

## Traditional Chinese Phonology

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Chinese historical phonology differs from most domains of contemporary linguistics in that its general framework is based in large part on a genuinely native tradition. The non-Western outlook of the terminology and concepts used in Chinese historical phonology make this field extremely difficult to understand for both experts in other fields of Chinese linguistics and historical phonologists specializing in other language families.

The framework of Chinese phonology derives from the tradition of rhyme books and rhyme tables, which dates back to the medieval period (see section 1 and 2, as well as the corresponding entries). It is generally accepted that these sources were not originally intended as linguistic descriptions of the spoken language; their main purpose was to provide standard character readings for literary Chinese (see subsection 2.4). Nevertheless, these documents also provide a full-fledged terminology describing both syllable structure (initial consonant, rhyme, tone) and several phonological features (places of articulation of consonants and various features that are not always trivial to interpret, see section 2) of the Chinese language of their time (on the problematic concept of “Middle Chinese”, see the corresponding entry).

The terminology used in this field is by no means a historical curiosity only relevant to the history of linguistics. It is still widely used in contemporary Chinese phonology, both in works concerning the reconstruction of medieval Chinese and in the description of dialects (see for instance Ma and Zhang 2004). In this framework, the phonological information contained in the medieval documents is used to reconstruct the pronunciation of earlier stages of Chinese, and the abstract categories of the rhyme tables (such as the vexing *děng* 等 ‘division’ category) receive various phonetic interpretations. Moreover, the language encoded in the rhyme books is generally believed to be the common ancestor of all non-Mǐn 閩 Chinese dialects, and is used as a blueprint for phonological analysis in descriptions of dialects. Several scholars have expressed reservations about this traditional approach (Norman and Coblin 1995, also Handel 2011), and this issue will be discussed in section 3.

Unlike Paninian linguistics, traditional Chinese phonology has not been applied to many other languages. The only true application of this tradition to a non-Chinese language is Tangut historical phonology, briefly described in section 4.

### 1. The sources on pre-modern Chinese phonology: why rhyme books?

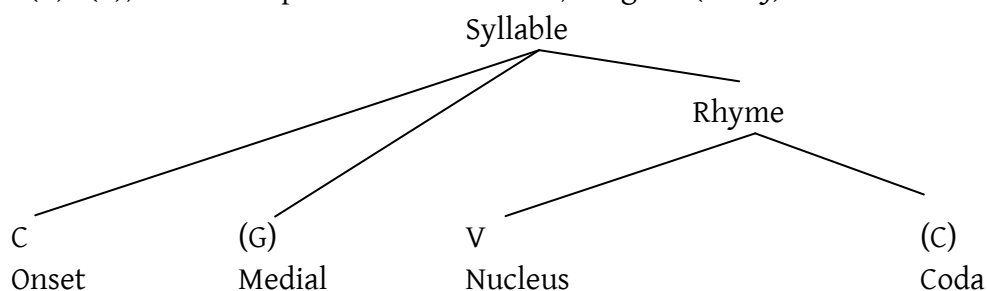
Unlike other ancient languages like Greek, Sanskrit or Hebrew, the logographic nature of the Chinese script considerably hampers the reconstruction of the pronunciation of the earlier stages of Chinese. Although the Chinese script reveals some indirect clues about the pronunciation of Chinese dialects that were spoken

before the script was standardized in the Hàn dynasty (see section 3 of this article and the article on Old Chinese), the data that can be gleaned from it are difficult to interpret and would not be sufficient to reconstruct the language if no other source existed. After the Hàn dynasty, the Chinese script has changed very little; almost nothing can be learned from it concerning the phonological evolution of the Chinese language from Hàn times to the modern period.

Fortunately, these defects can be partially compensated by three alternative philological sources on early Chinese pronunciation: the transcription of Chinese in alphabetic scripts, the transcription of foreign languages (especially Indic) into Chinese, and finally the rhyme books and rhyme table tradition that will be the main topic of this article.

These three sources of data appear relatively late in the history of Chinese: the earliest foreign transcriptions and sound glosses date from the late Han period (second century AD), but the first systematic data are as late as the Suí/Táng-dynasty (late sixth century). None is available for Pre-Hàn Chinese (Old Chinese).

The stage of the language that can be reconstructed on the basis of these three sources is broadly called Middle Chinese (*Zhōnggǔ Hànyǔ* 中古漢語). In Middle Chinese, there was a one-to-one relationship between character and syllable in the Chinese script. The general syllabic structure, as in modern Chinese languages, was C(G)V(C), where C represents a consonant, G a glide (w or j) and V a vowel.



Whether the medial stands on its own or belongs to the onset or rhyme is a topic that will be discussed in section 2 (see also the article on syllable structure). The general syllable structure presented above is only valid for Middle Chinese. In Old Chinese, more complex onsets and codas are reconstructed (see the articles on Old Chinese and on word families).

For convenience, we will use Baxter's (1992) transcription of Middle Chinese in this article. It is not intended as an actual reconstruction of the pronunciation, but rather an orthographic representation of the contrasts encoded by the *fǎnqiè* 反切 sound glosses in early rhyme books. The actual reconstructions will be discussed in the entry on Middle Chinese.

### 1.1 Alphabetic sources on Middle Chinese pronunciation

The first two philological sources—transcriptional data—have played a significant role in the reconstruction of Middle Chinese (see the article on Middle Chinese

reconstruction), but contrary to what a general historical linguist might expect, they are by no means *central* in the study of Chinese dialectology and historical phonology. In the framework of traditional Chinese historical phonology, the most central source of data on early Chinese pronunciation is the non-alphabetic system of the rhyme books, which has no equivalent elsewhere in the world. This puzzling state of affairs can be understood if we compare the value of these various sources.

The first phonetic transcriptions of Chinese appear in Tibetan script in the ninth century (Tokio 1988), but a systematic representation of Chinese in an alphabetic writing system only emerges much later with the ‘Phags-pa script in the thirteenth century (Coblin 2007). The ‘Phags-pa script documents the pronunciation of an early Mandarin dialect with unprecedented precision, but since most Chinese dialects had already diverged by the thirteenth century, it is of limited use for the study of the historical phonology of non-Mandarin dialects. All alphabetic transcription systems of Chinese before ‘Phags-pa have the critical defect of being extremely unsystematic and limited in quantity. For instance, in the corpus that Tokio (1988) has studied, the Chinese character *shì* 是 has at least five distinct spellings in Tibetan. Such a source is useful as a complement, but it would be clearly impossible to build a reconstruction system mainly on the basis of such data.

The Chinese transcriptions of Sanskrit in Buddhist texts also provide critical evidence concerning the reconstruction of Táng Chinese phonology, and have even been put to use to date some sound changes (see Maspéro 1920 on the evolution of the voiced stops of early Chinese). However, these transcriptions suffer from the same problems as early alphabetic transcriptions: limited corpus and lack of systematicity.

## 1.2 *fǎnqiè* 反切 sound glosses and rhyme books

The earliest *comprehensive* and *systematic* source on early Chinese pronunciation is non-alphabetic. This somewhat paradoxical situation is almost unique to Chinese: the only other language whose phonology is reconstructed on the basis of such data is Tangut (see section 2).

In this section, we will first discuss the nature of the sound glosses, and then present the rhyme books, their purpose and their structure.

### 1.2.1 Sound glosses and *fǎnqiè*

The need for phonetic glosses is motivated by two problems specific to the Chinese script. First, the total number of characters is and has always been extremely large, so that even learned scholars will inevitably encounter characters they might never have seen before, and will have no way to guess with certainty their pronunciation. Second, some characters, including common ones, can have more than one reading. This difference in reading is usually correlated with a difference in meaning (see the chapter on Old Chinese for an account of such phenomena).

This problem was eventually resolved by the invention of *fǎnqiè* sound glosses,

which use two “speller” characters to indicate a pronunciation. The first character represents the onset of the syllable (the initial consonant, since Middle Chinese did not have clusters), while the second character indicates the medial, the rhyme and the tone.

We provide here an example of *fǎnqiè* from the *Qièyùn* 切韻 rhyme dictionary; the Middle Chinese readings provided here follow Baxter’s (1992) transcription, which will be explained below in more detail.

Table 1: Example of a *fǎnqiè* from the *Qièyùn* dictionary.

	glossed character	first speller	second speller
Character	東	德	紅
Middle Chinese	t-uwng	t-ok	h-uwng
Mandarin	dōng	dé	hóng
Meaning	east	virtue	red

Naturally, any *fǎnqiè* is only meaningful for one particular dialect. For instance, the Middle Chinese *fǎnqiè* 東德紅 is not valid anymore in Mandarin, since *dōng* 東 and *hóng* 紅 now have developed distinct tones. The systematic use of such *fǎnqiè* in medieval rhyme books is an invaluable resource for the work of historical linguists.

### 1.2.2 Rhyme books and their significance for Chinese historical phonology

The rhyme books constitute the basis on which the whole tradition of Chinese historical phonology is built. These documents were originally created to provide a standard pronunciation for composing poetry. Such a standard would have been felt as a necessity for the purpose of official examinations, for which poetic composition was an important component. Besides, short definitions or citations from classical literature are sometimes included, so that these dictionaries could be used to check the meaning of a character when one knew its pronunciation.

The oldest extant rhyme dictionary is the *Qièyùn*, a work originally compiled by the scholar Lù Fǎyán 陸法言 in 601 at the end of the Suí dynasty. The *Qièyùn* is quite comprehensive: it includes the pronunciation of thousands of characters. Its textual history is quite complex. The original edition has been lost and the *Qièyùn* was known in modern times essentially through its expanded edition published in 1007, the *Guǎngyùn* 廣韻. Fortunately, a Táng dynasty corrected edition of the *Qièyùn* was discovered in 1947 among Dunhuang texts, and confirms that most of the data in the *Guǎngyùn* relatively faithfully reflects the original *fǎnqiè* of the *Qièyùn*.

In the rhyme books, the characters are classed by tone and rhyme, and then within each rhyme by initial consonant, though in a less systematic way. Rhyme books therefore encode the rhyme of each character redundantly by both its place in the structure of the book and its second *fǎnqiè* speller. Initial consonants are on the other hand only indicated by the first speller of their *fǎnqiè*. Homophonous characters are grouped together into one homophone group, and only one *fǎnqiè* for the whole group is indicated at the end. There are several possible *fǎnqiè* spellers for

all the initials and rhymes: in any case, two spellers for a given initial or rhyme is the theoretical minimum, as a character cannot be used in its own *fǎnqiè* as a speller. In practice all rhymes and initials have more than three spellers.

Although the *Qièyùn* encodes an abstract phonological system, where all contrasts (and even sub-phonemic distinctions) are explicitly distinguished, there are four major obstacles against using the *Qièyùn* as a model for reconstructing Suí dynasty Chinese pronunciation.

First, there is only an explicit list of rhymes, no list of initial consonants. One needs to study in detail the first speller of *fǎnqiè* to be able to determine the consonantal inventory. This process will be explained in section 2.

Second, although rhymes are clearly distinguished, there are no clues as to the phonetic value behind the phonological contrasts encoded in the *Qièyùn*. The only way their phonetic value can be reconstructed is by using other sources of data such as modern dialects and foreign transcriptions (see the article on Middle Chinese).

Third, and most seriously, there is no guarantee that the abstract system of the *Qièyùn* represents the genuine synchronic phonological system of any one dialect. The standard view (Zhou 1966) is that it constitutes a diasystem, combining all the phonological distinctions of at least two dialects of the Suí period.

Fourth, the rhyme books only include learned character readings, which are likely to have been considerably different from the pronunciation of the words in actual speech. In particular, it cannot preserve any traces of the morphology that can still be detected in various Chinese dialects (Sagart 1999).

The first of these obstacles is the easiest to overcome, as we will see in the following section; the other three issues go beyond the scope of the present article.

## 2. Rhyme tables

The rhymes books are not the only non-alphabetic philological sources on Middle Chinese pronunciation. Another class of documents has had tremendous importance in the development of traditional Chinese historical phonology: the rhyme tables.

The rhyme tables appear in the 12<sup>th</sup> century. In spite of this 500-year gap, these documents are generally believed to encode the phonological system of a language congruent with that of the rhyme books. In the tradition of Chinese historical phonology, the *fǎnqiè* of the rhyme books are generally studied through the framework of rhyme table terminology.

Unlike rhyme books, where only rhymes are explicitly listed, rhyme tables not only list rhymes, but also present in convenient tabular fashion the initials as well as some categories whose exact phonetic value is still debated. In this section, the structure of the rhyme tables and the terminology used to describe them will be presented in detail.

### 2.1 Basic layout of the rhyme tables

The two most ancient rhyme tables are the *Qīyīnlüè* 七音略 and the *Yùnjìng* 韻鏡, both dating from the twelfth century: the *Yùnjìng* was published by Zhāng Línzhī 张

麟之, and the *Qīyīnlüè* was included in Zhèng Qiáo's 鄭樵 encyclopedia *Tōngzhì* 通志. By a curious coincidence, both works were first published in the same year: 1161.

These two documents present slight differences in arrangement, but their content is largely the same, as even a cursory comparison can reveal. Both works include forty-three charts, in which initial consonants are listed in the columns, and rhymes and tones in the rows. Unlike rhyme books, the rhyme tables are obviously not intended as dictionaries: we do not find either *fǎnqiè* spellings or definitions of the meaning of words. Besides, the rhyme tables make no attempt at comprehensiveness. Each attested syllable is represented by a character on the grid. In the case of syllables that can be written using several homophonous characters (most syllables, actually), only *one* of those characters is chosen to be placed on the chart. A striking property of the rhyme tables is the presence of blank slots, which represent gaps in the distributions of initial and rhyme combinations in Middle Chinese: unattested or phonotactically impermissible syllables. While some of these gaps are fortuitous, their overall distribution reveals important facts about the reconstruction of both Middle and Old Chinese (see the articles on Middle and Old Chinese).

In the *Qīyīnlüè*, the onsets are indicated by the so-called thirty-six initials, ordered by place of articulation in six categories: *yǔ* 羽, *zhǐ* 徵, *jué* 角, *shāng* 商, *gōng* 宮 and *bànshāngzhǐ* 半商徵, the names of the notes in the pentatonic musical scale. In the *Yùnjìng*, the basic structure is the same, but the initials are not designated by individual names and musical notes: instead, we find terms that directly refer to articulatory organs. Within each column belonging to the same place of articulation (for example, the first, *chúnyīn* 唇音 'lip sounds', refers to the labials), the initials are distinguished from one another by the terms *qīng* 清 'clear' and *zhuó* 濁 'muddy', to which *cì* 次 'secondary' is added in some cases. The meaning of these terms will be addressed in 2.2.

On the extreme left of each row, one finds the names of each rhyme, which are essentially the same as the rhyme names found in the *Qièyùn* with a few exceptions. As in the rhyme books, rhymes are first listed by tone, always in the order *píng* 平 'level', *shǎng* 上 'rising', *qù* 去 'departing' and *rù* 入 'entering' (the 'entering' tone includes in fact only syllables with a final stop *-p*, *-t* or *-k*, which had no tonal contrasts in Middle Chinese).

Table 2: A table from the Qiyinlüè

	日	來	喻	匣	曉	影	邪	心	從	清	精	疑	群	溪	見	泥	定	透	端	明	並	滂	幫	外轉二十三
							禪	審	床	穿	照					孃	澄	徹	知					七音略
	半徵		宮				商				角				徵				羽					
重	寒	刪	蘭	寒	桓	安	珊	爻	餐	軒	看	千	難	壇	灘	單								平
中	然	連	馮	嗎	馬	鈺	燿	燿	燿	燿	乾	愁	經	經	經	經								
重	先	連	賢	扶	煙	先	前	千	駘	妍	牽	堅	年	田	天	顯	眠	邊						上
中	旱	爛	罕	罕	佞	散	散	散	散	散	散	散	散	散	散	散	散	散	散	散	散	散	散	
重	彌	蹠	登	沃	善	善	善	善	善	善	善	善	善	善	善	善	善	善	善	善	善	善	善	去
中	統	爛	現	顯	煙	統	統	統	統	統	統	統	統	統	統	統	統	統	統	統	統	統	統	
重	翰	爛	翰	漢	按	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	鐵	
中	諫	爛	肝	晏	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	
重	線	瘧	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	
中	霰	練	現	顯	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	
重	曷	刺	曷	顯	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	
中	黠	列	點	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	
重	薛	列	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	
中	屑	列	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	軀	

Then, within each tone category, one always find four sub-rows, which are called *divisions* or *děng* 等 in the tradition of Chinese historical phonology. In some cases, one rhyme of the Qièyùn will correspond to more than one row: the same rhyme will appear in two divisions.

Additionally, each of these charts is labelled with three indications: a number (23 for the example we have chosen), the *zhuǎn* 轉 category (either *wài* 外 ‘outer’ or *nèi* 内 ‘inner’) and a third category called *qīng* 輕 or *zhòng* 重 in the Qiyinlüè and *kāikǒu* 開口 or *hékǒu* 合口 in the Yùnjìng.

The exact meaning of *zhuǎn* is not entirely clear (see Li Xinkui 1983:19-23 for a discussion of its interpretations and Coblin 2006b:126-7), but the third category corresponds to the presence of a -w- medial or a rounded vowel (*hékǒu* / *qīng*) or its absence (*kāikǒu* / *zhòng*).

The rhyme tables group together different rhymes on the same chart, for instance 寒 -an, 刪 -æn, 仙 -jen and 先 -en in our example. These rhyme groups are called *shè* 攝. Their interpretation is again controversial, but some scholars such as Pulleyblank (1984) proposed that some of the rhymes of the Qièyùn had merged by late Táng times, and that *shè* represent the categories resulting from these mergers.

Table 3: A table from the Yünjing.

	齒音		舌音		喉音		齒音		牙音		舌音		唇音		外轉第二十三開
	清	濁	清	濁	清	濁	清	濁	清	濁	清	濁	清	濁	
寒刪仙先	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
早潛獮銑	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
翰諫線霰	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
曷黠薛屑	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

韻鏡

## 2.2 The thirty-six initials

In the earliest stage of development of Chinese historical phonology, the list of initials as indicated in the rhyme tables was believed to reflect the Middle Chinese system of initial consonants, but this idea was shown to be incorrect in the 19<sup>th</sup> century by Chén Lǐ 陳澧. In this section, we will first present how the initials are represented in the rhyme table, then discuss the origin of the system of thirty-six initials and finally give a brief account of Chén Lǐ's work and revision of the list of initial consonants.

### 2.2.1 The initials in the rhyme tables

The rhyme tables use a system of thirty-six initials (*sānshíliù zìmǔ* 三十六字母). The following table lists these initial consonants by their traditional name, indicated with *pīnyīn* and Middle Chinese transcription. (The name of each initial begins with that initial sound, so the Middle Chinese transcriptions can be taken as an approximate indication of the reconstructed Middle Chinese pronunciation of the initials).

	全清	次清	全濁	次濁
	quán qīng	cì qīng	quán zhuó	cì zhuó
	unvoiced	unvoiced	voiced	nasal
	unaspirated	aspirated		
重唇音	幫	滂	並	明
zhòng chún yīn	bāng	pāng	bìng	míng



bilabials	<b>pang</b>	<b>phang</b>	<b>bengX</b>	<b>mjäeng</b>		
輕脣音	非	敷	奉	微		
qīng chún yīn	fēi	fū	fèng	wēi		
labiodentals	<b>pjij</b>	<b>phju</b>	<b>bjowngX</b>	<b>mjjj</b>		
舌頭音	端	透	定	泥		
shé tóu yīn	duān	tòu	dìng	ní		
dental stops	<b>twan</b>	<b>thuwH</b>	<b>dengH</b>	<b>nej</b>		
舌上音	知	徹	澄	娘		
shé shàng yīn	zhī	chè	chéng	niáng		
retroflex stops	<b>trje</b>	<b>trhjet</b>	<b>drjeng</b>	<b>nrjang</b>		
齒頭音	精	清	從		心	邪
chǐ tóu yīn	jīng	qīng	cóng		xīn	xié
dental affricates	<b>tsjeng</b>	<b>tshjeng</b>	<b>dzjowng</b>		<b>sim</b>	<b>zjæ</b>
正齒音						
zhèng chǐ yīn	照	穿	床		審	禪
retroflex/ alveolo-palatal affricates	zhào	chuān	chuáng		shěn	shàn
	tsyewH	tshywen	dzrjang		syimX	<b>dzjenH</b>
牙音	見	溪	群	疑		
yá yīn	jiàn	xī	qún	yí		
velars	<b>kenH</b>	<b>khej</b>	<b>gjun</b>	<b>ngi</b>		
喉音	影	喻			曉	匣
hóu yīn	yǐng	yù			xiǎo	xiá
glottal	<b>'jäengX</b>	<b>yuH</b>			<b>xewX</b>	<b>hæp</b>
半舌音	來					
bàn shé yīn	lái					
'half dental = lateral'	loj					
半齒音	日					
bàn chǐ yīn	rì					
'half-retroflex'	<b>nyit</b>					

The terms *qīng* 'clear' and *zhuó* 'muddy' come from the *Yùnjìng*, and mean here respectively *unvoiced* and *voiced*. Unvoiced aspirated stops and affricates are called *cì qīng* 次清 'secondary clear', as opposed to the unaspirated unvoiced obstruents which are simply called *qīng* in the *Yùnjìng* or *quán qīng* 全清 'fully clear' in other sources. With voiced consonants, the nasals are called *qīngzhuó* 清濁 'clear muddy' in *Yùnjìng*, and *cìzhuó* 次濁 'secondary muddy' in other sources, as opposed to the *quán zhuó* 全濁 'fully muddy' non-nasal voiced stops.

The actual names of the initials appear in the *Qīyīnlüè*, and the names of places of articulation presented above in the *Yùnjìng*. On the charts, some places of articulations have been collapsed: *zhòng chún yīn* 重脣音 'bilabials' and *qīng chún yīn* 輕脣音 'labiodentals' appear together, as do *shé tóu yīn* 舌頭音 'dental stops' and *shé shàng yīn* 舌上音 'retroflex stops' on the one hand and *chǐ tóu yīn* 齒頭音 'dental affricates' and *zhèng chǐ yīn* 正齒音 'alveolo-palatal/retroflex affricates' on

the other hand. These series of initials are in quasi-complementary distribution with regards to the rhymes that they can appear with, so that merging the cells can reduce space in an efficient manner. However, it also increases the difficulty of using the rhyme tables.

The following table merges the layout of the *Qīyīnlüè* and the *Yùnjìng*; the initials found in each column are also given in Baxter's transcription:

半商徵		宮 <i>gōng</i>					商 <i>shāng</i>					角 <i>jué</i>				徵 <i>zhǐ</i>				羽 <i>yǔ</i>			
齒音舌 <i>shé yīn chǐ</i>		音喉 <i>hóu yīn</i> 'glottals and laryngeals'					音齒 <i>chǐ yīn</i> 'coronal affricates and fricatives'					音牙 <i>yá yīn</i> 'velars'				音舌 <i>shé yīn</i> 'dental stops'				音脣 <i>chún yīn</i> 'labials'			
清濁	清濁	清濁	濁	清	清	濁	清	濁	次清	清	清濁	濁	次清	清	清濁	濁	次清	清	清濁	濁	次清	清	
ny-	l-	y- hj-	h-	x-	'-	zj-	s- sr- dzy-	dz- dzr- sy- zy-	tsh- tsrh- tsyh-	ts- tsr- tsy-	ng-	gj-	kh-	k-	n- nr-	d- dr-	th- trh-	t- tr-	m-	b-	ph- -	p-	
日	來	喻	匣	曉	影	斜禪	心審	從床	清穿	精照	疑	群	溪	見	泥娘	定澄	透徹	端知	明	並	滂	幫	

As an example of how these initials are encoded in the table, let us use *xīn* 心 'voiceless dental fricative' and *shěn* 審 'voiceless alveolo-palatal fricative', whose transcription in Baxter's system are s- and sr- / sy- respectively. In Table 2, both appear in the eighth column from the left. Let us now observe the first four characters in that column and their reconstruction.

Rhyme	Division	Example	<i>xīn</i> 心 or <i>shěn</i> 審
寒 -an	1	珊 s-an	<i>xīn</i> 心
刪 -æn	2	刪 sr-æn	<i>shěn</i> 審
仙 -jen	3	羶 sy-jen	<i>shěn</i> 審
先 -en	4	先 s-en	<i>xīn</i> 心

The initial *xīn* appears in the first and fourth rows (*divisions*, as we will see in section 2.3), and *shěn* in the second and third. This conflation of two columns would have been fine had the complementary distribution been perfect, but in fact both *xīn* and *shěn* (and all the other *chǐyīn* initials) can appear with the rhyme 仙 -jen. However, there is obviously no place on the chart for a syllable *sjen* with *xīn* s- initial and rhyme 仙 -jen. For syllables such as these, the rhyme 仙 -jen appears again on another chart, presented below:

Table 4: Table 21 from the *Yùnjing*.

	齒音舌		音 喉		音 齒		音 牙		音 舌		音 脣		外轉第二十一開
	清濁	清濁	清濁	清濁	濁清濁	濁清濁	清濁	濁清濁	濁清濁	濁清濁	清濁	濁清濁	
山元仙	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
產阮獮	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
禰願線	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
鎡月薛	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○	○

On this chart, the rhymes that were in the third division of the rows in Table 3 (仙 -jen, 獮 -jenX, 線 -jenH and 薛 -jet) now appear on the fourth division of each row. All the syllables in the *chǐyīn* ‘dental/alveolo-palatal affricates/fricatives’ column here have in fact dental affricate/fricative initials. For instance, the character *xiān* 仙 *s-jen* which appears in the eight column from the left has the *xīn* s- initial consonant, unlike the corresponding character *shān* 羶 *sy-jen* in the preceding table. The general rule here is that whenever a rhyme can appear on both the third and the fourth divisions, then characters belonging to this rhyme have dental initials when in the fourth division and retroflex/alveolo-palatal initials when in the third division.

There are also characters in the labial and velar columns on the same line, but their presence here does not indicate a different initial consonant; these cases will be discussed in 2.3.

This example shows that the rhyme tables are cleverly crafted charts representing the distribution of syllables in a two-dimensional grid in a very economic way, by collapsing rows and column in quasi-complementary distribution. An exhaustive treatment of all the complementary distributions in the *Yùnjing* charts is beyond the scope of this paper, but the example just given represents the most complex case.

### 2.2.2 The origin of the thirty-six initials

The thirty-six initials actually predate the rhyme tables by several centuries. The earliest attestation of such a system is the Táng-dynasty fragments of a manuscript

by the Buddhist monk Shǒuwēn 守溫 (Luo 1931, Coblin 2006b). It contains thirty initials instead of thirty-six: it omits the four *qīng chún yīn* ‘labiodentals’ and *niáng* 娘 which are in complementary distribution with bilabials and *ní* 泥 respectively, and the initial *chuáng* 床 which is not distinguished from *shàn* 禪. The fragmentary manuscript includes detailed articulatory descriptions, and shows that the pentatonic notes were used as phonological terms as in the *Qīyīnlüè*.

In view of the obvious Buddhist connection of the Shǒuwēn manuscript and of rhyme table phonology in general, it is legitimate to envision a possible Indic inspiration for this tradition, unlike rhyme books and *fānqiè* which seem to be genuinely Chinese inventions (Branner 2006b:8-9).

In the Indic tradition, five places of articulation, or *varga-*, are distinguished:

Name	etymology	value
<i>kaṇṭhya-</i> ‘guttural’	<i>kaṇṭha-</i> ‘throat’	velar stops
<i>ālavya-</i> ‘palatal’	<i>tālu-</i> ‘palate’	palatal stops
<i>mūrdhanya-</i> ‘cerebral’	<i>mūrdhan-</i> ‘head’	retroflex stops
<i>dantya-</i> ‘dental’	<i>dant-</i> ‘tooth’	dental stops
<i>oṣṭhya-</i> ‘labial’	<i>oṣṭha-</i> ‘lip’	labial stops

A direct comparison with the names for the places of articulation in the *Yùnjìng* is disappointing: the only terms that could be direct loan translations are the ‘labials’ and the ‘dentals’, but these are not really specific enough: one could easily argue that they were independently recreated:

Name	value
<i>chún yīn</i> 唇音 ‘labial’	labial stops
<i>shé yīn</i> 舌音 ‘tongue’	dental and retroflex stops
<i>yá yīn</i> 牙音 ‘molar’	velars
<i>chǐ yīn</i> 齒音 ‘front tooth’	dental and retroflex affricates/fricatives
<i>hóu yīn</i> 喉音 ‘guttural’	laryngeal / velar fricatives, glottal stop

One can understand however, why the velars were not called ‘gutturals’ in Chinese: a term ‘guttural’ was needed for the glottal stop and the unvoiced velar/laryngeal fricative which do not exist in Sanskrit: Sanskrit only has *h-*, a voiced laryngeal fricative [ɦ].

An indirect Indic origin for the rhyme tables is probable, but in any case the Chinese scholar who established the rhyme table tradition and its terminology did not slavishly translate the Sanskrit terms, but rather invented a new framework inspired by them.

### 2.2.3 Chén Lǐ

Up to the nineteenth century, it was taken for granted by scholars that the thirty-six initials faithfully reflected the initial system of Middle Chinese.

The scholar Chén Lǐ 陳醴 investigated the *fǎnqiè* data of the *Qièyùn* in the first half of the nineteenth century, only the *Guǎngyùn* version was available), and devised a method of analysis called *xiliánfǎ* 系聯法 in order to extract the phonological system of the *Qièyùn* directly from the *fǎnqiè*. He discovered that five initials of the thirty-six must be divided into two: four of the *zhèngchǐyīn* (*zhào* 照 *chuān* 穿 *chuáng* 床 *shěn* 審) as well as *yù* 喻. Two alternative series of names exist for these five new initials, either by adding a number referring to the divisions where the initial in question can appear (see section 2.3) or by making up a new name.

Retroflex affricates				Alveolo-palatal affricates		
照 zhào	照二	莊 <i>zhuāng</i>	<b>tsrjang</b>	照三	章 <i>zhāng</i>	<b>tsyang</b>
穿 chuān	穿二	初 <i>chū</i>	<b>tsrhjo</b>	穿三	昌 <i>chāng</i>	<b>tsyhang</b>
床 chuáng	床二	崇 <i>chóng</i>	<b>dzrjuwng</b>	床三	船 <i>chuán</i>	<b>zywen</b>
審 shěn	審二	生 <i>shēng</i>	<b>srjæng</b>	審三	書 <i>shū</i>	<b>syo</b>
喻 yù	喻三	雲 <i>yún</i>	<b>hjun</b>	喻四	以 <i>yǐ</i>	<b>yiX</b>

The principle of *xiliánfǎ* comes from the idea that the relationship between *fǎnqiè* spellers is transitive, that is, characters with the same first *fǎnqiè* spellers have the same initial. Therefore, if we look for the *fǎnqiè* spellers of each *fǎnqiè* speller and link them together with one another, we obtain a series of *fǎnqiè* spellers all representing the same initial:

Table 5: Some *fǎnqiè* spellers of the initial 溪 kh-

<i>fǎnqiè</i> spellers	<i>fǎnqiè</i> of the character
可 <i>khaX</i>	枯我切 <i>khu ngaX tshet</i>
枯 <i>khu</i>	苦胡切 <i>khuX hu tshet</i>
苦 <i>khuX</i>	康杜切 <i>khang duX tshet</i>
康 <i>khang</i>	苦岡切 <i>khuX kang tshet</i>
空 <i>khuwng</i>	苦紅切 <i>khuX huwng tshet</i>
楷 <i>khøjX</i>	苦駭切 <i>khuX hojX tshet</i>
口 <i>kuwX</i>	苦後切 <i>khuX huwX tshet</i>
客 <i>khæk</i>	苦格切 <i>khuX kæk tshet</i>

These data show that the *fǎnqiè* spellers 枯可苦康空楷口客 all represent the same initial. However, this method has its limits, because not all the *fǎnqiè* spellers of a single initial can necessarily be linked. For example, the initial *duān* 端 t- is marked with the seven following *fǎnqiè* spellers:

Table 6: *fǎnqiè* spellers of initial 端 t-

冬 <i>towng</i>	都宗切 <i>tu tsowng</i>
都 <i>tu</i>	當孤切 <i>tang ku</i>
丁 <i>teng</i>	當經切 <i>tang keng</i>
当 <i>tang</i>	都郎切 <i>tu lang</i>
多 <i>ta</i>	得何切 <i>tok ha</i>

得 tok	多則切 ta tsok
德 tok	多則切 ta tsok

---

In the table above, it appears that 冬都丁當 and 多得德 are two different groups, and cannot be linked one with another. In order to overcome these difficulties, the solution is to use the *yòu yīn* 又音: when a character has more than one pronunciation, as we indicated above, its second pronunciation is always indicated. Therefore, the character and its two pronunciations redundantly appear in two places in the body of the text. Fortunately, the same *fānqiè* is not always used to mark a given pronunciation, which provides us with two different sound glosses for the same pronunciation.

For example, on the first page of the *Guǎngyùn*, *dōng/dòng* 凍 has two *fānqiè* tuwng 德紅切 and tuwngH 都貢切 (ta kuwngH). Turning to the location where the latter pronunciation is classified, however, the *fānqiè* given there for *dòng* 凍 is this time 多貢切 (tu kuwngH), and it is therefore certain that these two *fānqiè*, 都貢切 and 多貢切 represent the same pronunciation. Therefore, this means that 都 and 多 are homonymous *fānqiè* spellers, and that the two groups of Table 15 can be linked together.

By systematically applying this method, it becomes possible to make classes of *fānqiè shàngzì* for the initials and *fānqiè xiàzì* for the rimes of the *Guǎngyùn*. When two classes can never be linked together by any method, we may conclude that they represent distinct initials or distinct rimes.

### 2.3 Deng

The interpretation of the four *divisions*, or *děng*, of the rows in the *Yùnjìng* and *Qīyīnlüè*, is one of the most enduring and controversial issue in Chinese historical phonology.

The *divisions* are generally thought to encode a phonological feature of some stage of Middle Chinese, either a medial (presence -j-, -i- medials etc) or a feature of the vowel; this topic is discussed in the entry on Middle Chinese and *děng* (see also the articles collected in Branner 2006a).

As we have seen in section 2.2.1 however, in some cases the placing of a rhyme in the third or in the fourth row indicates a distinct initial consonant: in the case that we have seen, it distinguishes between dental and retroflex / alveolo-palatal affricates or fricatives. With velar or labial initials, this kind of phenomenon is called *chóngniǔ* 重紐 ‘repeated button’. Those syllables occurring in the third division are called *chóngniǔ sān* 重紐三 ‘*chóngniǔ* three’, and those which appear in the fourth division simply *chóngniǔ sì* 重紐四 ‘*chóngniǔ* four’. For instance, the character *miǎn* 免 mjenX in the second right hand cell of Table 23 of the *Yùnjìng* is *chóngniǔ* three, while *miǎn* 緬 mjienX in Table 21 of the *Yùnjìng* is *chóngniǔ* four.

The *chóngniǔ* distinction has been neglected by some scholars (such as Karlgren and Wáng Lì), but it has clear reflexes in Sino-Vietnamese and Sino-Korean (see the entry on Middle Chinese) and is reconstructed as a special type of medial.

The use of *division* in the framework of historical Chinese phonology can be slightly misleading: the rhymes -jen, -jenX, -jenH, -jet of Tables 21 and 23 of the *Yùnjìng* are all considered to be third division, even in the case of words like *xiān* 仙 *sjen* which appear in the fourth row to indicate a different initial. In almost all other cases however, the place of the rhyme in the grid indicates its intrinsic division, and is not a special trick to represent initial consonant contrasts.

Following Lǐ Róng (1952), contemporary Chinese historical linguistics classifies the rhymes of the *Qièyùn* into six groups on the basis of divisions as follows:

1. First division: rhymes that only appear in the first division and never have alveolo-palatal or retroflex initials.
2. Fourth division: rhymes that only appear in fourth division and never have alveolo-palatal or retroflex initials.
3. Second division: rhymes that only appear in the second division and never have alveolo-palatal initials.
4. Third division, type 1 (referred to as *zǐ* 子): rhymes that only appear in the third division and only have labial or velar initials.
5. Third division, type 2 (referred to as *chǒu* 丑): rhymes that can appear in the second, third and fourth divisions and have no restriction on the initials. With these rhymes, the *chǐ yīn* 音齒 ‘coronal affricates and fricatives’ characters appearing in the second division have retroflex initials, those appearing in third division have palatal initials and those appearing in the fourth division have dental initials.
6. Third division, type 3 (referred to as *yīn* 寅): rhymes that can appear in the second, third and fourth divisions and in addition have *chóngniǔ* distinctions.

These distributions can be explained historically, as they shed important light on the internal reconstruction of Old Chinese (see the corresponding entry).

#### 2.4 The purpose of the rhyme tables

In the early stages of Chinese historical phonology, both Chinese and Western scholars tended to view rhyme tables as the work of linguists trying to analyze the phonological system of Middle Chinese.

Pulleyblank (1984) proposed that rhyme tables did not reflect the phonological system of Suí/early Táng Chinese (a stage he calls Early Middle Chinese), but rather a much later system, dating from late Táng (which he calls Late Middle Chinese). In this view, the divisions and the rhyme groups of the rhyme table shed light on the phonological evolution that had taken place between Early and Late Middle Chinese, and should not be used to reconstruct the pronunciation of Early Middle Chinese as had been done by his predecessors.

An alternative view has been proposed by Coblin (2006b), who suggests that rhyme tables were not the works of linguists, but rather practical tools devised by speakers of late Táng / early Sòng Chinese to convert the *fǎnqiè* of the *Qièyùn* into pronounceable syllables of their native dialects. By Sòng times, at least 20% of the *fǎnqiè* of the *Qièyùn* did not work anymore in the standard literary dialects due to various sound changes (in particular, the tonal bipartition and the change from

rising tone to falling tone in syllables with voiced stop initials), but Coblin explains how rhyme tables could be used to correctly interpret ancient *fǎnqiè*.

### 3. The centrality of the Chinese tradition in dialect studies

Rhyme books and rhyme tables are not only the basis upon which the reconstruction of Middle and Old Chinese is undertaken; it is also the main framework in Chinese dialectology, exemplified by standard works such as Ding (1984) and especially Anonymous (1989), which serves as a workbook for fieldwork on Chinese dialects.

The rhyme table terminology that has been explicated in section 2 is ubiquitous in description of Chinese dialects. Indeed, most of the rhyme and consonantal contrasts found in Chinese dialects can be correlated with the phonological categories of the *Qièyùn*. Even if, as most specialists now believe, the *Qièyùn* system is not the genuine phonological system of any language which ever existed, it still provides a useful diasystem which can be used to organize the data: to sort out the correspondences between the dialects and distinguish between inherited and borrowed layers of vocabulary.

The *Qièyùn* system is therefore of critical interest for studying the historical phonology of Sinitic languages, just like Latin for Romance languages or Old Tibetan for Tibetan languages. Only Min dialects do not fit in this framework, as they preserve archaic pre-*Qièyùn* phonological contrasts (see Norman 1974).

However, the centrality of the *Qièyùn* system and the use of rhyme tables in Chinese dialectology is being increasingly criticized (Norman and Coblin 1995, Branner 2006a). This framework causes some degree of confusion between the etymological categories and the phonological categories of the modern dialects.

In the tone system for instance, the traditional terms are *píng* ‘level’, *shǎng* ‘rising’, *qù* ‘departing’ and *rù* ‘entering’, alongside with *yīn* 陰 ‘upper register tone’ (associated with voiceless initials) and *yáng* 陽 ‘lower register tone’ (associated with voiced initials). As explained in the entry on Middle Chinese, all Chinese dialects have undergone a tonal bipartition depending on the voicing of the initial consonant, and almost all tonal systems can be understood as deriving from the following eight-tone system:

Table 7: The eight tone categories.

	平 <i>píng</i>	上 <i>shǎng</i>	去 <i>qù</i>	入 <i>rù</i>
陰 <i>yīn</i>	1. <i>yīn píng</i>	3. <i>yīn shǎng</i>	5. <i>yīn qù</i>	7. <i>yīn rù</i>
陽 <i>yáng</i>	2. <i>yáng píng</i>	4. <i>yáng shǎng</i>	6. <i>yáng qù</i>	8. <i>yáng rù</i>

These eight tonal categories are sometimes referred to by a number 1-8 rather than by their full names. The use of these terms in modern dialect descriptions poses two problems.

First, the phonetic values of the tones have considerably changed in all dialects since Middle Chinese. It is often the case that the phonetic realization of a tone category is unrelated to its etymological label. For instance an etymological *shǎng* ‘rising’ tone may have become a falling tone in a particular dialect, but the tone in question is still described as *shǎng* ‘rising’.



Second and more seriously, there is in general no one-to-one correspondence between the etymological tones and the actual tone categories in modern dialects for the four following reasons:

a) Most dialects have undergone tonal mergers; for instance in Mandarin tones 5, 6 and part of 4 have merged as the fourth tone, which is generally called *qù*. Some *qù*-tone words in Mandarin had *shǎng* tone in Middle Chinese (for instance 道 *dawX* > *dào*), but this tone is nevertheless called *qù* because most of the words it contains derive from Middle Chinese *qù* tone.

b) Some tonal splits were determined by factors other than voicing. For instance in Nanchang tones have different reflexes with aspirated and unaspirated unvoiced stops initials (Sagart 1993:109-115).

c) There are many irregular tonal evolutions in Chinese dialects. In Mandarin for instance, some words with tone 2 (*yáng píng*) according to the traditional framework, such as *mā* 妈 ‘mother’ or *māo* 猫 ‘cat’, seem to have changed to tone 1 (*yīn píng*).

d) In dialects which preserve distinctions more archaic than Middle Chinese, such as Mǐn, this system becomes impractical and even misleading as pointed out by Handel (2011:387-8). Even in non-Mǐn dialects, it could lead to neglecting archaic distinctions, by interpreting irregular correspondences as dialect mixture rather than preservation of archaic contrasts. Indeed, it is possible that non-Mǐn dialects preserve more evidence relevant to Archaic Chinese reconstruction than is generally believed, but only a survey of the dialectal data unprejudiced by the *Qièyùn* system can reveal whether or not such evidence exists.

Of course, the use of etymologizing terminology is not unique to Chinese phonology. This situation is comparable to terms like “o-stems” in Germanic linguistics, referring to the Indo-European origin of a given declension, not its actual form in any attested Germanic language. Just as Indo-European linguistics can be daunting to read for non-specialists, Chinese dialectology presented in this framework is unintelligible to generalist linguists. This has the detrimental effect of hindering the dialogue between theoreticians interested in panchronic linguistics (the general principles of sound change) on the one hand and Chinese dialectologists on the other hand.

This critical appraisal of the use of the *Qièyùn* terminology should not be misunderstood as a dismissal of the entire tradition of Chinese dialectology. Quite the contrary, most of our knowledge of the history of Chinese dialects was built on the basis of the *Qièyùn* framework, and it will always remain a useful starting point for analyzing the phonological systems of Chinese languages. However, now that most dialects have been thoroughly analysed in terms of the traditional framework, we could gain newer insights on the dialect data by escaping the overwhelming influence of the traditional rhyme book and rhyme table tradition and broadening our research perspectives.

#### 4. Beyond Chinese: Tangut rhyme table phonology

In spite of the fact that many languages of East Asia are typologically similar to Chinese, the rhyme table tradition was not applied to the analysis of any other language except Tangut.

Tangut is a dead language without any modern descendant, and although we have a sizeable body of texts, its logographic script, like Chinese, yields few clues about the actual pronunciation of this language. As in Chinese, we have foreign transcriptions both from and into Tangut that can be used to reconstruct the system, but these transcriptions are not sufficiently consistent or systematic to serve as primary data to reconstruct the language.

Fortunately, we have several rhyme books and rhyme tables in Tangut, which are clearly closely based on Chinese models. One of the dictionaries, the 𐞑𐞑𐞑𐞑 *jwɨr<sup>2</sup>ɲjow<sup>2</sup>* 'Sea of characters', includes *fǎnqiè* readings for each character, along with a definition and an analysis of the structure of the character. Like the *Qiyùn*, the characters are classified by rhymes, so that the total number of rhymes of the Tangut language is known, but there is no clear list of initials. Scholars such as Sofronov (1968) had to apply Chén Lǐ's *xiliánfǎ* method to analyze the *fǎnqiè* spellers and determine the initial system of the Tangut languages.

## 5. Conclusion

Chinese historical phonology, as well as Tangut phonology, constitutes a sub-branch of historical linguistics without equivalent in other language families by dint of their peculiar methodology, based mainly on the analysis of a non-alphabetic system for encoding phonological information.

Although this traditional approach has come under criticism in recent years, it is still the generally accepted method for reconstructing Middle Chinese, studying Chinese dialects and reconstructing the Tangut language.

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