LATE MIDDLE CHINESE
by L. G. PULLEYBLANK

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 gojuon system, i.e. si, zi, ti, tu, di, du, hu, not shi, ji, chi, ji, zu, ju. Traditional kana orthography is followed, i.e. kau, kahu for modern kō; keu, kehu for modern kyō, etc. But such spellings as kuwan, kiyau are abbreviated to kwan, kyau. Note that k had the value of a labial stop [p] or fricative [f]. The kō otsu 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 was probably an unrounded central vowel /o/. According to Hattori 1959, p. 286, i and e were /jι/ /je/ respectively.)

Sino-Korean—The consonantal signs of the hangul alphabet are transcribed as follows: ㄱ, ㅋ, ㄲ, ㅅ, ㅆ, ㅇ, ㅈ, ㅊ, ㅋ, ㅌ, ㅍ, ㅎ, ㅏ, ㅏ, ㅑ, ㅓ, ㅗ, ㅜ, ㅡ, ㅣ, ㅐ, ㅔ, ㅖ, ㅒ, ㅗ, ㅓ, ㅏ, ㅓ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, ㅗ, 有期
The vowels transcribed as i and u are presumed to have been phonetically a somewhat retracted front [i] and a front rounded [y] respectively. The first elements o and u, in the combinations oa, ouj, uw, wej may have been either tense [u] or lax [w] [y]. (On this tense-lax distinction in medials see p. 232 below.)

Sino-Vietnamese—Quêc-ngữ 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.

The letters of the ŪP^a-pa alphabet are transcribed according to their Tibetan equivalents as follows: ਖ k, ਕ k’, ਙ g, ਙ ། g, ਕ ། k, ਙ ། g, ། l, ། m, ། t, ། d, ། n, ། p, ། p’, ། b, ། m, ། ts, ། dz, ། w, ། z, ། h, ། w, ། m, ། s, ། o, ། -w-. The following additional letters, not found in Tibetan, are used for Chinese: ། f, ། x, ། i (the above, together with ། g, are part of the original ŪP alphabet, designed as a universal alphabet for the Mongolian empire); ། f’, ། s’, ། w y’, ། h’ (the above are special forms, used in the Meng-hu tsu-yun 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 -i- and other questions of interpretation see Pulleyblank 1970.

BIBLIOGRAPHY ABBREVIATIONS

<table>
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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>AM</td>
<td>Asia Major</td>
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<tr>
<td>AOH</td>
<td>Acta Orientalia Academiae Scientiarum Hungaricae</td>
</tr>
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<td>BEFEO</td>
<td>Bulletin de l’École Française d’Extrême-Orient</td>
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<td>BIHP</td>
<td>Bulletin of the Institute of History and Philology, Academia Sinica</td>
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<td>BMFEA</td>
<td>Bulletin of the Museum of Far Eastern Antiquities</td>
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<td>BSOAS</td>
<td>Bulletin of the School of Oriental and African Studies</td>
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<td>CHHP</td>
<td>Ch’ing-hua Hsiêh-pao 清華學報</td>
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<tr>
<td>HJAS</td>
<td>Harvard Journal of Asiatic Studies</td>
</tr>
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<td>JAOS</td>
<td>Journal of the American Oriental Society</td>
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<td>MS</td>
<td>Monumenta Serica</td>
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<td>MTB</td>
<td>Memoirs of the Research Department of the Tôyô Bunko</td>
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<td>TG</td>
<td>Tôyô Gakuhô 東洋學報</td>
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<td>TP</td>
<td>T’oung Pao</td>
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<td>YCHP</td>
<td>Yin-ching Hsiêh-pao 燕京學報</td>
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</tbody>
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The study of Middle Chinese pronunciation has usually taken as its starting point the Ch'ieh-yün of Lu Fa-yen, completed in A.D. 601. The
rhyme tables, starting with the Yin-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'ang-an. 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 Chu-i who were uninhibited by li-shih canons accords with the rhyme groups (she 翹) 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

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 have been a shift from one underlying dialect to the other.

Thus the fronting of the central medial [i] to [ɻ], leading to the merger of Ch'ieh-yün rhymes like yün 雲 and hsien 仙, has affected nearly all parts of the Chinese language community. Vestiges of the earlier distinction (nolonger expressed as a contrast between [i] and [ɻ]) 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 ma 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. 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 [ɻ] 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

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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.

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-yüan. 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-yüan.

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. The earliest extant rhyme table is the Yin-ch'ing. 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 lieh, which forms part of Cheng Chiao's T'ang-chih of c. 1160. The Yin-ch'ing 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 oclusives 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. 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. 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 homophonic groups of the rhyme dictionary on a grid.

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. The Sun-sheng teng-tzu, a rhyme table in the Yin-ch'ing tradition which explicitly names the thirty-six initials and sets up the sixteen rhyme groups (she 韻) which are only implicit in the arrangement of the earlier table, is probably of Northern Sung date also, though the existing text is later. The Ch'ieh-yüan chih-chang t'u, traditionally but falsely attributed to Sun-ma Kuang, apparently comes from Southern Sung. Both the Sun-sheng teng-tzu and the Ch'ieh-yüan 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 Yuan period is the Ch'ang shih cheng yin Ch'ieh-yüan chih-nan which formed the basis for one of the tables included in the K'ang-hsi tzu-tien.

Standing somewhat apart from the main tradition is the very interesting skeletal table which we owe to Shao Yung, the Northern Sung Taoist philosopher. It is based on similar principles to the other tables but departs more radically from the Yin-ch'ing 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'ü-an rather than the still authoritative tradition of the Ch'ieh-yüan; (2) the new method of transcribing Sanskrit which came into use in the eighth century, especially the very careful renderings of dharma by the tantric monk, Amoghavajra, and his school; (3) transcriptions of Chinese in foreign scripts, especially Tibetan, from the late T'ang period; (4) the rhyming of poets such as Li Ho and Po Chü-i; (5) the later, Kan'on, form of Sino-

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8 Shen Kua, Meng-ch'i pi-t'an, ch. 15. The current editions of the Yü-pien as enlarged and revised in Northern Sung contain a list of the thirty-six initials, but it is only found in the so-called Yuan 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.
13 Huang, 1931. It has recently been shown that the Wu ching wen-tzu 言文足字 by Chang Shen 志生, a commentary on the Five Classics compiled 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;\textsuperscript{17} (6) Sino-Vietnamese;\textsuperscript{18} (7) Sino-Korean;\textsuperscript{19}—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.\textsuperscript{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.\textsuperscript{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'i\textquotesingle esh-y\textquotesingle en was: (a) to divide syllables by the fan-chi\textquotesingle esh 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

\textsuperscript{17} Tomo, 1957, pp. 95, 144 ff.
\textsuperscript{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 traditions of pronouncing Chinese characters; and (b) an earlier layer of loanwords which are treated simply as Vietnamese words. Standard Sino-Vietnamese, like Kan\textquotesingle on and Sino-Korean, discussing in this article but shows certain conservative features, especially the di- verse in the treatment of the rhymes which seem to link it with an early form general to the Ch'i\textquotesingle esh-y\textquotesingle en itself, that is, to the standard "mandara" of the pre-T'ang period. This will be demonstrated in a subsequent article.
\textsuperscript{19} In his full treatment of Sino-Korean (1964–7) Kôno Rosûru concludes that Sino-Korean is composed of a number of layers based on different forms of Chinese, fan-chi\textquotesingle esh, i.e. with the late T'ang or standard under discussion here. In fact it seems to me very few traces of earlier and later strata.
\textsuperscript{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\textquotesingle an-p\textquotesingle ei, Ligeti, Poppe, Clausen, M. Hashimoto, P. Denlinger, M. Nakano, and others. A contribution on the subject will appear shortly as Pulleyblank, 1970.
\textsuperscript{21} In contrast to Karlgren\textquotesingle s original study on the Ch'i\textquotesingle esh-y\textquotesingle en little reference is made in this paper to modern dialects of Chinese other than Mandarin. This is not in view of the evidence from the Middle and Old Chinese pronunciation but it seems to me to be due to the importance of 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 their present-day phonology is in need of much more analysis than it has yet received.

\textsuperscript{22} Since homophones were grouped in this way under a single fan-chi\textquotesingle esh spelling, the Ch'i\textquotesingle esh-y\textquotesingle en 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 make Ch'i\textquotesingle esh-y\textquotesingle en 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\textquotesingle ang-m\textquotesingle in pairs such as 般 /mi\textsuperscript{2}/, and 般 /mi\textsuperscript{4}/, both reconstructed as karlgren, as m\textsubscript{2}l, or 般 /k\textsuperscript{1}/ and 般 /k\textsuperscript{4}/, both reconstructed as k\textsuperscript{2}, though in each case the Ch'i\textquotesingle esh-y\textquotesingle en 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 Greco-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.

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<td>溪</td>
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<td>溪</td>
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<td>舌</td>
<td>唇</td>
<td>青</td>
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<td>溪</td>
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<td>唇</td>
<td>青</td>
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<tr>
<td>Throat:</td>
<td>青</td>
<td>溪</td>
<td>淡</td>
</tr>
<tr>
<td>半舌音</td>
<td>青</td>
<td>溪</td>
<td>淡</td>
</tr>
<tr>
<td>Half-front-tooth:</td>
<td>青</td>
<td>溪</td>
<td>淡</td>
</tr>
</tbody>
</table>

*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 theory) 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. 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., 饤 /kʰian/ GO gen, KO ken; 畿 /phian/ GO bin, KO hin. Tibetan transcriptions also sometimes render these initials as unvoiced. It seems probable therefore that they were not fully voiced sounds, 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. 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., 曆 /phiai/ for San. bha, but 前 /mua/-[mba] for San. ba.

In writing /kʰi/, 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. 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. In level tone they

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24 The term “not-clear-not-muddy” (pu ch’ing pu cho) is found in the Yu-p’ien as well as in the Siu-sheng t’eng-tsu and the Ch’ih-yün chin-chang-t’u. Shen Kua uses the term t’ing “even” for this category, thus separating it from the “clear” “muddy” dichotomy (Meng-ch’i pi-t’an, 13). Chang Lin-chih uses the term ch’ing-cho “clear-muddy” in the preatory material to his edition of the Yan-ching. It is only when we come to Huang Kung-shao’s Ku-chin yin-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; Csorngor, 1956, p. 109.
27 Maspero, 1940, 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 /ɦ/, this development can be represented as follows:

T'ang | Sung | Yün to present
---|---|---
ki | k'awi (level tone) > k
k'i | (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 the 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, [mɦ] [16], etc., are described for modern Wu dialects, 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—/ɦ/ /kɦ/ /sɦ/ /ʃɦ/ /xɦ/—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/ /tr/ /y/ 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 Karlgen 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 initials and other arguments from the point of view of Old Chinese reconstruction, 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 Quoc-ngu spelling, e.g., $/, triaj/ SV tri; /tram/ SV tran; /trai/ SV trê, 陳 /trîan/ SV trân. This characteristic of Sino-Vietnamese is obscured in Karlgen’s list of dialect forms 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 [ch].

Chinese /tr'/ appears in Vietnamese as s, e.g., ştur /tr'iaj/ SV si; ㄗ /tr'iov/ SV sdraising. Vietnamese s has also merged with the originally palatal initial s in Hanoi speech but the two are kept distinct in the south, where s is retroflex [ʂ].

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 /tsrai/ SV trţ, /srâi/ SV sa, ㄗts’rai/ SV sa etc. (all Grade II words in the rhyme tables), contrasting with ㄢ /triaj/ (<tsaj=/tsa=) SV chi; ㄗ /srîaj/ (<srîaj=/srî=) SV thi; ㄋ /srîiaj/ (<srîiaj=/srî=) SV xu‘ong (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 Karlgen, 1915-24, pp. 703-898; also in Karlgen, 1937.
The initials /tr/ /tr' / trn/ had merged with the corresponding sibilants /tsr/ /tsr' / tsrn/ by Southern Sung. The two series are not distinguished in the p'ags-pa spelling or in the Chung-yüan yin-yün. Their identity is implied in a remark in the preface 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 [Chinese characters]."

In Late T'ang these words had been /tsr'ai/ /tsr'ain/ /tsr'ain/ /trai/ but by Southern Sung they had become /tsr'ai/ and /tsr'ain/ 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 /tsr/.

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 /tl/ (< /nl/), 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 /la/. 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. This is satisfactory and convincing so long as we accept Karlgren's reconstructions for the grades. The distinctions between his náin (Grade I) and náin (Grade II) or náin (Grade III) and niem (Grade IV), are maintained even if one suppresses the diacritic on i 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'iche-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 náin (Grade III) and niem (Grade IV), and treating the rare cases of /l/ in Grade II as analogous to Grade I. In the same way we could, for example, treat both náin (Grade III) and ńo (Grade IV) as /nian/ and both niem (Grade I) and ńo (Grade II) as /nai/ 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. ńo (Grade I) quite regularly gives Mandarin ńo, like ni /la/ Man. ńo²; but ńo (Grade II) gives Man. ńo, like ti /tai/ Man. čh.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 /nri/ used for Sanskrit da and n in in transcriptions of the Sanskrit alphabet dated 724, 771 and 788-810. Another tell-tale clue comes from Tibetan transcriptions of Chinese. There we usually find Chinese initial ni /ni/ represented as tid (implying [nd]) or as n, when the syllable ends in a nasal, occasionally as tin. Initial niang /nia/ is much less common but we do find it in the two words ni /ni/ and ńi /ni/. Both are written ńi. This corresponds exactly to the way in which the retroflex stops are represented: č = /tr/, č = /tr/ or /tr/, j = /tr/ or /tr/. One may surmise, therefore, that ńi stands for /nt/ = [nd]. Note that dental stops are never written with Tibetan affricates even when followed by /i/, e.g. ńi /tje/ /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 jaw rhyme group: niem /naw/ (Grade I) SK no, but ńo /naw/ (Grade II) SK no. 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 /d'/ /taw/ SK to, but ńo /taw/ SK to. We may therefore suppose that ńo can stand for /nt/, like j for /tr/, the palatal glide in Korean doing duty for the retroflex glide in Chinese.

38 Lo, 1931 (1962), p. 27.
39 Conger, 1960, p. 112.
40 Köno, 1964–7, shūrō on'in hyō, pp. 120, 132. Exceptionally we also find no (Grade II) and no 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 n, derived from the corresponding Tibetan letters. Both are used for Chinese. n is used exclusively for initial niang but not for all words which originally had this 鼻 niang. 烏 nay, 尼 nǐ (distinguished from 貝 ni), 矩 nū (distinguished from 擴 nū). 女 nū, 綜 nū (distinguished from 擴 nū). With the exception of nīm and nay these are all words with close vowels. Conversely there is only one case, 綜 nīn, of a word with initial niaŋ before a close vowel spelt with n. nay is something of a special case, since in this rhyme /ia/ (Grade III) was in many cases reduced to /ja/ or /ia/ (see below), so that ʃ could simply stand for /nj/ 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/ <- /n-/, represented by ʃ, and /n-/, 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 ʃ 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 reflex value for initial niang, like that of the rest of the “tongue up” series. I write it correspondingly as /ni/. By the Mongol period it was on the point of disappearance. Judging by the hP'ags-pa evidence, it went through the stages /nt/> /nj/> /n/ in Grade III, i.e. before /i/. In Grade II, when followed directly by /a/, it probably simplified directly to /a/.

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 dentibial, 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 /ʃ/ for Sanskrit v, as in 昆 金 /viaj-muai-liai/ vimāle.41 As early as the middle of the seventh century we find /ʃ/a/ used for va instead of /phauə/ < /bai/ which had been usual earlier. In the absence of an appropriate syllable with initial /ʃ/ in Chinese, 縱 or 疏 continued to be used for va in the eighth and ninth centuries, sometimes with the special fan-ch'ieh 無 可 it to ensure the pronunciation.42

Karlgren's explanation of this “dentiblization” 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 /iou/ (phonetically [i]i), and giving rise to contrasts such as /pian/ (< /p*ian/ v. 議 /pien/). 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/, /p'iuu/ /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 /ʃ/ < /p/ and /ʃ/ < /p'/,43

We should expect a distinction to have been preserved in the case of affricates. /pf'/s'/p'/ would be parallel to /ts'/s'/ts'/ in the case of fricatives, however, while an opposition between [ʃ] and [ʃ] is, no doubt, phonetically possible, that would have been unsupported by any similar opposition in the system, such as [s] v. [ʃ] 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

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41 Maspero, 1920, p. 39.
42 See the table appended to Lo, 1931 (1935).
43 It should be noted that the sound glosses of the Wu-ching wen-ku (see n.43 above) agree with those of Hui-lin in distinguishing the “light” and “heavy” labials but disagree to the extent that they keep apart initials sei = /ʃ/ < /p/ and sei = /ʃ/ < /p'/.
tsu-yûn, though both traditional initials are listed in the prefatory material. 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 Chiieh-yûn. 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 Chiieh-yûn 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. 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 (yûn) 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, homophones sets to be assigned to initial /p'/.

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 dentalslabial /n/ 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 [h], a tense, voiceless, fricative accompanied by voiced aspiration, there is no obstacle to assigning a completely denasalized lax voiced fricative /h/ for the fourth member of the series. The evidence in favor of loss of nasalization at an early stage is in fact quite strong. Sino-Vietnamese has v-. Tibetan transcriptions sometimes have /b/, which might suggest the persistence of nasalization, but also have simply /v/. 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'sag-pa has [w-], probably meaning [v] or [w]. Initial /v/ was still distinct at that period from labiovelar /w/, as in /iaway [van] vs /iaway [wan]. This distinction is still maintained in Hsian, which has [van] and [wan] for these two words.

Retroflex silibants

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. Karlgen, basing himself on the fan-ch'ieh of the Chiieh-yûn, 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 Chiieh-yûn 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 i from retroflex s, though not corresponding affricates). What has not been envisaged is that there might have been a linguistic change later than the Chiieh-yûn 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 /j/ after the retroflex series as it existed, distinct from the palatais, in the Chiieh-yûn language. In the rhyme tables the Chiieh-yûn retroflexes

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44 hP'sag-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 tsu-yûn to distinguish the old "muddy" initial feng [f'],. There was undoubtedly no actual difference in pronunciation of the two fs by this time, though in level tone words with f'ary words with initials fei and fu are combined without discrimination under f. In the body of the dictionary 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 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 (1953), p. 203.
always appear in Grade II which, as we shall see, means that they were not followed by /ɪ/. 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 /ɪ/. In such cases Karlström reconstructed "Grade III" type rhymes, which for him meant presence of the glide i rather than the vowel /ɨ/, 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 hPags-pa spellings clearly show that such words had no medial /ɨ/ in the Mongol period. Thus we have /ʃʰiɨŋ/ "Grade II, v. 聲 "iɨŋ", Grade III, where the spelling -hi- is a device to represent a central vowel [ə], as in 聲 shiŋ "shen", 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 sō (Grade II) (where o' is structurally /i/), v. 書 SV thu' (Grade III); 数 SV sō (Grade II), like 古 SV 쇼 (Grade I), v. 疏 SV thu (Grade III); 森 SV sām (Grade II) v. 深 SV thâm (Grade III); 某 SV sān (Grade II) v. 身 sān (Grade III); cf. 桃 SV cân (Grade I); 色 SV săc (Grade II) v. 式 SV thu'c (Grade III), cf. 色 SV tâng (Grade I). Similar evidence comes from Sino-Korean though rather less consistently: 森 SK sâm (Grade II) v. 聲 sjım (Grade III); 色 SK sajk (Grade II) v. 式 SK sjîk (Grade III); 史 so (Grade II) v. 聲 SK sjît (Grade III) (see p. 239 below); 拾 SK su (Grade II) v. 收 SK sjû (Grade III); 所 SK so (Grade II) v. 書 SK sjî (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" (kanyō) which do not have -y: 引例 仄 soku (v. KO syoku), 崇 su, suu, sou (v. KO syuu), 数 su (v. KO syu). In other rhymes even standard Kan'on omits -y at least in some words: 莊壯 yau (Grade II) v. 莊賞 yiau (Grade III); 帝 Kanyō syau, 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

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 /ɨ/, coexisted with the new style. But it need not be taken as contradicting our interpretation of the rhyme tables. The hPags-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 /ɨ/ 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 romanzy. 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 /ɨ/ 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 [tɕ] in 知 v. [tɕʰ] in 之 and [tʂʰ] in 至 v. [tʂ] in 助. Even here the distinction is found only in these rhymes but it doubt correctly reflects what 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 /ɨ/ 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

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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-ch'ing; ʈʂ > ʈ, ɕ > ʃ, 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 proposed by other Japanese scholars who have written since. Even in 1964, Tōdō, though recognizing their complementary distribution, still treated the palatal 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.

---End of continuation---

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 瀡/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 i, which unlike the stop (or affricate) series, c, ch, etc., contrasted with retroflex s and dental s, the Chinese transcriptions continue to use the old palatal, as in 菅/sraI/ [sia]/ [sj]/ [s-] for ia. 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

Ch'uang, 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 [tsř]. This corresponds to Karlsgren's reconstruction as ds' (Grade II), ds" (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 簡, the “muddy” fricative of the same series, which I reconstruct as [tsř] (= Karlsgren's s).

Initial ch'an, with the exception of one word 俟 in rising tone and the rare word 見 occupying the corresponding position in level tone, only appears in Grade III. That is, it goes back to a Ch'ieh-yin palatal initial. Initial ch'uang appears both in Grade II and Grade III and goes back, therefore to two Ch'ieh-yin initials, one retroflex, the other palatal. As far as the Grade III parts of the two Yin-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 s. 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 s 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 ancien level tone, and as a non-aspirated affricate corresponding to ancient oblique tones: e.g. 卯 Mand. chu¹, 條 Mand. chan¹, 助 Mand. chu¿. The ancient evidence is not so consistent, however. Vietnamese most often has s, implying a fricative, as in: 咸 sâm, 順 sơn, 順 sán, 順 soan, 條 sán, 羅 só, 條 sói, 條 sói; but exceptionally shows an affricate, as in: 咸 tranq, 條 trai, 助 trã. Sino-Korean mostly has c or c'-, implying an affricate, as in 條 can¹, 咸 can, but also has some forms with s, implying a fricative: 咸 sajk, 條 say, 條 so, 條 so, 條 so. Tibetan transcriptions provide very little material but they too show both affricate and fricative: 咸 si, 條 se, 條 ço, 羅 con, 咸 cong, cong.

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 an affricate when it appeared before /i/ or /ui/ 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 [tsř] became assimilated a new phonemic distinction emerged between [tsř] and [sř] 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. 侯 ch'eng² “to fill”, sheng² “full” (initial ch'an); 乘 ch'eng² “to ride”, sheng² “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 [sx]/ [šš] / [sh]/ which normally have fricatives only. This suggests that the free variation

51 Lo, 1931 (1962), pp. 54-64.
between fricative and affricate pronunciation may have extended to Grade III as well as Grade II. Note that /sh/ > /ts/' in level tone is also found as in: 曰 Man. 1sz"a.

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'i'eh 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'i'eh-yün fan-ch'i'eh class in column three. There was of course no fan-ch'i'eh evidence to link this type of words, assigned thus 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'i'eh-yün fan-ch'i'eh.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'uan found only in the word 曰 Mand. ssu 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'i'eh-yün but there is no reason to suppose that the distinction survived into mid T'ang. The divergence in Mandarin between 曰 sssu and the theoretically homophonous 曰 shss is not significant. Loss of retroflexion by Ch'i'eh-yün retroflex initials is found in other cases in this rhyme, as in 曰 tz'ua, 淹 第 ts'ua, 淹 t'ua. 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 y), and zero, i.e. "smooth vocalic ingress" (ϕ). My reconstruction agrees with this except that (a) the "muddy" fricative, hisa, 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 yi is assumed to be a lax, voiced, velar or uvular fricative /y/ as in modern Mandarin.

In my previous discussion of the Ch'i'eh-yün reconstruction I argued in favour of regarding the fricatives of the "throat" series of initials as laryngeal, /h/ and /hs/ as in modern Wu dialects.54 This is undoubtedly correct as far as the Ch'i'eh-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 (/gl/ > /xh/, /ṣh/ > /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. ij, since, as will be shown below, there was a contrast between these two initials in both Grade III and

52 Pulleyblank, 1962, p. 67.
54 Pulleyblank, 1962, p. 66.
55 See especially Hope, 1953 and Yen, 1966.
Grade IV, i.e. between /i/ (Grade III) and /ji/ (Grade IV) as well as between /a/ (Grade III) and /yji/ (Grade IV).

If one wished to postulate a "zero" initial, it would clearly have to be initial yu, 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.\(^\text{56}\) 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 yu by the absence of any initial in alphabetic representation, but for analytical purposes it is better to indicate it explicitly.

Initial yu 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 /ya/ or /fa/ (depending on one's reconstruction for hsia in the Ch'ieh-yün) in contrast to initial /ji/ (= Karlgren's j) for the Grade IV part of initial yu.\(^\text{57}\) 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 /yi/ (Grade III), /yji/ (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 UIView, 有 huu, 雄 hung and the coalescence with y- in kai-kou in hPags-pa. In Grade IV /yji/ was, one may suppose, phonetically [j], without any overt acoustic impression of velar or uvular frication. One can, however, perhaps give a phonetic meaning to /yji/ 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

\(^\text{56}\) Chao Yuanren, 1948 and Li Fang-kuei, 1966.
\(^\text{57}\) Ko, 1932, Chao Yuanren, 1942, Lo, 1951.
Chinese but a lax voiced alveolo-palatal fricative [ɻ].
It had a similar (if
not identical) origin in Old Chinese to the palatal (Grade III) part
of initial chi [tɕ]. and there is some reason to think that the latter may not have
really been phonemically distinct from it. In this case we must assume that
as the distinctive set of palatal initials was lost, [ɻ] was mostly given a new
phonemic identification as the palatalized form of initial [ʃ] but in some
cases developed a tenser onset and went over to [ʃi] > [ʃʰi] > [ʃʰi], merging
with the earlier voiced palatal affricate [tʃʰi] > [ʃʰi] (initial ch’an).

Phonetically the contrast between a palatal fricative, represented
simply as [ʃ], and a frictionless glide, represented as [ʃj], is paralleled by the
contrast between labial [v] (or [ʃ]) and labiovelar [ʃw] (= [w]) which we
find in the Mongol period, when [ʃu-] became [ʃw] under certain circum-
stances. Though I write the former as [ʃ], it is in complementary distribution
with [ʃw] and could as well be written [ʃw], 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 hsi. This is no longer completely
true in the rhyme tables. Already in the Yün-ch’ung we find 阚, which ac-
cording to the Ch’ieh-yün should have initial yü, Grade III, (cf. Kan’on
yu), placed under initial hsi in Grade III, implying a reading [ʃhi:] in
which in fact corresponds to the Modern Mandarin reading bi. Shao
Yung gives a similar treatment to this word. In the opposite direction Shao
Yung places 阚, which according to the Ch’ieh-yün should have initial hsi,
in such a way as to imply a reading [ʃjw]. This again agrees with the
Mandarin reading bj, contrasting with the expected bsi. In Grade IV,
of course, initials yü and hsi were regularly in contrast—[ʃj] vs. [ʃsi]. In
the Ch’ieh-yün no such contrast had existed because “pure” Grade IV
rhythms did not at that period have a medial before the vowel nucleus.

The distinction between initials yung and yu disappeared between Late
T’ang and Yuan 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 yuan yin-yün. The way in
which they coalesced in the ju-sheng shows that the change was [j] > [ʃ]. We
can tell this because in the Chung yuan 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 (ka, /kʰ/, etc.) are in lower level
tone, (c) words with “clear-muddy” initials (nasals and liquids) are in
departing tone. The latter category includes both yung and yu. This shows
that, although in the original division of the tones into upper and lower

60 The curious paradox by which the hP represents Chinese [ʃ] by ʃ, [ʃ] by k², but
the old, voiced, “muddy” initial [kʰ] by ʃ 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-yuan yin-yün and
from the transcriptions of foreign words in Yün, 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 and of the ke group of velar initials (see below), the hP agrees closely with
the Chung-yuan yin-yün, indicating a closely related underlying dialect. It seems to me
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 (ʃ, s, d, b, de) and the corresponding
voiceless aspirates (k², sʰ, tʰ, t, p, t) occur freely as absolute initials. The voiceless
aspirates (k², sʰ, tʰ, p, t) mostly occur with prefixes except in exclamatory particles, onomatopeic
and foreign words. Moreover in Lhasa and other dialects the voiced consonants

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tzu-yün a distinction is also made between two kinds of initial y, corresponding to what had earlier been [μ]/ and [ŋ]/ 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**

This initial was a palatal nasal in the Ch'iese-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 /ŋ/, the value which this initial has in modern Mandarin. Such a value agrees well with the rest of the foreign evidence. Kan'on has k-, Tibetan has z-, with no indication of nasality through prefixed k, hP'agos-pa also has Z, Sino-Korean now has zero but formerly used an oblique 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 /ŋ/ has been represented in European romanizations. On the other hand the fact that the rhyme table phonologists aligned it with initial /i/ 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 /ain/ for words like 般, spelt  PRESS  in hP'agos-pa.

**The four grades**

In addition to the thirty-six initials, the full definition of the nonrhyming 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 (su t'eng). It is unanimously agreed that the first of these distinctions depended on the absence or presence of lip-rounding.41 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'e 齶齒 "[tongue] level with the teeth", i.e. palatalized, (3) ho-k'ou "closed mouth", i.e. labialized, (4) ts'o-k'ou 擤口 "compressed mouth", i.e. combined palatalization and labialization. This can be illustrated by Mandarin sets like:

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\begin{align*}
\text{k'ai-k'ou} & : \text{en} & \text{ken} & \text{an} & \text{an} & \text{kun} \\
\text{ch'i-ch'e} & : \text{yin} & \text{chin} & \text{yen} & \text{chi} & \text{chen} \\
\text{ho-k'ou} & : \text{yen} & \text{hun} & \text{wan} & \text{wan} & \text{kuan} \\
\text{ts'o-k'ou} & : \text{yen} & \text{chin} & \text{yen} & \text{yuan} & \text{ch'uan}
\end{align*}
\]

Hartman's interpretation of Mandarin vowels in terms of three vowel phonemes differing only in tongue height which may be preceded by the semivowels /i/, /w/, and /jw/ and modifications of his scheme by other scholars since are essentially adaptations of this traditional Chinese type of analysis.42

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  t e, "vocalic" i and "consonantal" w e, "vocalic" w—and 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

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41 In some works this opposition is called "heavy" vs. "light", rather than "open mouth" vs. "closed mouth". See Le 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.
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 /j, ø, 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. Typically the rhyme groups fall into pairs, one "inner" and one "outer", for example, the two groups with final /-m/, chen 陳 and shan 山, the two groups with final /-n/, shen 深 and hsien 咸, or the two groups with final /-w/, liu 流 and hiao 數. 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):

<table>
<thead>
<tr>
<th>chen (inner)</th>
<th>shan (outer)</th>
<th>shen (inner)</th>
<th>hsien (inner)</th>
<th>liu (outer)</th>
<th>hiao (outer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 杭 ken 干 han 合 han 楼 lou 老 lão</td>
<td>II 玫 chen 山 shan 參 ts'en 新 ch'en 搜 sou 稍 shào</td>
<td>III 斧 chin 建 chien 金 chin 傑 chien 流 liu 傑 liáo</td>
<td>IV 價 ch'en 見 chien 尖 chien 傑 miu 晃 miào</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 /a/ and /a/.

**Tense and lax semivowels**

With the centre of each syllable now defined as consisting of either close /a/ or open /a/ we can redefine "vocalic" /i/ and /u/ as semivowels, 68

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68 Lo 1933 (1).
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 /an/ /ian/ (= [in]) /wan/ /ian/ (= [yn]) have been, and are, considered to rhyme, the contrasts in *voice* (ka) being attributed to the initial, non-Sanskrit phonology where the vowels ə and o are considered to be a+t 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/. In front of the nucleus it is realized as high central or back rounded /i/ or [ui] as in Mandarin 鰲 /sia/ 西 /sia/. 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 /i/ and /u/, giving structures like those represented in Vietnamese by a' [ui] and a'a or u' [ua]. 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 /a/ or /a+u/ or /u/, the combinations /ai/ and /ai/ will be phonetically monophthongs, the semivocalic element comporting length and some degree of retraction; as in such syllables as Mandarin 歌 /kai/ [kv], 大 /tai/ [tw]. Postulating such structures enables us to account for the (now obsolete) distinction between 歌 /kair/ [ky] and 梅 /kar/ [kə], which has troubled investigators since Hartman, and such other marginal contrasts as that between /tampualaj/ (allegro form of 他們不來) and /tampuualaj/ (急不來).

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 /a/ and /k/. Since there is never a contrast between /a/ or /a+u/ or /a/ or /a+/i/ or between /ian/ /ak/ /aun/ /ak/ and /nin/ /aik/ /nian/ /aik/ 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 Yuan.

The first peculiarity of such rhyme groups to be noted is the rule that /ai/ and /a/ were not raised by a preceding tense /i/ or /u/, hence: *jiain* /jan/ /jaik/ are to be understood as [ia] [ian] [iak] in contrast to *jian* /jian/ /iain/.  

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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.
The earliest explicit naming of the sixteen rhyme groups is found in the Ssu-sheng teng-t'zu 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:

<table>
<thead>
<tr>
<th>Outer</th>
<th>Inner</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 果 /ai/</td>
<td>III 遇 /ai/</td>
</tr>
<tr>
<td>II 假 /ai/</td>
<td></td>
</tr>
<tr>
<td>IV 蟹 /aj/</td>
<td>V 止 /aj/</td>
</tr>
<tr>
<td>VI 敗 /aw/</td>
<td>VII 剃 /aw/</td>
</tr>
<tr>
<td>VIII 若 /ainj/ /aij/</td>
<td>IX 來 /ainj/ /aij/</td>
</tr>
<tr>
<td>X 梁 /ainj/ /aij/</td>
<td></td>
</tr>
<tr>
<td>XI 江 /aunj/ /auj/</td>
<td>XII 通 /aunj/ /auj/</td>
</tr>
<tr>
<td>XIII 山 /ain/ /at/</td>
<td>XIV 露 /ain/ /at/</td>
</tr>
<tr>
<td>XV 威 /ain/ /at/</td>
<td>XVI 深 /ain/ /at/</td>
</tr>
</tbody>
</table>

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 /aj/ or /aij/ was replaced by /iai/, e.g.: 師 /srjai/, 似 /srjai/.

In the case of the /aij/ /aw/ /an/ /an/ /aw/ 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. 古 /kai/, 高 /kaw/, 松 /kan/, 桃 /kan/, 夏 /kaw/. Allowing for the change of final /r/ to /l/, the same is true of the /an/ 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 /am/ group, the analogy of the /an/ group is sufficient to assure the basic reconstruction of the rhyme here also.

In the case of the /aj/ group both the ancient and modern evidence might justify a reconstruction with a pure high front vowel /iai/ for Grades III and IV, k'ai-k'ou, instead of the diphthong implied by /aj/. This would make it slightly easier to account for the development of the /aj/ rhyme noted above: /srjai/ /srjai/ /srjai/ /srjai/ /srjai/. The Meng-hu tsu-yüan appends words in -he- /ai/, which had developed out of /aij/, to the -oy 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-yüan

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68 Pulleyblank 1968.
The finals in /auŋ/ /auk/ /ouŋ/ /auk/ may also have had non-distinctive labialization of the final consonants corresponding to the palatalization in the /ai/ /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 vowelism.

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/ group. 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 /auŋ/ group (as well as sometimes with the /aiŋ/ group). Sino-Vietnamese sometimes has -ong and -oc as in: 聽 /traoun/ SV song, 滅 /triauk/ SV ter, 橫 /xfijauk/ SV hpe, 遠 /pjauk/ SV boe.

When /auŋ/ /auk/ merged with /aiŋ/ /aik/ there was a metathesis of the labial element in the case of syllables with retroflex initials: Traun> Trwain, Truak> Trwak. Tibetan transcriptions such as 童 /jwauŋ/ and 汶 /sauŋ/ for /trwaiŋ/ /triauk/ and /jwaŋ/ for 汶 /trwaiŋ/ /triauk/ show this process had already taken place in some dialects in late T'ang.

The t'ung rhyme group, which I reconstruct as /auŋ/, contained three Ch'ieh-yun rhymes. The first table in the Yün-ching, classed as k'ai-k'ou, was devoted exclusively to rhyme t'ung 聽 and the corresponding rhymes in other tones in all four grades. The second table, classed as k'ai-ho, had the other rhyme t'ung 響 in Grade I and rhyme chung 嗇 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 t'ung which was k'ai-k'ou. This implication is supported by Shao Yung who classified words from rhyme t'ung 聽, etc., as k'ai-k'ou and words from rhyme chung, etc., as ho-k'ou. In the Su-sheng teng-izu, the Ch'ieh-yin 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 /auŋ/, phonetically [ouŋ] agrees very well with all the foreign evidence from Late T'ang—KO -ou, -oku, SK -oy, -ok, SV -ong, -ok. Tibetan transcriptions have very consistently -oy, -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 Su-sheng teng-izu, and the Ch'ieh-yin chih-chang-t'u. They were treated

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68 Henderson 1966, p. 166 and n.10.

79 Chao Yungren 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 event-
ually became phonemic and can be symbolized /ai/ [a] > /au/ [o]. What
finally made the contrast phonological was the loss of final /t/ and /p/ in
words like 藤/tai/, 答/tap/ > /tai/, which then came into contrast with 多/ta/< /tau/. By the Mongol period this had taken place. Words in
/au/ < /ai/ are spelled -o in hP'ags-pa and there is an autonomous -o rhyme in
the Meng-ku tzu-yûn and a corresponding rhyme in the Chung-yûan yin-
yûn.

The corresponding close rhyme group in /ai/ had no k'ai-k'ou in
Grade I. Grade II, k'ai-k'ou did, however, exist after retroflex sibilants and
the reconstruction /ai/ [y] 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 [y] and structurally /ai/ according to my
analysis. Thus we have: ﹁/srai/ SV sô', ﹁/tsrai/ SV trô', etc. For these
words Kan'on has ryo, where o'=o=[o]. (For the representation of retro-
flex sibilants in Grade II by sy-, rather than s- in KO see p. 624 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 /uai/[uv] in Late
Middle Chinese, i.e., with a vowel very much like that in Mandarin kuo.
This gave KO -o, SV -o, SK -o. By the Mongol period the whole of the
k'ai-k'ou part of the /ai/ group had merged with the corresponding
ho-k'ou and the final element /i/ had been lost: /ai/ > /uai/ > /ua/, 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.