chinese. It seems best, however, to treat the distinction in Middle Chinese as belonging to the vocalism.

The /auŋ/ group, restricted to Grade II, merged with the /aiŋ/ group by Northern Sung times. It was already largely in complementary distribution to the /aiŋ/ group in late T'ang, since the latter lacked a Grade II component with most initials. It has indeed been suggested that it should simply be reconstructed as the Grade II part of the /aiŋ/ group⁷⁰. Historically, however, there is no doubt that it belongs with the back vowel rhymes, and even in the ninth century we find it occasionally rhyming with the /əuŋ/ group (as well as sometimes with the /aiŋ/ group). Sino-Vietnamese sometimes has *-ong* and *-oc* as in: 雙 /sraŋ/ SV *song*, 濁 /trfauk/ SV *trɔc*, 學 /xfjauk/ SV *hoc*, 剎 /pjauk/ SV *bóc*.

When /auŋ/ /auk/ merged with //aiŋ/ /aik/ there was a metathesis of the labial element in the case of syllables with retroflex initials: Trauŋ > Trwaiŋ, Trauk > Trwaiik. Tibetan transcriptions such as 懂 *ǰwaj* and 懂 *ǰwaj* for /trfaiŋ/ < /trfaiŋ/ and *ǰwag* for 濁 /trfaiuk/ < /trfaiuk/ show this process had already taken place in some dialects in late T'ang.

The *t'ung* rhyme group, which I reconstruct as /əuŋ/, contained three *Ch'ieh-yün* rhymes. The first table in the *Yün-ching*, classed as *k'ai-k'ou*, was devoted exclusively to rhyme *tung* 東 and the corresponding rhymes in other tones in all four grades. The second table, classed as *k'ai-ho*, had the other rhyme *tung* 冬 in Grade I and rhyme *chung* in Grades III and IV. It seems clear that the reason for the designation *k'ai-ho* was that the Grade I rhymes had coalesced and were both *k'ai-k'ou* but that the Grades III and IV rhyme *chung* was *ho-k'ou* in contrast to the Grades III and IV part of rhyme *tung* which was *k'ai-k'ou*. This implication is supported by Shao Yung who classified words from rhyme *tung* 東 etc., as *k'ai-k'ou* and words from rhyme *chung*, etc., as *ho-k'ou*. In the *Ssu-sheng teng-tzu*, the *Ch'ieh-yün chih-chang-t'u* and later tables the *k'ai-k'ou ho-k'ou* distinction has disappeared and all the rhymes are included in a single table.

The reconstruction of the Grade I rhyme as /əuŋ/, phonetically [oŋ] agrees very well with all the foreign evidence from Late T'ang—KO *-ou*, *-oku*, SK. *-oŋ*, *-ok*, SV *-ōng*, *-óc*. Tibetan transcriptions have very consistently *-oŋ*, *-og*. The equivalences in the other grades will be discussed below.

Rhyme Groups I and II, reconstructed here as /ai/, were completely in complementary distribution and were treated as such by Shao Yung, the *Ssu-sheng teng-tzu*, and the *Ch'ieh-yün chih-chang-t'u*. They were treated

⁶⁹ Henderson 1966, p. 166 and n. 10.

⁷⁰ Chao Yunren 1940, p. 229.

as a single rhyming category already by Li Ho in the ninth century, and by Sung writers. I have therefore felt justified in reconstructing them in the same way in spite of the fact that they were labelled as separate *she* and were placed in separate tables in the *Yün-ching*. It is probable that there was already an allophonic difference in vowel quality between words in Grade I and those in the other grades, a tendency to a back-rounding which eventually became phonemic and can be symbolized /ai/ [a] > /au/ [ɔ]. What finally made the contrast phonological was the loss of final /t/ and /p/ in words like 達 /tʰiat/ > /tai/, 答 /tap/ > /tai/, which then came into contrast with 多 /tai/ > /tau/. By the Mongol period this had taken place. Words in /au/ < /ai/ are spelt -o in hP'ags-pa and there is an autonomous -o rhyme in the *Meng-ku tzu-yün* and a corresponding rhyme in the *Chung-yüan yin-yün*.

The corresponding close rhyme group in /əi/ had no *k'ai-k'ou* in Grade I. Grade II, *k'ai-k'ou* did, however, exist after retroflex sibilants and the reconstruction /əi/ [ɣ] agrees well with what we find in the foreign evidence. The most perfect correspondence is in Sino-Vietnamese where we have the vowel *o'*, phonetically [ɣ] and structurally /əi/ according to my analysis. Thus we have: 所 /srəi/ SV *sò'*, 阻 /tsrəi/ SV *trò'*, etc. For these words Kan'on has *syo*, where *o = o' = [ə]*. (For the representation of retroflex sibilants in Grade II by *sy-*, rather than *s-* in KO see p. 024 above). SK has mostly -o, like Grades I and II, *ho-k'ou*, contrasting with -e in Grades III and IV, *k'ai-k'ou*. Grades I and II, *ho-k'ou*, were /uəi/[uɣ] in Late Middle Chinese, i.e., with a vowel very much like that in Mandarin *kuo*. This gave KO -o, SV -ò, SK -o. By the Mongol period the whole of the *k'ai-k'ou* part of the /əi/ group had merged with the corresponding *ho-k'ou* and the final element /i/ had been lost: /əi/ > /uəi/ > /uə/, giving hP -u.

It remains to discuss in detail the proposed reconstruction for the four grades and to see how far it is supported by the ancient evidence and the history of Mandarin from T'ang to Yüan.

To be concluded in Vol. XVI.