

OLD CHINESE

A NEW RECONSTRUCTION

WILLIAM H. BAXTER

LAURENT SAGART

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William H. Baxter and Laurent Sagart

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Old Chinese

{ 1 }

Introduction

This book presents the Baxter-Sagart reconstruction of Old Chinese, a product of several years' collaboration between William H. Baxter and Laurent Sagart to produce an improved linguistic reconstruction of the phonology, morphology, and lexicon of Old Chinese, the language of the earliest Chinese classical texts (early first millennium BCE) and the ancestor of later varieties of Chinese. We have both written on Old Chinese reconstruction in the past (especially Baxter 1992; Sagart 1999c; Baxter and Sagart 1998). However, newly available evidence has now made it possible to take a new approach to the problem and to achieve significant improvements over previous research. The Baxter-Sagart reconstruction is the result of this new approach. A companion document giving proposed reconstructions for over 4,000 individual Old Chinese lexical items is available online at http://ocbaxtersagart.lsait.lsa.umich.edu/.

Reconstructing the linguistic features of this 3,000-year-old language is not just a matter of satisfying the curiosity of historical linguists; in fact, it is crucial to interpreting the foundational texts of Chinese civilization. With an ancient text from Greece or Rome, written in an alphabetic script, the words are usually easy to identify, and one can begin to interpret the text without worrying excessively about how it was actually pronounced. But when reading early Chinese texts, reconstructing pronunciation often plays a crucial role in the initial process of identifying the words of a text themselves—a fact recognized for centuries by Chinese scholars.

1.1 What is Old Chinese?

We use the term "Old Chinese" in a broad sense to refer to varieties of Chinese used before the unification of China under the Qín 秦 dynasty in 221 BCE. The earliest written records in Chinese are oracular inscriptions on bones and shells from about 1250 BCE (in the late Shāng 商 dynasty, which was overthrown by the Zhōu 周 in 1045 BCE), so this is an interval of about 1,000 years. Obviously, there must have been many varieties of Chinese during this period, widely distributed in time and space. In principle, we would like to reconstruct the entire linguistic history of this period in all its complexity, but we can be certain that much of this information has been irretrievably lost.

A useful starting point, however, is to reconstruct whatever we can of the common ancestor of all the attested varieties of Chinese; later varieties can then be described as resulting from changes affecting the common ancestor. We cannot be sure, but it appears that the earliest Chinese texts we have—including oracular inscriptions, bronze inscriptions, and the earliest Chinese classical texts—were not far removed from this common ancestor.

It is customary in historical linguistics to distinguish languages that are attested, such as Latin, Greek, and Sanskrit, from those that must be reconstructed, such as Proto-Germanic or Proto-Indo-European. Old Chinese is attested in the sense that there is a large corpus of written texts; but because of the nature of its writing system, in order to read these texts, it is also necessary to reconstruct the phonology and other linguistic features of the language.[1] This is because the most important principle of the early Chinese script was to use the graph for one word to write other words of similar pronunciation (sometimes combined with additional graphic elements). So for texts composed in the Old Chinese period, just in order to decide what the words of a text are, one often has to know which words sounded similar to which *at the time the text was written*, without the benefit of an alphabetic representation.

Furthermore, since the language of the earliest Chinese texts appears to be very close to the common ancestor of all attested varieties of Chinese, it is difficult at this stage to make a meaningful distinction between Old Chinese and Proto-Chinese (= Proto-Sinitic). As a practical matter, we use the term "Old Chinese" in the narrow sense to refer to the earliest stage of Chinese that we can reconstruct from Chinese evidence, and we consider evidence from any Sinitic language (including Chinese loanwords to other languages) to be relevant to its reconstruction.

1.1.1 THE TRADITIONAL APPROACH TO OLD CHINESE RECONSTRUCTION

The most important early work on reconstructing Old Chinese was done by Chinese scholars in the Qīng 清 dynasty (1644–1911), who focused on early pronunciation as a philological tool for interpreting canonical texts from the Old Chinese period. Using both early rhymes and the phonetic patterns in the writing system, they were able to identify words in classical texts that may have been confused or written in nonstandard ways in the course of textual transmission.

The Swedish sinologist Bernhard Karlgren (1889–1978) combined the Qīng scholars' findings with the notation and some of the techniques of the linguistics of his time and produced a phonetic reconstruction of Old Chinese (summarized in Karlgren 1954; his term for it was "Archaic Chinese"), relying on three main kinds of evidence:

1. rhymes in early poetry, especially the *Shījīng* 《詩經》(Book of Odes), the earliest anthology of Chinese poetry;

2. the phonetic elements of the Chinese script; and
3. the detailed information about the pronunciation of Middle Chinese ("Ancient Chinese" in Karlgren's terminology) preserved in the *Qièyùn* 《切韻》 (601 CE) and other rhyme dictionaries in that tradition and in other written records, such as the *Jīngdiǎn shìwén* 《經典釋文》 (hereafter: *JDSW*) of Lù Déming 陸德明 (550?–630), which contains comments on the proper pronunciation of words in classical texts.

Karlgren's approach, which became traditional, was to propose pronunciations for Old Chinese that were both consistent with these three kinds of evidence and (to one degree or another) plausible for a natural language. Baxter's *Handbook of Old Chinese phonology* (1992) is in this tradition. The traditional approach has achieved important results, but it suffers from several limitations:

1. Evidence from outside Chinese written records (e.g., the spoken forms of modern dialects and early Chinese loanwords in other languages) was largely ignored.
2. Most researchers relied on a traditional analysis of the rhymes of the *Shījīng* based on the work of the Qīng philologists, instead of directly examining the rhyme evidence itself.
3. For the most part, the analysis of the phonetic elements of the Chinese script was based not on the actual scripts of the pre-Qín period but rather on the script that has been standard since the Hàn 漢 dynasty (206 BCE– 220 CE) or on the *Shuōwén jiězì* 《說文解字》, a dictionary completed in 100 CE that attempts to analyze each character of the script established in the Qín dynasty (221–207 BCE). This procedure is obviously anachronistic.
4. Old Chinese has mostly been treated as a single homogeneous synchronic system; little has been said about linguistic variation in the Old Chinese period.
5. The focus has been on phonetic reconstruction, with relatively little attention to morphology or to the syntactic and semantic properties of the reconstructed forms.

1.1.2 A BROADER APPROACH

In our new reconstruction we still rely heavily on the three kinds of evidence used in traditional reconstructions. But a number of recent developments have now made it feasible to take a broader approach. Modern dialects—especially those dialects that are likely to be most informative about Old Chinese, such as those of the Mǐn 閩 group, spoken in and near Fújiàn 福建 province—are much better documented now than in the past, so it is no longer necessary or even acceptable to rely on the written remains of Middle Chinese alone, as Karlgren did, as a surrogate for later forms of Chinese.

We also have much better documentation of and research on languages of the Kra-Dai (= Tai-Kadai),[2] Hmong-Mien, Tibeto-Burman, and Vietic families that

preserve early loanwords from Chinese. These loanwords frequently give us information that would be difficult or impossible to recover from modern dialects alone, or from Middle Chinese written sources, but that should be accounted for in reconstructing Old Chinese.

Another recent development is that dramatic archeological discoveries in China are producing a growing and diverse corpus of excavated documents[3] from the pre-Qín period, before the script was unified and standardized, especially documents on bamboo strips from the Guōdiàn 郭店 archeological site in Húběi province (see *GD*) and similar documents acquired in the 1990s by the Shànghǎi Museum (published in *SB*). Previously, the only substantial documents from the Old Chinese period were rather formulaic and restricted in content: the Shāng oracle-bone inscriptions, and ceremonial inscriptions on bronze vessels. Many common words simply do not appear in these documents, so Karlgren's reliance on the later standard script is understandable. But the recently discovered documents, written on silk or on strips of bamboo or wood, are far richer and more diverse, representing a variety of domains including philosophy, history, mythology, law, divination, and medicine. Some overlap with previously known texts of the received tradition, but many were previously unknown or known only by name. Moreover, the characters in these texts, many also previously unknown, give precious evidence about pre-Qín pronunciations. By contrast, many characters in the standard script first came into use during Qín and Hàn and do not represent Old Chinese phonology at all.

We also believe that the reconstruction of Old Chinese phonology has progressed to the point that it is productive to use the techniques of internal reconstruction to reconstruct the morphology of Old Chinese. Karlgren laid some of the groundwork for this approach in his paper "Word families in Chinese" (1933), in which he grouped together words that were similar in sound and meaning as a preliminary step to identifying roots and morphological processes. But the inadequacies of his phonological reconstruction made it difficult to identify the patterns involved. Improved phonological reconstructions, along with evidence from dialects and early loanwords, are now making it possible to identify morphological processes with more precision.

Finally, through improved reconstructions, we are now better able to understand some of the information in early texts, both implicit and explicit, about early Chinese and its dialectal variants.

1.2 Methodology

1.2.1 THE NATURE OF LINGUISTIC RECONSTRUCTION

We view linguistic reconstruction as a process of making inferences about earlier stages of a language or languages by forming hypotheses and testing them empirically. The reconstruction of phonology usually plays a primary role, especially in the early stages

of investigation, because some understanding of phonology is a prerequisite to understanding the rest of linguistic structure; but in principle, the goal is to reconstruct everything, including the grammatical and semantic properties of all words and expressions, not just their pronunciations.

These goals may seem to be, and sometimes turn out to be, unrealistic. How is it possible in principle to gain such knowledge about a dead language—or a whole host of dead languages? Here we encounter two diverging views about how linguistic history is reconstructed. One traditional view is that historical linguists have certain scientific procedures at hand that, if correctly applied, will produce reliable results and will not lead them into error. Conclusions resulting from the correct application of these methods may be regarded as "proved." (It follows from this view that if two scholars reach different results, one of them—at least—must have applied the methods improperly.) Furthermore, in such a view, researchers must go as far as the data take them and no farther; to speak about matters unseen would be unscientific.

It is doubtful whether anyone ever implemented this approach consistently, but this is how the process of reconstruction is sometimes described: certain results are said to be "proved," and disagreements between researchers are attributed to illegitimate procedures on one side or the other. An alternate view of scientific inquiry, which we adopt here, is the hypothetico-deductive approach (as described, for example, in Mayr 1982:28–29). In our view, a linguistic reconstruction is a set of hypotheses about the linguistic past. Hypotheses are not simply summaries of observations; crucially, while they are based on existing observations, they also make testable predictions about future observations. This is the deductive part of the approach. Hypotheses cannot be proved, but they can be tested empirically. If the predictions they make are false, hypotheses can be disproved, and in that case it is the scientist's job to revise or replace them.

An illustration of the hypothetico-deductive method is the famous case of the solar eclipse of May 29, 1919, which provided an opportunity to compare the predictions of Newtonian physics and Einstein's general theory of relativity. Before this time, the achievements of Isaac Newton in formulating the laws of classical physics were so impressive that most people would probably have said that they had been "scientifically proved." But Newton's and Einstein's theories made different predictions about how light should appear to be bent under the influence of a massive object like the sun, and the total eclipse of 1919 provided an opportunity to test these predictions. In the event, Einstein's theories turned out to fit the observations much more closely than Newton's (Dyson, Eddington, and Davidson 1920).

Linguistic reconstructions, then, are not simply summaries of observed data; rather, they are sets of hypotheses about actual languages—hypotheses that are broadly consistent with observed data but that also make predictions about data not yet seen. Our Old Chinese reconstructions make predictions about what kinds of rhymes should and should not occur in texts that are either newly discovered or not thoroughly analyzed; about how words should or should not be written in documents from the Old Chinese period; and about what pronunciations should or

should not be found in Chinese dialects or in early Chinese loanwords into other languages. Thus our reconstructions are subject to falsification by either existing or newly discovered evidence.

It follows that the work of reconstruction can never be considered complete as long as new data may become available. It is somewhat unfortunate that the English verb *reconstruct* seems to fall into the class of what Zeno Vendler (1957) called "accomplishment verbs"—those that involve both a process and an endpoint. With accomplishment verbs (or, better, verbal expressions) such as *run a mile*, it makes sense to ask questions such as "How long did it take you to run a mile?" Accomplishment verbs contrast with "activity verbs" such as *run*; for these, it is normal to ask, "How long did you run?" but not "How long did it take you to run?" (unless an endpoint is presupposed, as when a person runs a specific distance every day). In the case of *reconstruct*, it sounds normal to ask, "How long did it take you to reconstruct Old Chinese?" so *reconstruct Old Chinese* is treated as an accomplishment verb. Indeed, Karlgren seems to have believed that he had finished reconstructing his Archaic Chinese when he published his *Grammata serica* (1940).[4]

But in our view, this understanding of reconstruction is misleading. On the one hand, since some information about Old Chinese has necessarily been irretrievably lost, the process of reconstructing it will never be entirely complete. At the same time, as more evidence becomes available, and as more people study it, existing reconstructions will need to be modified. We believe that the basic hypotheses of our reconstruction are sufficiently stable that it makes sense to publish our results now. But we are making the reconstructions themselves available on a public website so that they may be revised as necessary in the light of new evidence or arguments.

It is worth emphasizing that it is as important for hypotheses to be able to predict what will *not* be observed as it is to predict what will be observed. If a reconstruction cannot account for certain examples, it is usually possible to incorporate ad hoc complications in the reconstruction to account for them; but if the reconstruction becomes so powerful that it is consistent with all imaginable observations, it loses its predictive power. It is often better to leave some phenomena unexplained until a pattern emerges that will explain them.

1.2.2 OUR APPROACH TO RECONSTRUCTING OLD CHINESE

Our ultimate goal is not just to reconstruct Old Chinese in the narrow sense but also to reconstruct everything we can about the linguistic history of the pre-Qín period. What was the early phonological system, and how did it change? What morphological processes were there? What dialect distinctions were there, and how did they develop? How did the semantic and grammatical properties of each lexical item evolve? What languages was Chinese in contact with, and what were the linguistic results of these contacts? For that matter, how was the linguistic history of Chinese related to the history of Chinese speakers themselves? To answer these questions we think all available evidence should be used, not just the traditional triad described above.

Our use of each of the main kinds of evidence is summarized in Chapter 2. First, though, some remarks about our notation are in order.

When citing examples, we generally cite pronunciations from modern standard Mandarin, Middle Chinese (MC), and reconstructed Old Chinese (OC). Mandarin pronunciations are given in pīnyīn romanization. Middle Chinese pronunciations are given in a conventional transcription, explained in more detail in Chapter 2. These Middle Chinese transcriptions are *not* phonetic reconstructions but conventional representations of the information about pronunciation given in Middle Chinese written sources. Accordingly, they are not preceded by asterisks; for typographical convenience, and to emphasize the fact that they are *not* reconstructions, they are restricted to ordinary ASCII characters (in italic type), rather than the International Phonetic Alphabet.

Old Chinese reconstructions are preceded by asterisks and do use the International Phonetic Alphabet. Hyphens indicate morpheme boundaries; angle brackets around prevocalic *-r- indicate that it is an infix (see section 3.3.2.6). As further explained in the discussion of root structure in section 3.3.1, Old Chinese words could have phonetic material before the main syllable. In some cases this presyllabic material can be recognized as a synchronic prefix, so we separate it from the main syllable with a hyphen, as in this pair showing the stative-intransitivizing prefix *N-:

(1) 華 huā < *xwae* < *q$^{wh\varsigma}$ra ‘flower (n.)’ (from Hàn times on, generally written as 花[5])
華 huá < *hwae* < *N-q$^{wh\varsigma}$ra ‘flower (v.); flowery (adj.)’

However, not all presyllables can be analyzed as synchronic prefixes at the Old Chinese stage. Some of them may have been prefixes at an earlier time but must be analyzed as part of the root at the Old Chinese stage; others may have been part of the root all along. In either case, if we are not confident that a presyllable is a synchronic prefix, we write a period after it instead of a hyphen:

(2) 千 qiān < *tshen* < *s.n̥$^{\varsigma}$i[ŋ] ‘thousand’

(3) 實 shí < *zyit* < *mə.li[t] ‘fruit; full’[6]

As noted above, we will never have full information about all the words of Old Chinese; in particular, the reconstructions of individual words are sometimes underdetermined by the evidence. For example, in most cases, we can tell from Middle Chinese forms whether a word did or did not have *-r- before the main vowel in Old Chinese, but in some contexts the reflexes with and without *-r- are the same. Thus while OC *kaŋ and *kraŋ are still distinguished in Middle Chinese as *kjang* and *kjaeng,* respectively, OC *ka and *kra both became MC *kjo*. Similarly, MC *ki* can reflect either OC *kə or *krə, and MC *kje* can reflect either OC *kaj or *kraj. We consider it desirable to represent such uncertainty in our notation, so in such cases we write *k(r)a, *k(r)ə, and *k(r)aj, meaning that for all we know, there could have been an *-r- before the vowel in Old Chinese (but not implying that there is any positive evidence for *-r-).

Similarly, in our reconstruction, MC *k-* can come from either OC *k- or OC *C.q- (where *C is an unspecified consonant). In many cases, we have evidence to choose one

or the other reconstruction, but often we do not, and in such cases, in order to reflect this uncertainty, we write MC *k*- < OC *[k]-. In general, the notation "*[*X*]" means "either **X*, or something else that has the same Middle Chinese reflex as **X*." In some cases, the identity of the main vowel is also unclear. The bracket notation is especially frequent in words with final *-n* in Middle Chinese, because although there is strong evidence that MC final *-n* can reflect either OC *-r or *-n (see section 5.5.1), in particular words it is often difficult to decide which coda to reconstruct. As a concrete example of uncertainty in particular reconstructions, we reconstruct 奇 jī < *kje* 'odd number' as *[k](r)aj, indicating that we do not know from currently available evidence whether the MC initial *k*- is of velar or uvular origin or whether there was an *-r- before the vowel or not.[7]

Finally, in paleographic discussions, we adopt the convenient convention (as in Qiú Xīguī[8] 1988, 2000) that a character in curly brackets refers to the word the character now represents in the standard script, not to the written character itself. Thus {聞} wén 'hear' refers to the word now written as 聞, not the character "聞" itself; in the Old Chinese period, {聞} wén was written in a variety of ways, but "聞" was not one of them.

1.3 Plan of the book

Chapter 2 discusses in more detail the kinds of evidence on which our reconstruction is based. Chapter 3 gives a brief summary of the history of proposed reconstructions of Old Chinese down to the present time and summarizes the innovations of the present one. The core of the book is Chapter 4, on the reconstruction of Old Chinese syllable onsets, and Chapter 5, on the reconstruction of Old Chinese rhymes. Chapter 6 identifies some known problems in the reconstruction and topics for future research.

{ 2 }

The evidence for Old Chinese

2.1 Middle Chinese

2.1.1 SOURCES FOR MIDDLE CHINESE

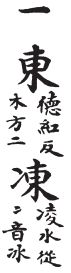
Information about Middle Chinese pronunciation is found in two main sources: (1) the so-called rhyme books (yùnshū 韻書), especially the *Qièyùn* 《切韻》 of 601 CE and the *Guǎngyùn* 《廣韻》 of 1008, which is an expanded version of the *Qièyùn*; and (2) the *Jīngdiǎn shìwén* 《經典釋文》 (hereafter: *JDSW*) of Lù Déming 陸德明 (550?–630), an extensive commentary on fourteen classical texts, probably compiled in the late sixth century CE, which gives details on the pronunciations of words in particular contexts. A third kind of written source is the somewhat later rhyme tables (yùntú 韻圖), which arrange syllables in two-dimensional grids according to various analytical categories: but we make little use of them, because their interpretation is problematic. They are probably based on a later stage of the language (Late Middle Chinese; see Pulleyblank 1984), and they are largely irrelevant to Old Chinese reconstruction.[1]

The rhyme books are dictionaries of Chinese characters arranged by pronunciation, so that words that rhyme with each other are put together. The original *Qièyùn* is no longer extant, and the traditional practice has been to use the *Guǎngyùn* of 1008 as a surrogate for it. However, in the late 1940s an almost complete manuscript of the Wáng Rénxù 王仁煦 version of the *Qièyùn*, dating from 706 CE, was found in the former imperial palace in Běijīng, which gives us access to an earlier version of the text (see Lóng Yǔchún 1968).

At the highest level, the rhyme books are divided into four sections, one for each of the traditional four tonal categories of Middle Chinese: píngshēng 平聲 'level tone', shǎngshēng 上聲 'rising tone', qùshēng 去聲 'departing tone', and rùshēng 入聲 'entering tone'.[2] Within each tone section, words are arranged according to rhyme. Each rhyme is numbered, and the first character listed in the rhyme is used as the name of that rhyme. The first entry in all versions is for the word 東 dōng 'east', so this rhyme is called the 東 Dōng rhyme, and it bears the number 1. (The numbering starts over at 1 at the beginning of each tone section.)

Each rhyme is further divided into homonym groups. Example (4) below gives the entire first homonym group of the píngshēng section in the Wáng Rénxù *Qièyùn*, containing entries for the two characters 東 and 凍.

(4)



In each homonym group, the first entry is provided with a spelling in the system called *fǎnqiè* 反切, a device for indicating the pronunciation of a word by giving two characters: one representing a word that has the same initial consonant as the word being spelled, and a second in which everything but the initial consonant is the same. These two characters are followed by either 反 fǎn (as in the Wáng Rénxù version of the *Qièyùn*) or 切 qiè (as in the *Guǎngyùn*) to identify them as a fǎnqiè spelling.

For example, here is the fǎnqiè spelling in the entry for 東 pictured in example (4), specifying the pronunciation of the two homonyms 東 and 凍:

(5)

德	紅	反
dé	hóng	fǎn

The first character 德 dé identifies the initial consonant; the second character 紅 hóng specifies the rest of the syllable; and the third character 反 is what tells us that "德紅" is a fǎnqiè spelling. In our ASCII-friendly notation for Middle Chinese (further explained below), 德 dé is *tok*, and 紅 hóng is *huwng*. To get the Middle Chinese pronunciation of 東 and 凍, we put the initial consonant of 德 *tok* together with everything but the initial consonant of 紅 *huwng*: 德紅反 *t(ok)* + (*h)uwng* = *tuwng*. This indicates that *tuwng* is the Middle Chinese pronunciation of the words in this homonym group, that is, of both 東 and 凍.

If in turn we look up the initial speller 德 dé, we find the following entry:

(6)



Here the fǎnqiè spelling is "多特反," that is, MC *t(a)* + *(d)ok* = *tok*. If we go on to look up 多 duō, the initial speller for 德 dé, we find

(7)



with the fǎnqiè spelling "得河反," that is, *t(ok)* + *(h)a* = *ta*.

These spellings specify Middle Chinese pronunciations by reference to other Middle Chinese pronunciations, so they do not tell us in concrete terms how the words were actually pronounced. But by linking up the fǎnqiè spellings, we can establish equivalence classes: we know that according to these spellings, 德 dé, 多 duō, and 得 dé are all represented as beginning with the same Middle Chinese initial consonant.[3] In our conventional notation for Middle Chinese, we write the initial consonant of 德 dé, 多 duō, and 得 dé as *t-*, based on the fact that modern varieties of Chinese, as well as Chinese loanwords in other languages, overwhelmingly (though not universally) have initial [t] in these words, as seen in Table 2.1. (Our Middle Chinese notation is given in the first row in the table.[4])

Our Middle Chinese notation is *not* to be understood as a reconstruction, however; rather, it is designed as a conventional, mnemonically convenient representation of the information found in the Middle Chinese written sources.[5]

As for the *Jīngdiǎn shìwén,* it is not a dictionary but a running commentary on fourteen important classical texts that gives notes on the pronunciations of words in context (and often other information as well). For example, in the *Zuǒ zhuàn* 《左傳》(first year of Duke Yǐn 隱), we find the following sentence:

(8) 惠公之季年,敗宋師于黃。
Huì gōng zhī jì nián, bài Sòng shī yú Huáng.[6]
"In the last year of Duke Huì, he defeated the Sòng troops at Huáng."

Concerning this passage, the *Jīngdiǎn shìwén* says:

(9) 敗宋、必邁反、敗他也、後放此
Bài Sòng, bì mài fǎn, bài tā yě. Hòu fǎng cǐ.
[In the phrase] 敗宋 'defeat Sòng [troops]', [敗 is read] 必邁反 [MC *p(jit)* + (*m)aejH* = *paejH*]; it means 'to defeat another'; [examples] below are like this (*JDSW* 222).

The reason for the annotation is that according to the Middle Chinese sources, the character 敗 bài has two readings: MC *paejH* when it means 'to defeat' (transitive) and MC *baejH* when it means 'to suffer defeat' (intransitive). The comment tells the reader that in this passage in the *Zuǒ zhuàn*, 敗 bài is to be read as MC *paejH*, because it is used

TABLE 2.1 德 dé, 多 duō, and 得 dé in Middle Chinese, selected dialects, and loanwords from Chinese

	德	多	得
Middle Chinese	*tok*	*ta*	*tok*
Mandarin	[tɤ^{35}]	[tuo^{55}]	[tɤ^{35}]
Cantonese	[tɐk^{5}]	[tɔ^{55}]	[tɐk^{5}]
Sūzhōu	[tɤʔ^{4}]	[tɒ^{44}]	[tɤʔ^{4}]
Sino-Korean	*tŏk* [tʌk]	*ta* [ta]	*tŭk* [tɯk]
Sino-Japanese	*toku*	*ta*	*toku*
Sino-Vietnamese	*đức* [ɗɯk D1]	*đa* [ɗɑ A1]	*đắc* [ɗăk D1]

transitively, meaning ‘to defeat another’. The phrase “後放此 hòu fǎng cǐ” ‘[examples] below are like this’ tells the reader that the same principle applies in subsequent occurrences of 敗 bài, and that not every case will be explicitly annotated.

We do not assume that these Middle Chinese sources faithfully represent the language of any single time and place; indeed it is obvious from their content that they do not. The preface of the *Qièyùn* clearly indicates that its system is a kind of compromise between at least two varieties of pronunciation (see Zhōu Zǔmó 1966, 1968). Both the *Qièyùn* and the *Jīngdiǎn shìwén* were probably intended to define a correct method of reciting classical texts aloud—a reading tradition that may have been artificial in many respects and built on interpretations of the classical texts that cannot have been perfect. Whether literary scholars attempted to follow these pronunciations in actual conversation is difficult to say; certainly they must have used at least some colloquial words to which the dictionary standards did not apply. This is why we refrain from providing a phonetic reconstruction for Middle Chinese and use a conventional transcription instead. Without a great deal more historical research on modern spoken dialects, these books alone cannot give us an accurate picture of the spoken Chinese of the Middle Chinese period.

But this does not disqualify the written sources as evidence for Old Chinese: in fact, the diversity observed within these sources helps us understand what the dialect situation was in the period before they were written.[7]

2.1.2 OUR NOTATION FOR MIDDLE CHINESE

The Middle Chinese sources define an abstract space of possible syllables, and it is usually easy to determine from the written sources where a particular form belongs in this space. A Chinese syllable is traditionally analyzed as consisting of three parts: an initial (*shēngmǔ* 聲母), a final (*yùnmǔ* 韻母), and a tone (*shēngdiào* 聲調); the phonological space can therefore be thought of as three dimensional. We will use the traditional terminology of initial, final, and tone in describing Middle Chinese; but note that the final, as traditionally defined, is not the same thing as the rhyme: the final includes some elements before the main vowel, which in a different analysis would be considered part of the syllable onset.

Even if it is problematic to decide exactly how this syllable space might correspond to the pronunciation of any particular spoken variety of Middle Chinese, in most cases we can be confident that the distinctions it includes are not artificial and existed in some variety of Chinese at some time; they are therefore relevant to the reconstruction of Old Chinese. Our Middle Chinese notation is intended to represent the position of each syllable within that abstract space.

Generally, our Middle Chinese transcription follows these principles:

1. For simplicity and convenience, and as a reminder that it is *not* intended as a phonetic reconstruction, our transcription uses standard ASCII characters only; in this book they are in italic type.

2. When the pronunciation of an element of the Middle Chinese system is more or less unproblematic, its transcription is chosen accordingly. For example, the words whose MC transcription begins with *t-* probably really did begin with [t] in most varieties of Chinese in the Middle Chinese period; those ending in *-p, -t, -k, -m, -n, -ng* probably really did end in [p], [t], [k], [m], [n], and [ŋ]; and so forth.
3. In cases where pronunciations are unclear, are difficult to represent in ASCII symbols, or may have differed from dialect to dialect, we use conventional symbols chosen for their mnemonic value. For example, we write 國 guó 'country' as MC *kwok*. Now in most varieties of Middle Chinese the word probably really did begin and end with [k], and the *-w-* is probably realistic for most dialects as well. In proposed reconstructions of Middle Chinese, the word is usually reconstructed something like [kwək] or [kwʌk]. But we have no convenient ASCII equivalent for [ə] or [ʌ]; besides, how do we know that the vowel was unrounded—and which dialect would we be talking about anyway? Although the notation *kwok* may not exactly match any Middle Chinese dialect, it does have the virtue that it uses easily recognizable symbols and is easy to connect mnemonically with other known forms of this etymon, as shown in Table 2.2.
4. As far as possible, our notation is designed so as to make it easy to identify what seem to be natural classes in the *Qièyùn* system. For example, one such natural class is the so-called division-II (*èrděng* 二等) finals. Although this name originates with the Late Middle Chinese rhyme tables, the division-II finals are easy to define using distributional criteria based on the *Qièyùn* itself, without reference to the rhyme tables: they are the finals in the *Qièyùn* system that occur with "retroflex" initials such as *tr-* and *tsr-* but not with "palatal" initials such as *tsy-* and *ny-*.[8] In our notation, all division-II syllables are recognizable from the fact that they are written with either *-ae-* or *-ea-* as main vowel, with no preceding *-j-* or *-y-*. Some varieties of Chinese around 601 CE probably really did have two contrasting vowels here, which are sometimes reconstructed as [æ] and [ɛ], but there were probably other varieties that did not distinguish them. Our *-ae-* is mnemonic for [æ], and *-ea-* is easy to relate to both *-ae-* and [ɛ].

TABLE 2.2 Forms of the etymon 國 guó < MC *kwok* 'country'

國 guó 'country'	
Middle Chinese	*kwok*
Mandarin	[kuɔ^{35}]
Cantonese	[kwɔk^{33}]
Shànghǎi	[koʔ^{5}]
Xiàmén	[kɔk^{32}]
Sino-Korean	*kuk* [kuk]
Sino-Japanese	*koku*
Sino-Vietnamese	*quốc* [kwʌk D1]

Incidentally, this is an example of the kind of information about dialect diversity that the *Qièyùn* system gives us. The finals written *-aen* and *-ean* in our system correspond to the two adjacent *Qièyùn* rhymes 刪 Shān (MC *sraen*) and 山 Shān (MC *srean*). By establishing these as separate rhymes, the *Qièyùn* suggests that some dialects distinguished them—which is probably true, judging from contemporary rhyming practice. That the distinction was a real one is also supported by the fact that it corresponds to distinctions that are independently inferable from Old Chinese rhymes and from the phonetic elements of the script. But when adjacent rhymes in the *Qièyùn* begin with the same initial consonant (as these do, both beginning with *sr-*), this probably indicates that some dialects did *not* distinguish them. Examples of such adjacent rhymes that had probably merged in some dialects are 東 Dōng (MC *tuwng*) ~ 冬 Dōng (MC *towng*), 支 Zhī (MC *tsye*) ~ 脂 Zhī (MC *tsyij*) ~ 之 Zhī (MC *tsyi*), 刪 Shān (MC *sraen*) ~ 山 Shān (MC *srean*), 仙 Xiān (MC *sjen*) ~ 先 Xiān (MC *sen*).

2.1.2.1 The Middle Chinese tones

The 'four tones' (*sì shēng* 四聲) of Middle Chinese are *píng* 平, *shǎng* 上, *qù* 去, and *rù* 入. In our notation they are marked as follows; the English glosses have become conventional translations for the names of the tones:

(10)

平 píng < *bjaeng* 'level'	no mark
上 shǎng < *dzyangX* 'rising'	marked by final *-X*
去 qù < *khjoH* 'departing'	marked by final *-H*
入 rù < *nyip* 'entering'	marked by final *-p, -t*, or *-k*

The names of the tones were evidently chosen to be both descriptive of the tones they denote and examples of them; thus 平 píng < *bjaeng* itself is a píngshēng word, 上 shàng ~ shǎng < *dzyangX* is a shǎngshēng word, and so forth. To preserve this iconicity in modern pronunciation, when "上" is used as the name of the Middle Chinese tone, it is conventionally given the pronunciation *shǎng* (rather than *shàng*, the regular modern Mandarin reflex of MC *dzyangX*), because most shǎngshēng words have tone 3 in Mandarin. (However, shǎngshēng words that had voiced obstruent initials in Middle Chinese, including 上 *dzyangX* itself, regularly have Mandarin tone 4.) The rùshēng category includes all and only those words that ended in *-p*, *-t*, or *-k*; these codas have been lost in Mandarin but are preserved in some southern dialects, such as Cantonese.

Note that the four tones of Middle Chinese do not correspond in a simple way to the four tones of modern Mandarin: Middle Chinese píngshēng words regularly have Mandarin tone 1 or tone 2; shǎngshēng words have tone 3 or tone 4; qùshēng words have tone 4; and rùshēng words may have tone 1, 2, 3, or 4 in a pattern that is rather irregular in standard Mandarin.

2.1.2.2 The Middle Chinese initials

The initial consonants of Middle Chinese, as they are transcribed in our notation, are listed in Table 2.3, together with their Chinese names according to one widely used

system, that of Dīng Shēngshù and Lǐ Róng (1981); the Chinese name of each initial is a word that had that initial in Middle Chinese. The capitalized notations in the second column are cover symbols for the sets of initials listed to their right. We call initials of the types *P-* and *K-* "grave initials"; the others are "acute initials." The numbers in square brackets in Table 2.3 refer to notes after the table. (A more detailed discussion of the Middle Chinese initial consonants, and other variants of the traditional terminology, may be found in Baxter 1992:45–61.)

Lists of Middle Chinese initials also frequently include 非 Fēi, 敷 Fū, 奉 Fèng, and 微 Wēi, but these are simply the labiodental counterparts of *p-* (幫 Bāng), *ph-* (滂 Pāng), *b-* (並 Bìng), and *m-* (明 Míng), respectively. Although the four names for labiodental initials are frequently used with reference to Middle Chinese, to use them for initial consonants of the *Qièyùn* system is anachronistic: the labiodentals had not yet developed in the Early Middle Chinese of the *Qièyùn* system, so we do not distinguish them in our notation.

TABLE 2.3 The initial consonants of Middle Chinese

1	*P-*	*p-* 幫	*ph-* 滂	*b-* 並	*m-* 明				
2	*T-*	*t-* 端	*th-* 透	*d-* 定	*n-* 泥	*l-* 來			
3	*Tr-*	*tr-* 知	*trh-* 徹	*dr-* 澄	*nr-* [1] 娘				
4	*Ts-*	*ts-* 精	*tsh-* 清	*dz-* 從			*s-* 心	*z-* 邪	
5	*Tsr-*	*tsr-* 莊	*tsrh-* 初	*dzr-* 崇			*sr-* 生	*zr-* [2]	
6	*Tsy-*	*tsy-* 章	*tsyh-* 昌	*dzy-* [3] 禪	*ny-* 日		*sy-* 書	*zy-* 船	*y-* [4] 以
7	*K-*	*k-* 見	*kh-* [5] 溪	*g-* 群	*ng-* 疑				
8		*'-* 影	*x-* 曉	*h-* 匣					*hj-* [6] 云

Notes on Table 2.3:

[1] Y. R. Chao (1941) pointed out that *n-* and *nr-* are in complementary distribution and proposed that they need not be distinguished; accordingly, sometimes the name 泥 Ní is used for both our *n-* and our *nr-*. However, the distinction is usually maintained in fǎnqiè spellings, and we retain it in our notation.

[2] The initials *dzr-* and *zr-* were not distinguished in the *Guǎngyùn*, and hence *zr-* has no traditional name. However, the Wáng Rénxù *Qièyùn* does have a distinct initial *zr-*, and we make the distinction in our notation.

[3] Nowadays, the more common pronunciation of the character 禪 is probably *chán* (meaning 'meditation; Chán or Zen Buddhism'), but as the name of this initial, Dīng and Lǐ (1981) give the other pronunciation *shàn* (meaning 'abdicate').

[4] Before the analysis of fǎnqiè spellings showed them to be distinct initials, MC *y-* (以 Yǐ) and *hj-* (云 Yún) were treated as a single initial with the traditional name 喻 Yù. Since in the rhyme tables *y-* (以 Yǐ) is always placed in division IV (sìděng 四等) and *hj-* (云 Yún) in division III (sānděng 三等), a common alternative terminology refers to *y-* (以 Yǐ) as "喻四 Yù sì" and to *hj-* (云 Yún) as "喻三 Yù sān"; we will sometimes use these terms also.

[5] According to current dictionaries, the character 溪 is pronounced xī in Mandarin, not the "qī" that might be expected from its Middle Chinese reading *khej*; some dictionaries do include qī as an older reading.

[6] The traditional initials 匣 Xiá and 云 Yún are in complementary distribution, which is why they are both written with *h-* in our notation, but the traditional terminology distinguishes them. In context, they can always be distinguished in our notation as well: all cases of *h-* before a division-III final represent 云 Yún (including those written with *-i-* rather than *-j-*, e.g., 隕 yǔn < *hwinX* 'fall down'). All cases of *h-* before other finals represent 匣 Xiá. In lists and tables such as this one, we distinguish them by writing *h-* for 匣 Xiá and *hj-* for 云 Yún, even though an *h-* representing 云 Yún is not always followed by *-j-* in spelling.

2.1.2.3 The Middle Chinese finals

The most convenient way to present the finals of Middle Chinese is by their distributional classes: in traditional terminology, these are (1) division-I finals, (2) division-II finals, (3) division-IV finals, and (4) division-III finals. (Actually, in the Early Middle Chinese of the *Qièyùn*, the division-I finals and the division-IV finals occur with exactly the same set of initials and are a single distributional class, but it is conventional to treat them as separate categories because of how they are represented in the rhyme tables.) Words with division-I, division-II, and division-IV finals together constitute the class of syllables that we call "type A" (following Pulleyblank 1977–1978); words with division-III finals belong to "type B."[9] In our Old Chinese reconstruction, the type A syllables are reconstructed with pharyngealized onsets, as opposed to type B syllables, which have no pharyngealization (see section 3.1.1).

In our Middle Chinese notation, the letters or digraphs *a, e, i, o, u, ae, ea,* and "+" (plus sign, mnemonic for barred-i "ɨ") are treated as main vowels. The main relevant traditional classes of syllables, and the ways to identify them from our notation, are given in Table 2.4.

Since the *Tsy-* initials can only occur with division-III finals, for conciseness we adopt the spelling convention that a prevocalic *-j-* in the final is omitted after *Tsy-*; thus 章 zhāng has the Middle Chinese initial *tsy-* and the final *-jang*, but we write it as *tsyang* rather than "*tsyjang,*" since the *-j-* is redundant in this context.

The division-I finals of Middle Chinese are listed in Table 2.5, along with the names of the *Guǎngyùn* rhymes in which they occur.[10] As with the other tables below, numbers in square brackets refer to notes below the table. In many cases several finals are included in the same rhyme: e.g., the 東 Dōng rhyme includes words with the finals *-uwng* and *-juwng*. Note that rùshēng finals—those with final voiceless stops—are associated with the corresponding finals having nasals at the same place of articulation; thus

TABLE 2.4 Types of Middle Chinese syllables

Division	traditional term	Middle Chinese notation and examples
I	yīděng 一等	contains *-a-*, *-o-*, or *-u-* but no *-e-* and no preceding *-j-*: 綱 gāng < MC *kang*, 本 běn < MC *pwonX*, 東 dōng < MC *tuwng*.
II	èrděng 二等	contains *-ae-* or *-ea-* but no preceding *-j-*: 間 jiān < MC *kean*, 白 bái < MC *baek*, 詐 zhà < MC *tsraeH*.
III	sānděng 三等[a]	contains *-i-*, a *-j-* to the left of the vowel (including "+"), or both; or has an initial spelled with *-y-*: 真 zhēn < MC *tsyin*, 長 cháng < MC *drjang*, 丙 bǐng < MC *pjaengX*, 貴 guì < MC *kjw+jH*, 章 zhāng < MC *tsyang*.
IV	sìděng 四等	contains *-e-* (but not *-a-*), with no preceding *-j-* or *-y-*: 天 tiān < MC *then*, 圭 guī < MC *kwej*, 閉 bì < MC *pejH*.

[a] In contexts where there is a chóngniu 重紐 distinction (explained in section 5.2.1 and in Baxter 1992:75–81), division-III chóngniǔ syllables have either the vowel *-i-* or a *-j-* to the left of some other vowel, but not both: 乙 yǐ < MC *'it*, 龜 guī < MC *kwij*, 碑 bēi < MC *pje*, 廟 miào < MC *mjew*H are all division-III chóngniǔ syllables. Division-IV chóngniǔ syllables have both prevocalic *-j-* and *-i-* (possibly with an intervening -w-): 一 yī < MC *'jit*, 季 jì < MC *kjwij*H, 卑 bēi < MC *pjie*, 妙 miào < MC *mjiew*H are all division-IV chóngniǔ syllables.

-uwng, *-uwngX*, *-uwngH*, and *-uwk* are treated as a set, as if *-uwk* were *-uwng* in a fourth tone. Another analysis would be to say that Middle Chinese had only three tones but that stop-final syllables had no tonal distinctions.

TABLE 2.5 Division-I finals of Middle Chinese and their *Guǎngyùn* rhymes

	-X		*-H*		*-p, -t, -k*
-uwng	東 *tuwng*	董 *tuwngX*	送 *suwngH*	*-uwk*	屋 *'uwk*
-owng [1]	冬 *towng*	—	宋 *sowngH*	*-owk*	沃 *'owk*
-u	模 *mu*	姥 *muX*	暮 *muH*		
-aj, -waj [2]			泰 *thajH*		
-woj	灰 *xwoj*	賄 *xwojX*	隊 *dwojH*		
-oj	哈 *xoj*	海 *xojX*	代 *dojH*		
-won	魂 *hwon*	混 *hwonX*	慁 *hwonH*	*-wot*	沒 *mwot*
-on [3]	痕 *hon*	很 *honX*	恨 *honH*	*-ot*	—
-an [4]	寒 *han*	旱 *hanX*	翰 *hanH*	*-at* [4]	曷 *hat*
-wan [4]	桓 *hwan*	緩 *hwanX*	換 *hwanH*	*-wat* [4]	末 *mat*
-aw	豪 *haw*	皓 *hawX*	号 *hawH*		
-a [4]	歌 *ka*	哿 *kaX*	箇 *kaH*		
-wa [4]	戈 *kwa*	果 *kwaX*	過 *kwaH*		
-ang, -wang	唐 *dang*	蕩 *dangX*	宕 *dangH*	*-ak, -wak*	鐸 *dak*
-ong, -wong	登 *tong*	等 *tongX*	嶝 *tongH*	*-ok, -wok*	德 *tok*
-uw	侯 *huw*	厚 *huwX*	候 *huwH*		
-om	覃 *dom*	感 *komX*	勘 *khomH*	*-op*	合 *hop*
-am	談 *dam*	敢 *kamX*	闞 *khamH*	*-ap*	盍 *hap*

Notes on Table 2.5:

[1] There is no separate shǎngshēng rhyme corresponding to 冬 Dōng; a few words with the final *-owngX* are included, with special annotations, in the 腫 Zhǒng rhyme (which otherwise includes only words with *-jowngX*); evidently, words with the final *-owngX* were considered too few to justify a separate rhyme.

[2] A few rhymes with the coda *-j* occur only in qùshēng; this is explained in section 5.5.2.2.

[3] Although *-won* and *-on* are separate rhymes in the other tones, there is no separate rhyme for *-ot*; the few words in *-ot* are included in the 沒 mò rhyme with words in *-wot*.

[4] The *Qièyùn* does not have separate rhymes for *-an* vs. *-wan*, *-at* vs. *-wat*, or *-a* vs. *-wa*, but the *Guǎngyùn* separates them, as in the table. After labial initials, there is no contrast between *-an*, *-at*, *-a* on the one hand and *-wan*, *-wat*, *-wa* on the other, and the *Qièyùn*'s fǎnqiè spellings usually imply the former: e.g., 末 mò < *mat* 'end of a branch' is spelled in the Wáng Rénxù *Qièyùn* manuscript as "莫割反," i.e., *m(ak)* + *(k)at* = *mat*. But the *Guǎngyùn* usually treats labial-initial syllables with these finals as if they had *-w-* and puts them in the rhymes with *-wan*, *-wat*, *-wa*. Our notation follows the *Qièyùn* rather than the *Guǎngyùn* on this; thus we write 末 mò as MC *mat*—even though the *Guǎngyùn* uses 末 mò < *mat* as the name of the rhyme containing words with *-wat*, as if it were "*mwat*."

The division-II finals and their *Guǎngyùn* rhymes are listed in Table 2.6. Note that they all have vowels written as *-ae-* or *-ea-*, with no preceding *-j-* (or *-y-*).

The division-IV finals and their *Guǎngyùn* rhymes are listed in Table 2.7.

TABLE 2.6 Division-II finals of Middle Chinese and their *Guǎngyùn* rhymes

		-X	*-H*		*-p, -t, -k*
-aewng	江 *kaewng*	講 *kaewngX*	絳 *kaewngH*	*-aewk*	覺 *kaewk*
-ea, -wea	佳 *kea*	蟹 *heaX*	卦 *kweaH*		
-eaj, weaj	皆 *keaj*	駭 *heajX*	怪 *kweajH*		
-aej, -waej			夬 *kwaejH*		
-aen, -waen	刪 *sraen*	潸 *sraenX*	諫 *kaenH*	*-aet, -waet*	鎋 *haet*
-ean, -wean	山 *srean*	產 *sreanX*	襉 *keanH*	*-eat, -weat*	黠 *heat*
-aew	肴 *haew*	巧 *khaewX*	效 *haewH*		
-ae, -wae	麻 *mae*	馬 *maeX*	禡 *maeH*		
-aeng, -waeng	庚 *kaeng*	梗 *kaengX*	映 *'jaengH*	*-aek, -waek*	陌 *maek*
-eang, -weang	耕 *keang*	耿 *keangX*	諍 *tsreangH*	*-eak, -weak*	麥 *meak*
-eam	咸 *heam*	豏 *heamX*	陷 *heamH*	*-eap*	洽 *heap*
-aem	銜 *haem*	檻 *haemX*	鑑 *haemH*	*-aep*	狎 *haep*

TABLE 2.7 Division-IV finals of Middle Chinese and their *Guǎngyùn* rhymes

		-X	*-H*		*-p, -t, -k*
-ej, -wej	齊 *dzej*	薺 *dzejX*	霽 *dzejH*		
-en, -wen	先 *sen*	銑 *senX*	霰 *senH*	*-et, -wet*	屑 *set*
-ew	蕭 *sew*	篠 *sewX*	嘯 *sewH*		
-eng, -weng	青 *tsheng*	迥 *hwengX*	徑 *kengH*	*-ek, -wek*	錫 *sek*
-em	添 *them*	忝 *themX*	栝 *themH*	*-ep*	帖 *thep*

For the division-III rhymes we give two tables: Table 2.8 presents finals with vocalic (or zero) codas; Table 2.9 presents finals with nasal or stop codas. In our Middle Chinese notation, the division-III finals are those that are spelled with *-i-* as the main vowel, or with *-j-* or *-y-* to the left of the main vowel, or both. Some finals are spelled with both *-j-* before the vowel and *-i-* as all or part of the main vowel (possibly with an intervening *-w-*). This notation is used to distinguish the so-called chóngniǔ 重紐 'repeated-initial' finals, which call for special comment.

An example of a rhyme with chóngniǔ finals is the 支 Zhī rhyme, in which there are two homonym groups for syllables with MC initial *p-*: one with the head word 碑 bēi < MC *pje* 'pillar' and one with the head word 卑 bēi < MC *pjie* 'low, humble'. The term chóngniǔ 'repeated initial' refers to the fact that rhymes like this include more than one syllable with the same initial consonant—in this case, *p-*. The phonetic nature of the contrast between these syllables has long been debated, but in the rhyme tables, 碑 bēi < *pje* is placed in division III, and 卑 bēi < *pjie* in division IV. In our notation, the division-IV chóngniǔ finals are those like *-jie* that are spelled with both prevocalic *-j-* and *-i-*; division-III chóngniǔ finals like *-je* have either provocalic *-j-* or *-i-* but not both. The distinction is limited to syllables with grave initials, that is, types *P-* and *K-*. (For a more detailed discussion of the chóngniǔ distinctions see Baxter 1992:75–81.)

The grave-initial syllables in the rhymes 幽 Yōu and 清 Qīng are also placed in division-IV in the rhyme tables, and we write the finals of these syllables as *-jiw* and *-j(w)ieng,* respectively; these can be considered division-IV chóngniǔ syllables in a broad sense, even though there are no contrasting division-III syllables in the same rhyme.

TABLE 2.8 Division-III finals of Middle Chinese and their *Guǎngyùn* rhymes (vocalic codas)

		-X	*-H*
-je, -jwe, -jie, -jwie	支 *tsye*	紙 *tsyeX*	寘 *tsyeH*
-ij, -wij, -jij, -jwij	脂 *tsyij*	旨 *tsyijX*	至 *tsyijH*
-i	之 *tsyi*	止 *tsyiX*	志 *tsyiH*
-j+j, -jw+j	微 *mj+j*	尾 *mj+jX*	未 *mj+jH*
-jo	魚 *ngjo*	語 *ngjoX*	御 *ngjoH*
-ju	虞 *ngju*	麌 *ngjuX*	遇 *ngjuH*
-jew, -jiew	宵 *sjew*	小 *sjewX*	笑 *sjewH*
-ja [1]	歌 *ka*	哿 *kaX*	箇 *kaH*
-jwa [1]	戈 *kwa*	果 *kwaX*	過 *kwaH*
-jae	麻 *mae*	馬 *maeX*	禡 *maeH*
-juw	尤 *hjuw*	有 *hjuwX*	宥 *hjuwH*
-jiw	幽 *'jiw*	黝 *'jiwX*	幼 *'jiwH*

Note on Table 2.8:

[1] There are only a few marginal words with the finals *-ja* and *-jwa*; they are of late origin and cannot be reconstructed for Old Chinese.

TABLE 2.9 Division-III finals of Middle Chinese and their *Guǎngyùn* rhymes (nasal and stop codas)

		-X	*-H*		*-p, -t, -k*
-juwng	東 *tuwng*	董 *tuwngX*	送 *suwngH*	*-juwk*	屋 *'uwk*
-jowng	鐘 *tsyong*	腫 *tsyongX*	用 *yowngH*	*-jowk*	燭 *tsyowk*
-in, -win, -jin [1]	真 *tsyin* 臻 *tsrin*	軫 *tsyinX*	震 *tsyinH*	*-it, -wit-, -jit*	質 *tsyit* 櫛 *tsrit*
-win, -jwin [1]	諄 *tsywin*	準 *tsywinX*	稕 *tsywinH*	*-wit, -jwit*	術 *zywit*
-jun	文 *mjun*	吻 *mjunX*	問 *mjunH*	*-jut*	物 *mjut*
-j+n	欣 *xj+n*	隱 *'j+nX*	焮 *xj+nH*	*-j+t*	迄 *xj+t*
-jon, -jwon	元 *ngjwon*	阮 *ngjwonX*	願 *ngjwonH*	*-jot, -jwot*	月 *ngjwot*
-jen, -jwen, *-jien, -jwien*	仙 *sjen*	獮 *sjenX*	線 *sjenH*	*-jet, -jwet,* *-jiet, -jwiet*	薛 *sjet*
-jang, -jwang	陽 *yang*	養 *yangX*	漾 *yangH*	*-jak, -jwak*	藥 *yak*
-jaeng, -jwaeng	庚 *kaeng*	梗 *kaengX*	映 *'jaengH*	*-jaek*	陌 *maek*
-jeng, -jieng, *-jwieng*	清 *tshjeng*	靜 *dzjengX*	勁 *kjiengH*	*-jek, -jiek,* *-jwiek*	昔 *sjek*
-ing, -wing	蒸 *tsying*	拯 *tsyingX*	證 *tsyingH*	*-ik, -wik*	職 *tsyik*
-im, -jim	侵 *tshim*	寢 *tshimX*	沁 *tshimH*	*-ip, -jip*	緝 *tship*
-jem, -jiem	鹽 *yem*	琰 *yemX*	豔 *yemH*	*-jep, -jiep*	葉 *yep*
-jaem	嚴 *ngjaem*	儼 *ngjaemX*	釅 *ngjaemH*	*-jaep*	業 *ngjaep*
-jom	凡 *bjom*	范 *bjomX*	梵 *bjomH*	*-jop*	乏 *bjop*

Note on Table 2.9:

[1] The *Qièyùn* has a single rhyme 真 Zhēn that the *Guǎngyùn* split into two rhymes, 真 Zhēn and 諄 Zhūn. The general pattern in the *Guǎngyùn* is that words with *-in* and grave-initial words with the division-III chóngniǔ final *-win* are included in 真 Zhēn, while acute-initial words in *-win* and division-IV chóngniǔ words in *-jwin* are placed in 諄 Zhūn.

The Middle Chinese notation presented above is a slightly modified version of the notation introduced in Baxter (1992:27–85). The differences between that notation and the present one are exactly these:

1. We replace the initial glottal stop ʔ- of Baxter (1992) with an apostrophe '- (APOSTROPHE, Unicode U+0027); this represents the initial consonant traditionally called 影 Yǐng.
2. The Middle Chinese finals written in Baxter (1992) as "-ɛɨ" and "-wɛɨ" (in the 佳 Jiā rhyme of the *Guǎngyùn*) are replaced by *-ea* and *-wea,* respectively; otherwise, "ɨ" (barred-i) is replaced by "+" (PLUS SIGN, U+002B), "æ" is replaced by *ae*, and "ɛ" is replaced by *ea*.

2.2 Old Chinese rhyme evidence

Many pre-Qín texts contain rhymed passages, but the primary corpus traditionally used in Old Chinese reconstruction is the *Shījīng*《詩經》, the earliest collection of Chinese

poetry, almost all of which employs rhyme. One of the requirements for an adequate reconstruction of Old Chinese is that it should account for which words rhyme with each other in the *Shījīng* and—equally importantly—which words do *not* rhyme with each other.

Like other early canonical Chinese texts, the *Shījīng* is generally read from a text that uses some version of the script that has been standard for about two millennia. Even though many of the words long ago fell out of use in speech, dictionaries give modern pronunciations for every character, and these are the pronunciations used in recitation. When reading aloud, it is easy to notice that the original rhyme words do not always rhyme anymore. Consider Ode 8, reproduced below as read with modern pronunciation; rhyme words are in small capitals and are transcribed in Middle Chinese on the right.

(11) Ode 8: Guó fēng: Zhōu nán: Fúyǐ 國風・周南・芣苢 rhyme words

1	采采芣苢、薄言采之	cǎicǎi fúyǐ, bó yán CǍI zhī	采 cǎi < MC *tshojX*
	采采芣苢、薄言有之	cǎicǎi fúyǐ, bó yán YǑU zhī	有 yǒu < MC *hjuwX*
2	采采芣苢、薄言掇之	cǎicǎi fúyǐ, bó yán DUŌ zhī	掇 duó < MC *twat*
	采采芣苢、薄言捋之	cǎicǎi fúyǐ, bó yán LUŌ zhī	捋 luō < MC *lwat*
3	采采芣苢、薄言袺之	cǎicǎi fúyǐ, bó yán JIÉ zhī	袺 jié < MC *ket*
	采采芣苢、薄言襭之	cǎicǎi fúyǐ, bó yán XIÉ zhī	襭 xié < MC *het*

1	Colorful is the plantain, we GATHER it	采 cǎi < MC *tshojX*
	Colorful is the plantain, we HOLD it	有 yǒu < MC *hjuwX*
2	Colorful is the plantain, we PICK it	掇 duō < MC *twat*
	Colorful is the plantain, we PLUCK it	捋 luō < MC *lwat*
3	Colorful is the plantain, we HOLD IT IN OUR SKIRTS	袺 jié < MC *ket*
	Colorful is the plantain, WE TUCK IT UP IN OUR SKIRTS	襭 xié < MC *het*

From the structure of the poem, it is easy to identify the rhyme words: they are the only words that change from one stanza to the next. Stanzas 2 and 3 still rhyme in both Middle and modern Chinese, but in the first stanza, 采 cǎi < MC *tshojX* and 有 yǒu < MC *hjuwX* are not a good rhyme in either Middle or modern Chinese. This rhyme is by no means exceptional, though, and it follows a regular pattern; there are many parallel examples. An adequate reconstruction of Old Chinese must be able to account for such rhymes.

When interpreting rhymes or other poetic devices as evidence about pronunciation, one must not be too naive: literature is subject to its own conventions and cannot always be assumed to reflect spoken language in a simple way. The intended audience for works of literature frequently does not coincide with the population speaking any

single dialect, and compromises of one kind or another are to be expected (see Baxter 1992:87–97 for further discussion). But Old Chinese rhyming shows no signs of the elaborate and often artificial conventions that came to be associated with Chinese poetry in the Táng 唐 dynasty (618–907) and later, when rhyming standards were strictly defined in reference books and observed regardless of the poet's own dialect background. We have no evidence of rhyme books or other prescriptive literature about poetry from the Old Chinese period. Of course, at any period, newly composed poetry may be influenced by existing poetry: even in pre-Qín times, for example, poets might sometimes have imitated rhymes in well-known poetry, even if they did not reflect their own pronunciation. But on the whole, it is safe to assume that Old Chinese rhymes were largely based on the phonology of actual speech.

As mentioned in section 1.1.1, the foundations for analyzing Old Chinese rhyming were laid by Chinese scholars of the Qīng dynasty; the culmination of this research was the work of Wáng Niànsūn 王念孫 (1744–1832) and Jiāng Yǒugào 江有誥 (?–1851). Their practice, still widely followed today, was to identify groups of words that rhymed in Old Chinese (*yùnbù* 韻部), defining them in terms of the rhymes of the *Guǎngyùn,* and using the names of *Guǎngyùn* rhymes as labels for these groups.

Several versions of the traditional rhyme categories are in use today. Probably the most influential version is that given in Wáng Lì's (1999) textbook *Gǔdài Hànyǔ*《古代漢語》(Ancient Chinese). This version is summarized in Table 2.10. Wáng Lì did reconstruct phonetic values for each rhyme group, although the group names are most frequently used without them; his rhyme reconstructions are included in the table (in quotation marks, so as not to be confused with our reconstructions). As is traditional, the rhymes are arranged into three categories: *yīnshēng* 陰聲, those with no coda or a vocalic coda; *rùshēng* 入聲, those with voiceless stop codas *-k, *-t, or *-p; and *yángshēng* 陽聲, those with nasal codas. The division into three categories (甲 jiǎ, 乙 yǐ, and 丙 bǐng, or A, B, and C) is based on the position of articulation of the coda, if any: in Wáng Lì's reconstruction, the A category have zero or velar codas, the B category have *-i or dental codas, and the C category have labial codas.

Wáng Lì's system of rhyme categories is very little changed from that of the Qīng scholars. The major revision is one proposed by Wáng Lì himself ([1937] 1958): to divide the traditional 脂 Zhī group into a 脂 Zhī group (number 18 in Table 2.10), reconstructed with a front vowel, and a 微 Wēi group (number 21 in Table 2.10), reconstructed with a non-front vowel (Wáng Lì's "*-ei" and "*-əi," respectively).

The Qīng scholars' analysis is justly considered a major intellectual achievement, and it is often assumed that the task of identifying Old Chinese rhyme categories is now complete. Proposed reconstruction systems (such as that of Fang-kuei Li 1971 and the proposals of Pulleyblank 1977–1978) are usually not based on the early rhymes themselves but rather on the traditional analysis of them. This tendency is reinforced by the fact that the traditional analysis seems to work well in the sense that when reading early poetry, one rarely encounters rhymes that are inconsistent with it.

But while the traditional analysis is generally consistent with the rhymes that occur, it does not adequately explain why certain rhymes do *not* occur. It is easy to notice

TABLE 2.10 Old Chinese rhyme groups according to Wáng Lì, with his reconstructions

	陰聲 yīnshēng (zero or vocalic coda)			入聲 rùshēng (voiceless stop coda)			陽聲 yángshēng (nasal coda)		
甲類 jiǎlèi "type A"	1.	之 Zhī	"*-ə"	2.	職 Zhí	"*-ək"	3.	蒸 Zhēng	"*-əng"
	4.	幽 Yōu	"*-u"	5.	覺 Jué	"*-uk"	6.	冬 Dōng	"[*-ung]"[a]
	7.	宵 Xiāo	"*-ô"	8.	藥 Yào	"*-ôk"			
	9.	侯 Hóu	"*-o"	10.	屋 Wū	"*-ok"	11.	東 Dōng	"*-ong"
	12.	魚 Yú	"*-a"	13.	鐸 Duó	"*-ak"	14.	陽 Yáng	"*-ang"
	15.	支 Zhī	"*-e"	16.	錫 Xī	"*-ek"	17.	耕 Gēng	"*-eng"
乙類 yǐlèi "type B"	18.	脂 Zhī	"*-ei"	19.	質 Zhì	"*-et"	20.	真 Zhēn	"*-en"
	21.	微 Wēi	"*-əi"	22.	物 Wù	"*-ət"	23.	文 Wén	"*-ən"
	24.	歌 Gē	"*-ai"	25.	月 Yuè	"*-at"	26.	元 Yuán	"*-an"
丙類 bǐnglèi "type C"				27.	緝 Qī	"*-əp"	28.	侵 Qīn	"*-əm"
				29.	葉 Yè	"*-ap"	30.	談 Tán	"*-am"

a. Wáng Lì believed that 冬 Dōng (number 6) and 侵 Qīn (number 28) were a single rhyme group at the time of the *Shījīng*, but had split into two by the time of the Warring States period (475–221 BCE) because of a sound change; see Wáng Lì (1980:8).

cases where words rhymed in Old Chinese but do not rhyme now, as with Ode 8, quoted above; they are obvious when the *Shījīng* is read aloud. But it is harder to identify cases where words that do rhyme now did *not* rhyme in Old Chinese: to do this, one has to check the whole corpus to verify that certain types of rhymes are absent.

Cases where words no longer rhyme result from splits in Old Chinese rhymes, as when 采 cǎi < MC *tshojX* and 有 yǒu < MC *hjuwX*, which rhyme in Old Chinese in Ode 8.1, went into different rhymes in Middle Chinese. Cases where words rhyme now but did not rhyme then result from mergers of Old Chinese rhymes. Since the splits are more easily noticed than the mergers, scholars who investigated Old Chinese rhyming initially had the impression that Old Chinese made far fewer rhyme distinctions than later varieties of Chinese. Over time, their analysis gradually became more fine-grained, but recent research makes it clear that it was not fine-grained enough.

For example, the early Qīng scholar Gù Yánwǔ 顧炎武 (1613–1682) identified only ten rhyme groups for Old Chinese—compared with thirty in Wáng Lì's list. As mentioned above, the Qīng scholars used the rhymes of the *Guǎngyùn* as the units of their analysis. Gù Yánwǔ's third rhyme group includes words from the *Guǎngyùn* rhymes 魚 Yú (MC *-jo*), 虞 Yú (MC *-ju*), and 侯 Hóu (MC *-uw*), among others. He was presumably influenced by the fact that there are *Shījīng* rhymes between the *Guǎngyùn*'s 魚 Yú and 虞 Yú rhymes, and also between the 虞 Yú and 侯 Hóu rhymes, which may have given the impression that these three *Guǎngyùn* rhymes all rhymed together in Old Chinese.

It was apparently Jiāng Yǒng 江永 (1681–1762) and Duàn Yùcái 段玉裁 (1735–1815) who noticed that those words of the *Guǎngyùn*'s 虞 Yú rhyme (MC *-ju*) that rhyme in Old Chinese with the *Guǎngyùn*'s 魚 Yú rhyme (MC *-jo*) are a separate group from those that rhyme with the *Guǎngyùn*'s 侯 Hóu rhyme (MC *-uw*); moreover, words from the *Guǎngyùn*'s 魚 Yú and 侯 Hóu rhymes do not rhyme with each other. So they separated Gù Yánwǔ's third rhyme group into a 魚 Yú rhyme group (our *-a, number 12 in Table 2.10) and a 侯 Hóu rhyme group (our *-o, number 9 in Table 2.10). Gù Yánwǔ had been confused by the fact that there had been a partial merger of the Old Chinese 魚 Yú rhyme group (*-a) and the 侯 Hóu rhyme group (*-o), words from both groups winding up in the *Guǎngyùn*'s 虞 Yú rhyme (MC *-ju*).[11]

In fact, Old Chinese rhyme distinctions that were later lost through mergers are extremely difficult to detect inductively, just by going through the *Shījīng* text, unless one begins with some hypotheses about where the distinctions might be. Suppose we have a group of just fifteen rhyme words, and we want to check whether it should be divided into two groups, but we have no idea which words were in which original group. There are 16,368 ways to divide a group of fifteen rhyme words into two rhyme groups, so checking all the possible solutions one by one would be a huge task.[12] As a practical matter, we will make progress with the problem only if we start with some specific hypothesis about how rhyme groups should be divided. In the case of Gù Yánwǔ's rhyme group 3, the fact that the *Guǎngyùn* distinguished 魚 Yú (MC *-jo*) from 侯 Hóu (MC *-uw*) probably suggested to Jiāng Yǒng and Duàn Yùcái the hypothesis that these

two rhymes were distinguished in Old Chinese rhyming as well; when checked, this hypothesis turned out to be true.

Recent progress beyond the traditional analysis of Old Chinese rhyming has been driven by hypotheses suggested not by the explicit arrangement of the *Guǎngyùn* itself, but by patterns in the distribution of phonological elements in the Middle Chinese system. For example, the distribution of Middle Chinese prevocalic *-w-* suggested to Jaxontov (1960b) that some cases of MC *-w-* came from Old Chinese labialized initials like *k^{w}-, but that other cases had to come from the diphthongization of original rounded vowels: e.g., 團 tuán 'round; plenty' < MC *dwan* < OC *-on, contrasting with syllables like 壇 tán 'altar' < MC *dan* < OC *-an. We call this the "rounded-vowel hypothesis." Both 團 tuán and 壇 tán are included in the traditional 元 Yuán rhyme group of Old Chinese (number 26 in Table 2.10), but the rounded-vowel hypothesis says that they must have had different main vowels, and thus predicts that they should not rhyme with each other in Old Chinese. A careful analysis of the rhyme evidence shows that this prediction is correct (Baxter 1992:370–389).[13] Similar distributional arguments led to the "front-vowel hypothesis," which predicts the existence of still more rhyme distinctions that were overlooked in the traditional analysis; these predictions are also supported by the rhyme data. (Both hypotheses are discussed in more detail in section 5.2.1.)

Let us recapitulate. In using rhyme evidence to reconstruct Old Chinese, discovering which rhymes *do not* occur is as important as discovering which rhymes do occur. Discovering which rhymes do occur is easy; they are in the corpus for us to see. But discovering which rhymes do not occur is a more subtle matter. It is difficult to discover such distinctions inductively just by looking through the corpus; we have to be guided by some kind of hypothesis that suggests what distinctions to look for. The Qīng philologists relied on hypotheses suggested by the arrangement of the *Guǎngyùn*, and discovered more and more rhyming distinctions as time went on; but there is no reason to assume that they discovered them all. Analyzing the distribution of phonological elements in Middle Chinese has suggested hypotheses about additional rhyme distinctions, which are confirmed by an analysis of the rhyme data. An adequate reconstruction of Old Chinese phonology must account for these distinctions also.

A limitation in the use of rhymes as evidence is that only a minority of Old Chinese words are actually attested as rhymes. Rhymed passages in newly discovered documents can resolve some questions, but even if a word is attested as a rhyme, it may be difficult to reconstruct its pronunciation if there are too few examples. In part this is because the poems originate at different times and places and do not all reflect the same phonological system. (The fact that the traditional rhyme groups are insufficiently fine-grained can give the impression that *Shījīng* rhyming is more uniform than it actually is.)

Based on the use of phonetic elements in the script, and on graphic variants occurring in received texts, the Qīng scholars also made contributions in understanding the

development of Old Chinese initial consonants: they recognized, for example, that the Middle Chinese *Tr-* initials were a secondary development and were originally not distinct from the *T-* initials; similarly, that *n-*, *nr-*, and *ny-* all had a common origin (which we reconstruct as *n-). In this they anticipated many of the results of the linguistic reconstructions of the twentieth century.

2.3 Evidence from the Chinese script

As just noted, rhyme evidence is available only for a minority of Old Chinese words; moreover, rhymes tell us nothing about syllable onsets. A potentially more comprehensive source of evidence is the Chinese script, in which the vast majority of words are written with a phonetic element: either by itself, in so-called loan characters (*jiǎjiè zì* 假借字), or with a semantic element added, in phonetic compounds (*xíngshēng zì* 形聲字 or *xiéshēng zì* 諧聲字). For convenience, we will say that words written with the same phonetic element, with or without an added semantic element, have "xiéshēng connections."

Since the Chinese script has remained frozen without major changes for the last two thousand years, sound changes in the intervening period have often disrupted the relations of phonetic similarity on which the original choice of phonetic elements was based. But this very fact means that the phonetic elements preserved in the script can help us reconstruct earlier pronunciations. Evidence from the script is especially important because of the three kinds of evidence used in traditional approaches to reconstruction—Middle Chinese, Old Chinese rhymes, and the Chinese script—only two, Middle Chinese and the script, tell us anything about syllable onsets.

As with rhymes, in using evidence from the script to reconstruct Old Chinese, it is important to take into account not only which words were written with the same phonetic element, but also which words were *not* written with the same phonetic element. Traditional Chinese philologists noticed cases where initial consonants that were very different in later pronunciation were apparently treated as interchangeable in the early script. For example, Zēng Yùnqián ([1927] 1972) observed that words with the Middle Chinese initials *y-* (traditional name: 喻四 Yù sì = 以 Yǐ) and *d-* (traditional name: 定 Dìng) are often interchanged in different versions of the same text and are often written with the same phonetic element. Here are some examples:

(12) 弋 yì < *yik* 'shoot arrow with string attached' is phonetic in
代 dài < *dojH* 'replace'

(13) 余 yú < *yo* < 'I' is phonetic in
涂 tú < *du* < 'path'

(14) 易牙 Yìyá < MC *yek-ngae*, a proper name, also appears written as
狄牙 Díyá < MC *dek-ngae*.

These facts are often summarized in the saying, familiar to Chinese paleographers, that "Yù sì gǔ guī Dìng 喻四古歸定" ([The initial] 喻四 Yù sì in ancient times went back to [the initial] 定 Dìng). Similar reasoning led scholars to conclude that the Middle Chinese initials *ny-* (traditional name: 日 Rì), *nr-* (娘 Niáng), and *n-* (泥 Ní) all had the same origin, because the same phonetic element could be used to write any of them.

Such observations gave the impression that Old Chinese had a simpler system of initial consonants than Middle Chinese: while traditional Chinese terminology identifies some forty Middle Chinese initials (the exact number depending on how one counts them), Wáng Lì identifies only thirty-two initial consonants for Old Chinese (1999:689–700); Hé Línyí gets by with only nineteen (1998:1). As with rhymes, it is easy to notice cases where initials that seem to be interchangeable in Old Chinese split into two or more different initials later. But the reverse situation, where several Old Chinese initials have merged into one, is not so easily noticed, and such cases have been discovered only gradually.

For example, Pulleyblank (1962–1963) observed that Middle Chinese *d-* had two different Old Chinese sources that are kept quite distinct in the writing system; we now reconstruct them as *d^{ʕ}- and *l^{ʕ}-. Here are some minimal contrasts:

(15) 度 duó < *dak* < *[d]^{ʕ}ak 'measure (v.)'
鐸 duó < *dak* < *l^{ʕ}ak 'a kind of bell'

(16) 屠 tú < *du* < *[d]^{ʕ}a 'butcher (v.)'
涂 tú < *du* < *l^{ʕ}a 'path'

The phonetic elements used to write MC *d-* < OC *d^{ʕ}- are generally separate from those used to write MC *d-* < OC *l^{ʕ}-, and follow a different pattern: phonetics used to write MC *d-* < *d^{ʕ}- are also used to write MC *dzy-* < *d-, MC *t-* < *t^{ʕ}-, and MC *tsy-* < *t-, for example, but rarely MC *y-*. Phonetics used to write *l^{ʕ}-, on the other hand, are frequently used for MC *y-* < *l-, *sy-* < *l̥-, and *th-* < *l̥^{ʕ}-, but rarely for MC *dzy-*, *t-*, or *tsy-*. Karlgren and most of his successors had overlooked this distinction, and it is not widely recognized by paleographers either.

Just as there was more than one Old Chinese source for MC *d-* (定 Dìng), there was also more than one source for MC *y-* (喻四 Yù sì = 以 Yǐ), and the early script does not confuse them. We reconstruct both *l- and *ɢ- (a voiced uvular stop) as sources for MC *y-*, as illustrated by the minimal pairs below:

(17) 陽 yáng < *yang* < *laŋ 'bright'
羊 yáng < *yang* < *ɢaŋ 'sheep'

(18) 譯 yì < *yek* < *lAk 'interpret'
亦 yì < *yek* < *ɢ(r)Ak 'also'

(19) 以 yǐ < *yiX* < *ləʔ 'take, use'
已 yǐ < *yiX* < *ɢ(r)əʔ 'cease; already'

MC *y-* < *ɢ- can generally be distinguished from MC *y-* < *l- because the two have different xiéshēng connections: *y-* < *ɢ- tends to have xiéshēng connections with velars and laryngeals, while *y-* < *l- has xiéshēng connections with MC *sy-* < *l̥-, MC *d-* < *lˤ-, and MC *th-* < *l̥ˤ-.

Old Chinese *ɢ- is one of a set of uvular stops that we reconstruct (modifying a proposal by Pān Wùyún 1997); details are given in section 3.1.2 (see also Sagart and Baxter 2009). The connections with velars result from the fact that when preceded by a presyllabic consonant, Old Chinese uvulars have velar reflexes in Middle Chinese:

(20) 影 yǐng < *'jaengX* < *qraŋʔ 'shadow (n.)'
景 jǐng < *kjaengX* < *C.qraŋʔ 'bright; image'

Both these words are commonly written as 景 in early texts and are presumably derived from the same root, though at this point we cannot specify what the preinitial consonant in 景 *C.qraŋʔ was.

The uvular hypothesis also accounts for other distinctions among phonetic elements that have not been previously noticed. For example, 工 gōng < *kuwng* 'work' and 公 gōng < *kuwng* 'father; prince' are homonyms in Middle Chinese, and have previously been reconstructed as homonyms in Old Chinese as well; but in pre-Qín documents, the words written with 工 gōng and the words written with 公 gōng do not overlap at all (see Bái Yúlán 2008:254–257), and this fact calls for some explanation. We account for this by reconstructing

(21) 工 gōng < *kuwng* < *kˤoŋ 'work'
公 gōng < *kuwng* < *C.qˤoŋ 'father; prince'.

This reconstruction also explains why 公 gōng < *C.qˤoŋ was used as phonetic in these examples, each reconstructed with a uvular initial:

(22) 瓮 wèng < *'uwngH* < *qˤoŋ-s 'earthen jar'
容, 宂 róng < *yowng* < *[ɢ](r)oŋ 'contain'[14]

Paleographers believe that 公 gōng < *C.qˤoŋ was the original graph for {瓮} wèng < *'uwngH* < *qˤoŋ-s 'earthen jar' (Jì Xùshēng 2010:83–84). As for 容 róng < *[ɢ](r)oŋ 'contain', in the standard script it appears to be composed of 宀 mián 'house; building' and 谷 gǔ 'valley'; but the original phonetic element was 公 gōng < *C.qˤoŋ: the *Shuōwén jiězì* cites a gǔwén 古文 'ancient script' form 宂, composed of 宀 mián and 公 gōng (*SWGL* 3236a), and forms from bronze inscriptions confirm this (*GG* 6.803–804); in the early script, the shapes 厶 and 口 are often interchangeable.

The example of 容 róng < *[ɢ](r)oŋ, where the original phonetic 公 gōng < *C.qˤoŋ is not apparent from the standard character, illustrates a crucial problem with traditional reconstructions of Old Chinese based on the standard script. That script took more or less its present form during the Qín and Hàn dynasties (221–207 BCE and 206 BCE–220 CE, respectively), more than a thousand years after the beginning of the Old Chinese period. How safe is it to use this script as a guide to Old Chinese phonology?

Until recently the answer has not been clear: as noted in section 1.1.2 above, the only available large samples of pre-Qín writing were the oracular inscriptions of the late Shāng dynasty and bronze inscriptions. Both kinds of texts tend to be short and formulaic, and the domain of their content is limited; many Old Chinese words are simply not attested in them. This is probably why Old Chinese reconstruction in the past has generally relied on the phonetic elements of the standard script, not the scripts of the pre-Qín period. Even though Karlgren was familiar with the scripts of the oracular and bronze inscriptions, he deliberately excluded from his *Grammata serica recensa* (*GSR*) those pre-Qín characters that did not have counterparts in the later standard script (*GSR*, p. 5): for example, for {容} róng 'contain', he included the character 容 (*GSR* 1187a) but not the earlier, more revealing form 宂 and did not recognize the connection of these graphs to 公 gōng (*GSR* 1173a).

From the scripts of recently discovered pre-Qín documents, we now have more and better evidence about Old Chinese phonology than was available to earlier researchers, and we can see the importance to Old Chinese reconstruction of careful paleographic research. In some cases, the standard script simply fails to give enough information; in other cases it is positively misleading, because it reflects the phonology of Qín and Hàn rather than Old Chinese. We give two examples here; additional examples are given in section 3.4 below.

設 **shè < syet < *ŋ̊et 'set up'**

It has been difficult to reconstruct the syllable onset of 設 shè < *syet* 'set up'. The Middle Chinese initial *sy-* (審三 Shěn sān or 書 Shū) shows several different patterns of xiéshēng connections, indicating that it had several Old Chinese sources. In our reconstruction they include *n̥-, *l̥-, and (before front vowels) *ŋ̊-, plus the clusters *s.t- and *s.t^{h}-; the reconstruction depends on xiéshēng connections and dialect reflexes. The examples below show our reconstructions of some cases of MC *sy-* and the xiéshēng connections on which they are based.

		MC	Baxter-Sagart
(23)	恕 shù 'indulgent'	*syoH*	*n̥a-s
	如 rú 'as, like, if'	*nyo*	*na
(24)	輸 shū 'convey (v.)'	*syu*	*l̥o
	愉 yú 'enjoy'	*yu*	*lo
(25)	勢 shì 'circumstances, setting'	*syejH*	*ŋ̊et-s
	埶 yì 'to plant'	*ngjiejH*	*ŋet-s
(26)	書 shū 'write'	*syo*	*s-ta
	煮 zhǔ 'boil, cook'	*tsyoX*	*[t]aʔ

But unlike these examples, the standard character 設 shè < *syet* 'set up' has no informative xiéshēng connections to tell us which of the various possible Old Chinese sources of MC *sy-* should be reconstructed for it.[15] In an important paper, Qiú Xīguī (1985) showed that in early documents, {設} shè 'set up' was written with graphs

ancestral to 埶 yì < MC *ngjiejH* ‘to plant’ (see also Qiú Xīguī 1998). This discovery allows us not only to identify the initial consonant of {設} shè as *ŋ̊- but also to recognize its etymological relationship to 勢 shì < MC *syejH* ‘circumstances, setting’. The relevant reconstructions are given below.

(27) 埶 yì < *ngjiejH* < *ŋet-s ‘to plant’
設 shè < *syet* < *ŋ̊et ‘set up’
勢 shì < *syejH* < *ŋ̊et-s ‘circumstances, setting’

Having clarified the reconstruction of the verb 設 shè < *syet* < *ŋ̊et ‘set up’, we can now see that 勢 shì < *syejH* < *ŋ̊et-s ‘circumstances, setting’ is simply the noun derived from it by adding the very productive suffix *-s, one of whose main functions is to derive a noun from a verb (see section 3.3.2.7). This in turn considerably clarifies the semantics of 勢 shì, which has proved a challenge for translators. The Mathews dictionary (1943) defines 勢 shì as “Power; influence; authority; strength. Aspect, circumstances, conditions”; but it is difficult to tell from this list of possible English translations how the various senses are connected semantically. From the connection with 設 shè < *ŋ̊et ‘set up’, we can see the common thread: 勢 shì is basically the way things are set up. It can refer to the way nature has set things up, including such things as terrain and weather; although these are beyond human control, they can be exploited to advantage by those who know how to recognize and use them. In the *Hán Fēi zǐ* 《韓非子》 (third century BCE), it can also refer to the way things are set up by human agents such as rulers, so that things will happen in the desired way as an apparently natural consequence. An excerpt from *Hán Fēi zǐ: Nán shì* 《韓非子・難勢》 in which both 設 shè (the verb) and 勢 shì (the noun) occur suggests that readers of the time would have been aware of the etymological connection between them:

(28) 吾所為言勢者, 言人之所設也
Wú suǒ wéi yán shì (*ŋ̊et-s) zhě, yán rén zhī suǒ shè (*ŋ̊et) yě.
‘The setup (*ŋ̊et-s) of which I am speaking refers to what is set up (*ŋ̊et) by men.’

A. C. Graham’s translation, “When I speak of the power-base it is of something instituted by man” (1989:280), misses this etymological connection. This case shows how linguistic reconstruction can provide better insight into how a text would have been understood at the time it was composed.

改 ~ 攺 **gǎi** < ***kojX*** < ***C.qʕəʔ ‘change (v.)’**

In the standard script, the character 改 gǎi < *kojX* ‘change’ appears to be a phonetic compound with 己 jǐ < *kiX* ‘sixth heavenly stem; self’ as phonetic, and that is what the *Shuōwén* says (*SWGL* 1337b). But in excavated documents, we find that it is consistently written with the phonetic 巳 sì < *ziX* ‘sixth earthly branch’ instead of 己 jǐ (Wèi Cídé 2009), as in these examples from the Guōdiàn and Shànghǎi Museum strips:[16]

(29) {改} gǎi 

For comparison, here are examples of the characters for 己 jǐ and 巳 sì from the Guōdiàn and Shànghǎi Museum strips; in their ancient forms they are much less similar than in their present forms:[17]

(30) {己} jǐ  

{巳} sì  

By the way, the character 巳 sì < *ziX* 'sixth earthly branch' is now written differently from 已 yǐ < *yiX* 'cease, already', but this practice did not begin until the Táng dynasty (Jì Xùshēng 2010:1020). Our reconstructions are as follows:

(31) 己 jǐ < *kiX* < *k(r)əʔ 'sixth heavenly stem'
巳 sì < *ziX* < *s-[ɢ]əʔ 'sixth earthly branch'
已 yǐ < *yiX* < *ɢ(r)əʔ 'cease; already'
改 gǎi < *kojX* < *C.qˤəʔ 'change (v.)'

The Middle Chinese initial *k-* in 改 gǎi < *kojX* comes from *C.qˤ-, just as in 公 gōng < *kuwng* < *C.qˤoŋ 'father, prince', discussed above. The replacement of the phonetic element 巳 sì < *ziX* < *s-[ɢ]əʔ by 己 jǐ < *kiX* < *k(r)əʔ, with original *k-, reflects the sound change *C.qˤ- > *k-, which evidently had already happened by late Hàn and is reflected in the *Shuōwén*.

The patterns of phonetic elements in the script indicate that, far from being simpler than those of Middle Chinese, the syllable onsets of Old Chinese must have been considerably more complex. In general, we want to keep our reconstructions constrained as much as possible, so that they have some predictive value: a reconstruction that allowed all conceivable complex combinations of consonants might be able to account for all the existing xiéshēng relationships, but it is equally important to make predictions about what combinations should *not* occur. We would like to account for all the xiéshēng patterns that actually occur, and no more.

But the facts point unavoidably to the conclusion that Old Chinese had some quite complex word-initial consonant combinations. In the majority of cases, words written with the same phonetic element at least have Middle Chinese initials with the same position of articulation. But there is a considerable residue of characters that seem to violate this principle. Consider the following pair of words:

(32) 九 jiǔ < *kjuwX* 'nine'
肘 zhǒu < *trjuwX* 'elbow'

In its modern standard form, 肘 zhǒu appears to be composed of 月 (an abbreviation of 肉 ròu 'flesh') and 寸 cùn 'thumb; inch'; this is how the *Shuōwén* analyzes it (*SWGL* 1761a), and Karlgren does not relate it to 九 jiǔ 'nine' (*GSR* 992a, 1073a). However, it is now widely agreed among paleographers that the character 九 was the original

character for ‘elbow’; in the character 肘 zhǒu, the 寸 cùn on the right is a reduced form of 九 jiǔ, and the semantic element 肉 ròu ‘flesh’ has been added on the left (Jì Xùshēng 2010:991; see our more detailed discussion in section 4.4.4.1).

So it appears that 九 jiǔ originally represented {肘} zhǒu < *trjuwX* ‘elbow’ and was used as a loan character to write {九} jiǔ < *kjuwX* ‘nine’. But it is difficult to reconcile the Middle Chinese initials *tr-* and *k-*, which are usually not written with the same phonetic element. We have no simple Old Chinese consonant that could be the origin of both MC *tr-* and MC *k-*; to account for this connection, we have to reconstruct something more complex. Our reconstructions are

(33) 肘 zhǒu < *trjuwX* < *t-[k]<r>uʔ ‘elbow’[18]
九 jiǔ < *kjuwX* < *[k]uʔ ‘nine’

Reconstructing combinations like *t-k- may seem ad hoc: by piling up initial consonants, one could account for almost any xiéshēng connection, and an unrestrained use of this move would diminish the predictive value of the reconstruction. But in this case both Tibeto-Burman comparisons and the morphological patterns of Old Chinese indicate that we are on the right track. Tibeto-Burman shows both unprefixed forms such as Written Tibetan *khru* ‘cubit’ and prefixed forms such as rGyalrong /tə[22] kru[33]/ ‘elbow’ (Huáng Liángróng and Sūn Hóngkāi 2002:661); and other evidence suggests that Old Chinese had a prefix *t-, one of whose functions was to mark inalienable possession (see section 3.3.2.4 below), which is appropriate for body part terms. A similar example is

(34) 齒 chǐ < *tsyhiX* < *t-[kʰ]ə(ŋ)ʔ ‘front tooth’

Here, MC initial *tsyh-* would usually be reconstructed with a dental *tʰ-, and this is the traditional solution: Karlgren reconstructed 齒 chǐ as *t̂ʾi̯əg. But while this is consistent with Middle Chinese, it ignores Mǐn dialect forms for ‘tooth’ with velar initials, such as Fúzhōu /kʰi 3/ and Xiàmén /kʰi 3/, which appear to represent an unprefixed form *kʰəʔ (or possibly *ŋ̊əʔ, see section 3.1.7.2).

We will see below that both modern dialects and early Chinese loanwords in other languages support the idea that considerable complexity must be reconstructed for Old Chinese in word-initial position.

2.4 Modern Chinese dialects

It has long been recognized that the Mǐn dialects reflect features that cannot be explained in terms of the Middle Chinese of the *Qièyùn*. But there are at least two other dialect groups that also retain distinctions lost in Middle Chinese and thus also provide independent evidence for the reconstruction of Old Chinese: these are the Hakka (Kèjiā 客家) dialects of southeastern China and the Wǎxiāng 瓦鄉 or Xiānghuà 鄉話 dialects of Húnán.

2.4.1 THE MǏN DIALECTS

For our documentation on Proto-Mǐn (pMǐn) phonology we rely largely on Norman's studies of this dialect group (beginning with Norman 1973, 1974a, 1981). For Proto-Mǐn Norman reconstructed six manners of articulation among stops, and a set of voiceless sonorants *mh-, *nh-, *lh-, etc. alongside the voiced sonorants. Acceptance of Norman's findings by the field has been exceedingly slow, undoubtedly because of the distance between them and the much simpler system attested by Middle Chinese. Yet the overall reality of the distinctions he reconstructs is firmly established: Norman's data are restricted to colloquial forms, and the correspondences he presents show a satisfactory degree of regularity across Mǐn.

The divergence of Mǐn from mainstream Chinese must have occurred before the nearly pan-Chinese first palatalization of velars, which Mǐn did not undergo (see section 4.1.2). Schuessler (2010:305) places the palatalization of OC *ki- to [tɕi-] during the western Hàn period (207 BCE to 9 CE); if this is so, then a branch of Chinese ancestral to proto-Mǐn must have separated from mainstream Chinese before that time, explaining why Proto-Mǐn contains some vocabulary that escaped innovations that happened in other varieties of Chinese. This time frame is consistent with Norman's statement (1979) that the earliest layer in the Mǐn dialects dates to the Hàn dynasty; it is slightly earlier than Ting's estimate (1983), based on the chronology of changes in the rhyming system: that the divergence occurred in the transition period between Western and Eastern Hàn (roughly 50 BCE–50 CE).

Subsequent to the individualization of the language that was to lead to the Mǐn dialects, a number of lexical and phonological innovations, most of them documented by Norman, took place: 層 céng (or a word cognate to it)[19] displaced 田 tián as 'field', 戍 shù displaced 屋 wū as 'house', 囝 jiǎn displaced 子 zǐ as 'child', and 喙 (*MC tsyhwejH*) displaced 口 kǒu as 'mouth' (Běijīng dàxué 1995:249). In phonology, a unique Mǐn innovation is the shift of OC *r to the Proto-Mǐn softened initial *-d- in words such as 路 lù 'road' and 鯉 lǐ 'carp' (see section 4.5.2.4). These innovations guarantee that the Mǐn dialects are a valid subgroup of Sinitic. Given that it takes time for innovations to accumulate, Proto-Mǐn can probably be dated to some time during the first half of the first millennium CE.

2.4.2 THE HAKKA (KÈJIĀ 客家) DIALECTS

Hakka is a geographically widespread but linguistically little diversified group principally distributed over southern Jiāngxī, southwestern Fújiàn, Táiwān, and Guǎngdōng. Descriptive data are varied and abundant (Lǐ Rúlóng and Zhāng Shuāngqìng 1992; Lǐ Rúlóng et al. 1999; Liú Lúnxīn 2001). The center of greatest diversity is in southern Jiāngxī and immediately adjoining regions in northeastern Guǎngdōng and western Fújiàn; the Proto-Hakka homeland was probably in that region. The present-day extension of Hakka resulted from a series of economically motivated migrations between 1550 and 1850, described in Leong (1997). Proto-Hakka must therefore be earlier than 1550, but, in

view of the limited degree of Hakka diversity, even in the core Hakka regions, not much earlier than that date. The Hakka features that cannot be derived from Middle Chinese include a tonal distinction in syllables with resonant initials that largely corresponds to the distinction between voiced and voiceless resonants reconstructed by Norman for Proto-Mǐn (Norman 1989).

2.4.3 WǍXIĀNG 瓦鄉 OR XIĀNGHUÀ 鄉話 DIALECTS

The Wǎxiāng or Xiānghuà dialects are spoken in western Húnán. They are sufficiently divergent from other Chinese dialects that for a time there was even a debate about whether they were Sinitic or not (Wáng Fǔshì 1982). Although definitely part of Chinese, like the Mǐn group they show a number of features that cannot be derived from the Middle Chinese system. Several varieties of Wǎxiāng have now been documented, but so far little research has been done on their linguistic history. Some features appear to be shared with Mǐn, but they may be shared retentions rather than shared innovations, so it would be premature to put them together with Mǐn in a separate subgroup.

2.5 Early Chinese loanwords in other languages

The main language families that received early loanwords from Chinese are Vietic, Hmong-Mien (known in Chinese as Miáo-Yáo 苗瑤), and Kra-Dai.

2.5.1 THE VIETIC LANGUAGES

The Vietic languages include Vietnamese (VN), Mường, and a number of languages such as Rục, Sách, and Thavưng, spoken by isolated upland groups in Vietnam and Laos. Vietic is one of the subdivisions of Mon-Khmer, the eastern branch of Austroasiatic according to the traditional classification scheme for that family.

Extensive contacts between speakers of Vietic and Chinese probably began around the late third century BCE. Around the time of the fall of the Qín dynasty, the Chinese general Zhào Tuó 趙佗 established the Nányuè 南越 kingdom and ruled over portions of modern Guǎngdōng, Guǎngxī, and northern Vietnam; in the second century BCE, this kingdom became a vassal state of the Western Hàn dynasty (Aurousseau 1923). His kingdom probably included speakers of both Kra-Dai and Vietic languages, so it is likely that some of the earliest Chinese loans to Kra-Dai and Vietic reflect the phonological system of the language of Zhào Tuó's administration.

Chinese occupation of Vietnam continued until 938 CE; during the entire period, Chinese loanwords were continually introduced into Vietic, and especially into Vietnamese, forming a succession of layers, each reflecting phonological characteristics of Chinese at the time the borrowings were made. In Vietnamese, two main periods may be distinguished through tone correspondences. As shown by Maspero (1912) and Haudricourt (1954a), popular words borrowed in the earlier part of the Chinese occupation period exhibit these correspondences:[20]

TABLE 2.11 Tone correspondences between Chinese and Vietnamese (earlier period)

Chinese tone	Vietnamese tone
píng 平	*ngang-huyền* (A)
shǎng 上	*sắc-nặng* (B)
qù 去	*hỏi-ngã* (C)

Later during the occupation period, the correspondences of the Chinese shǎng 上 and qù 去 tones were inverted.

The so-called Sino-Vietnamese pronunciation is a system of pronunciation of Chinese characters used by Vietnamese literati after the end of the Chinese occupation to read documents aloud in Chinese. Its nature is different from a layer of loanwords in the spoken language, yet it presumably reflects the reading pronunciation of Chinese characters in use at the Vietnamese capital in the early tenth century, during the final years of the occupation. Its tone correspondences to Chinese are those in Table 2.12. Sino-Vietnamese readings are not directly relevant to the reconstruction of Old Chinese, and neither are the borrowings made in the later period, but the borrowings of the earlier layer, characterized by the tone correspondences in Table 2.11, are relevant. Neither period is entirely homogeneous in terms of sound correspondences.

2.5.2 THE HMONG-MIEN LANGUAGES

The Hmong-Mien languages (known in Chinese as Miáo-Yáo 苗瑤) are spoken in scattered areas in southern China and in southeast Asia. For Hmong-Mien we rely primarily on Martha Ratliff's new reconstruction; all reconstructions for Proto-Hmong-Mien (pHM), Proto-Hmongic (pHmong), and Proto-Mienic (pMien) are from Ratliff (2010) unless otherwise specified. The Mienic branch of Hmong-Mien is tight and well delimited; Mienic languages are generally conservative of Proto-Hmong-Mien rhyme contrasts. The Hmongic branch is considerably more diversified, but at the same time exhibits a drastic reduction of rhyme contrasts when compared to Mienic; this forms a large set of phonological innovations, tying these languages together into the Hmongic taxon. In addition, Ratliff mentions another shared innovation of Hmongic: the reflection of pHM *-k as tone C. Like her predecessors, she gives reconstructions at three levels: Proto-Hmong-Mien,

TABLE 2.12 Tone correspondences between Chinese and Vietnamese (later period)

Chinese	Vietnamese tone
píng 平	*ngang-huyền* (A)
shǎng 上	*hỏi-ngã* (C)
qù 去	*sắc-nặng* (B)

Proto-Hmongic, and Proto-Mienic. While building on the work of Wáng and Máo (1995), she recognizes layers of Chinese loanwords in Hmong-Mien; this allows her to exclude the later layers from her Proto-Hmong-Mien reconstruction. Exclusion of late loans makes for a much simpler and more natural-looking system.

The dates of Proto-Hmong-Mien are a matter of some uncertainty. The period during which Chinese words were borrowed by Hmong-Mien with regular sound correspondences across the family's two branches appears to have extended at least into the first century CE. We find the sound changes *l^{ʂ}- > *d^{ʂ}- and *l̥^{ʂ}- > *t^{hʂ}- reflected in words like

(35) 銅 *[l]^{ʂ}oŋ > *duwng* > tóng 'bronze, copper', pHM *dɔŋ 'copper'

and

(36) 桶 *l̥^{ʂ}oŋʔ > *thuwngX* > tǒng 'bucket', pHM *thɔŋ(X).

Sagart (1999c:30–31) gave evidence that these two changes occurred in mainstream Eastern Hàn Chinese before 79 CE.

The upper dates of Proto-Hmong-Mien are more difficult to determine. Based on the sound correspondences for onsets presented in chapter 4 of this book, Chinese loans into Proto-Hmong-Mien sometimes appear to have slightly more archaic features than those into Vietic or Proto-Mǐn. For instance, in at least one case, Proto-Hmong-Mien shows an unaffricated reflex of an Old Chinese nonpharyngealized alveolar stop (see example (734) in section 4.5.2.2). Since loans to Vietic were made possible by the Qín conquest of the south, this may point to an upper date sometime before the late third century BCE for Proto-Hmong-Mien.

2.5.3 THE KRA-DAI LANGUAGES

The Kra-Dai[21] languages are spoken in southern China and southeast Asia; the center of greatest diversity is in southern China, and the extension of the family into southeast Asia is relatively recent. While the Kra-Dai languages, and especially the Tai and Kam-Sui subgroups, have had sustained contact with Chinese since the establishment of the Nányuè kingdom of Zhào Tuó in the Guǎngdōng and Guǎngxī region in about 206 BCE, so far we have reconstructions only for subgroups of Kra-Dai: Proto-Kra (Ostapirat 2000), Proto-Hlai (Ostapirat 2004; Norquest 2007), Proto-Kam-Sui (Thurgood 1988; Ostapirat 2006), and Proto-Tai (Li 1977; Pittayaporn 2009); so the current state of Kra-Dai reconstruction has only allowed us to make occasional use of early Chinese loans in individual Kra-Dai languages.

Among these, Lakkia (Lakkja) must be singled out. Lakkia, a Kra-Dai language spoken in China by a group officially classified as Yáo 瑤, is known to be the only language in the family that simplifies clusters having a nasal as their second element by preserving their first consonant and transferring nasality onto the main vowel,

even if there was a nasal coda (Solnit 1988, Edmondson and Yang 1988, L-Thongkum 1992). Examples:

(37) Proto-Tai (PT) *q.ma: A ↔ Lakkia /kʰũə A/ 'dog'
PT *q.mu: A ↔ Lakkia /kʰũ: A/ 'pig'
PT *q.mat: D ↔ Lakkia /kʰũət D1/ 'flea'

The Proto-Tai reconstructions are from Pittayaporn (2009).[22] In addition, Ostapirat (2006:1092, fn. 16) compares Lakkia /kjaai C1/ 'intestine' with Kam-Sui forms derived from Proto-Kam-Sui *k-s- and Lakkia /khjom C1/ 'sour' with Kam-Sui forms that imply *kʰ-s-, showing that Lakkia retains the first consonant in at least some nonnasal clusters as well.

In section 4.2.2.3 we present evidence that this behavior also affects early loans from Chinese, including words where the second consonant is a stop. That the preinitials revealed by Lakkia were part of the Chinese donor language is clearly demonstrated by the converging testimony of other conservative languages, notably the Vietic language Rục (Nguyễn Phú Phong et al. 1988): see Table 2.13.

Lakkia therefore constitutes an important source of evidence on Old Chinese complex onsets.

TABLE 2.13 Preservation of initial consonants in Lakkia

Chinese	Lakkia	Shui	VN	Rục	pMĩn
紙 *k.teʔ > *tsyeX* > zhǐ 'paper'	khjei 3		*giấy* [zʌi B1]	kəcáy	*tš-
賊 *k.dzˤək > *dzok* > zéi 'bandit'	kjak 8		*giặc* [zak D2]	kəcʌ́k	*dzh-
牀 *k.dzraŋ > *dzrjang* > chuáng 'bed'				kəci:ŋ	*dzh-
箴 *t.[k]əm > *tsyim* > zhēn 'needle'	them 1		*găm* [ɣam A1]		*tš-
溺 *kə.nˤewk-s > *newH* > niào 'urine'	kjĩ:w 5	ʔniu 5			*n-

2.6 Traditional Chinese texts explicitly discussing language

Quite apart from what can be inferred from their rhymed passages and character usages, there are early Chinese texts that discuss language and pronunciation explicitly. The *Fāng yán*《方言》of Yáng Xióng 揚雄 (53 BCE–18 CE), the *Shuōwén jiězì*《說文解字》of Xǔ Shèn 許慎 (58–147 CE), and the *Shì míng*《釋名》(ca. 200 CE) of Liú Xī 劉熙 are well known, but the commentarial literature from Hàn times onward is also a rich source of remarks on both meaning and pronunciation. Many such comments from the Eastern Hàn period (25–220 CE) are conveniently available in Coblin (1983), but many others remain to be discovered and studied. Sometimes, remarks that seem cryptic at first make more sense if examined in the light of recent work on Old Chinese reconstruction. Examples to be discussed later include a description of the feature we reconstruct as pharyngealization, in the commentary by Hé Xiū 何休 (129–182) on the *Gōngyáng zhuàn*《公羊傳》(section 4.1.1), and comments by Zhèng Xuán (127–200) in his

commentary on the Lǐ jì《禮記》on local pronunciations of words that we reconstruct with the coda *-r (section 5.5.1.4). Here we will discuss a single phenomenon: the substitution of 云 yún ‘to say’ for 有 yǒu ‘have, exist’ in some received texts.

2.6.1 THE SUBSTITUTION OF 云/員 YÚN FOR 有 YǑU IN EARLY TEXTS

Qīng-dynasty scholars noticed a number of passages in classical texts where 云 yún (sometimes written 員 yún), which usually means ‘say, speak’, was either glossed by early commentators as meaning 有 yǒu ‘have’ or at least seemed open to this interpretation. In each case, there is evidence that the word following 云 or 員 yún began with a nasal consonant, suggesting that the substitution of 云 or 員 yún for 有 yǒu involved an assimilation to the initial nasal of the following word.

Wáng Yǐnzhī 王引之 (1766–1834), the son of the famous Qīng scholar Wáng Niànsūn 王念孫 (1744–1832), recorded his father’s view that 云 yún sometimes means 有 yǒu ‘have’ in early texts, and cited a number of examples ([1798] 1956:31–32).

We reconstruct 云 yún and 有 yǒu as follows:

(38) 云 *[ɢ]ʷə[r] > *ɢʷən > *hjun* > yún ‘say’
有 *[ɢ]ʷəʔ > *hjuwX* > yǒu ‘have, exist’

That is, the two words are quite similar in Old Chinese pronunciation: they have the same onset and the same vowel, and differ only in that 云 yún ended in *-r (which later became [n]), while 有 yǒu ended in a glottal stop *-ʔ. The fact that one could be substituted for the other supports our reconstruction of the onset *[ɢ]ʷ- and the main vowel *ə in both. But what about the difference in the codas?

In several of the cases where 云 yún is said to mean 有 yǒu ‘have’, it is clear that the next word begins with OC *n-, which suggests that the original glottal stop *-ʔ of 有 yǒu < *[ɢ]ʷəʔ may have assimilated phonetically to the following nasal: *[ɢ]ʷəʔ n- > *[ɢ]ʷən n-. For example, one of the cases cited by Wáng Yǐnzhī occurs in a quotation from the philosopher Shèn Dào 愼到 (fourth century BCE), found in the commentary to *Xúnzǐ*《荀子》by the Táng-time scholar Yáng Liàng 楊倞.[23] Yáng Liàng quotes Shèn Dào as follows:

(39) 云能而害無能，則亂也。
yún néng ér hài wú néng, zé luàn yě.

Wáng Yǐnzhī paraphrases this as

(40) 言有能而害無能之人，則必亂也。
yán yǒu néng ér hài wú néng zhī rén, zé bì luàn yě.
‘It means that if one has ability and does harm to those who lack ability, then there will necessarily be disorder’.

The parallelism of 云能 yún néng with 無能 wú néng ‘lack ability’ is strong support for Wáng Yǐnzhī’s interpretation. It appears that at some point in the transmission of the text, the phrase

(41)

有	能
yǒu	néng
hjuwX	*nong*
*[ɢ]ʷəʔ	*nˤə(ʔ) ~ *nˤəŋ[24]
‘have’	‘ability’

has been written as if it were

(42)

云	能
yún	néng
hjun	*nong*
*[ɢ]ʷən < *[ɢ]ʷə[r]	*nˤə(ʔ) ~ *nˤəŋ
‘say’	‘ability’

That is, the sequence *[ɢ]ʷəʔ n- has been replaced by *[ɢ]ʷən n-, a natural phonetic assimilation.[25] Wáng Yǐnzhī goes on to cite a second example of the same substitution (云能 yún néng meaning 有能 yǒu néng ‘have ability’) in the *Xúnzǐ* itself (the “Rú xiào”《儒效》chapter). Similarly, he cites a passage in the “Qín shì”《秦誓》chapter of the *Shàng shū*《尚書》where 員 yún < *hjun* < *[ɢ]ʷə[n] has been substituted for 有 yǒu before the nasal initial of 然 *[n]a[n] > *nyen* > rán ‘so, thus; (adv. suffix)’. Here 員 yún < MC *hjun* and 云 yún < MC *hjun* are homonyms.[26]

In the cases discussed so far, the substitution of 云 yún < *[ɢ]ʷən (perhaps from earlier *[ɢ]ʷə[r]) for 有 yǒu < *[ɢ]ʷəʔ has occurred before MC *n-* or *ny-*, both of which (usually) reflect OC initial *n-. But such substitutions occur before other consonants as well. In another passage from the “Qín Shì” chapter of the *Shàng shū*, Wáng Yǐnzhī says that the phrase

(43)

員	來
yún	lái
hjun	*loj*

should be understood as

(44)

或	來
huò	lái
hwok	*loj*
‘there are some who come’	

The characters 有 yǒu and 或 huò are similar in pronunciation and presumably come from related roots; they are frequently interchanged in early texts. Our reconstructions are:

(45) 有 *[ɢ]ʷəʔ > *hjuwX* > yǒu ‘have, exist ’
或 *[ɢ]ʷˤək > *hwok* > huò ‘some; or’

But why would 云 yún < *[ɢ]ʷən (< *[ɢ]ʷə[r]) be substituted for either 有 yǒu or 或 huò before 來 lái? As explained in section 4.5.2.4, we believe that 來 lái originally had a preinitial *mə-, which helps account for the fact that 來 lái is the phonetic element in the character 麥 mài < *meak* < *m-rˤək 'wheat'.

We can then understand the substitution of 云 yún for 有 yǒu or 或 huò as an assimilation to the nasal preinitial of 來 lái < *mə.rˤək. In fact, all the examples of this substitution that we know of happen before words with nasal initials or preinitials.[27] These substitutions give us information about both main vowels (*ə in both cases) and preinitials.

Note, however, that this interpretation presupposes that the *-r coda of 云 yún has already changed to [n]. The examples cited apparently originate in Hàn-dynasty texts; we would predict that such substitutions of 云 for 有 should probably not occur in pre-Qín excavated documents, written at a time when *-r and *-n were probably still distinct.

It is likely that the abundant Chinese commentarial literature includes many more comments like these that may be helpful in reconstructing the Old Chinese phonological system or in choosing reconstructions for particular words. As our reconstructions become more precise, we should be able to make better sense of these comments; so they are not to be neglected as a form of evidence for Old Chinese reconstruction.

2.7 Tibeto-Burman

We accept that Chinese (= Sinitic) and the languages called Tibeto-Burman are part of a larger family called Sino-Tibetan. Our approach more or less presupposes that Sinitic itself is a valid taxon within Sino-Tibetan, but the subgrouping of the family as a whole is not yet clear; in other words, we are not certain whether Sino-Tibetan splits cleanly into these two branches or whether its phylogeny is more complex. In either case, progress in understanding either Sinitic or Tibeto-Burman is likely to help us better understand the other—just as in Indo-European, knowing the location of accents in Greek and Sanskrit helped explain consonant alternations in Germanic (the "Grammatische Wechsel" resulting from the operation of Verner's Law). It is perfectly legitimate to take hints from Tibeto-Burman (or anywhere else) when formulating hypotheses about Old Chinese; as a matter of fact, Starostin's hypothesis that OC *-r occurred as a syllable coda (contrasting with both *-n and *-j), which we accept here, was initially suggested by comparisons with Tibeto-Burman words with final [r] (Starostin 1989:338–341; see section 5.5.1).

But it would be a mistake to use Tibeto-Burman evidence to *test* hypotheses about Old Chinese. The fact that [r], [n], and [j] codas contrast in some Tibeto-Burman languages may raise the question of whether Old Chinese had a similar contrast, but only evidence from within Chinese (not excluding words in other languages borrowed from Chinese) can answer this question. Similarly, the fact that some Tibeto-Burman

languages have such-and-such an affix with such-and-such a function is suggestive, but cannot be decisive, for reconstructing the morphology of Old Chinese.

There probably are early loanwords from Chinese in a number of Tibeto-Burman languages that would be relevant to Old Chinese reconstruction, but given the present state of our knowledge, it is difficult to distinguish reliably between loanwords and actual cognates.

{ 3 }

An overview of the reconstruction

In this chapter we present a brief overview of what is new in the present reconstruction; the details of our proposals are given in chapter 4 (on onsets) and chapter 5 (on rhymes).

3.1 Onsets: main hypotheses

Old Chinese words had an obligatory main initial consonant and sometimes a preinitial (discussed in detail in chapter 4). Our reconstruction includes a number of innovations in both main initials and preinitials.

We reconstruct significantly more forms with preinitial elements than in earlier reconstructions. In his Archaic Chinese, Karlgren already reconstructed a small number of forms with initial consonant clusters in order to account for xiéshēng connections, as in the following examples:

(46) 筆 Karlgren's *pli̯ə̯t 'writing brush' (> *pit* > bǐ; our *p.[r]ut); cf.
律 Karlgren's *bli̯wə̯t 'law, rule (n.)' (> *lwit* > lǜ; our *[r]ut)

(47) 黑 Karlgren's *χmək 'black' (> *xok* > hēi; our *m̥ˤək); cf.
墨 Karlgren's *mək 'ink' (> *mok* > mò 'ink'; our *C.mˤək)

(48) 品 Karlgren's *p'li̯ə̯m 'kind, class' (> *phimX* > pǐn; our *pʰr[ə]mʔ); cf.
臨 Karlgren's *bli̯ə̯m 'look down at' (> *lim* > lín; our *(p.)rum)

However, when one takes into account modern dialects and early Chinese loanwords into other languages, it becomes clear that many more forms must be reconstructed with complex syllable onsets. For example, Karlgren reconstructed 瓦 wǎ 'roof tile' simply as *ngwa, Baxter (1992) as *ngʷrajʔ (equivalent to "*ŋˤʷrajʔ" in our current notation); but we must reconstruct initial *C.ŋʷˤ- (with unspecified preinitial *C) to account for upper-register tones in Mǐn and Hakka dialects and in an early loan in Vietnamese:

(49) 瓦 *C.ŋʷˤra[j]ʔ > *ngwaeX* > wǎ 'roof tile'; pMǐn *ŋh-; Méixiàn Hakka /ŋa 3/; cf. VN *ngói* [ŋɔi B1] with high-register tone

It is also clear that there was considerable dialect diversity in the treatment of preinitial elements, as we see from the following adjacent entries in the *Shuōwén* for 'writing brush' (see section 4.4.4.4 for more examples):

(50) 聿 (*[m-]rut > *lut > *ywit* > yù):
所以書也。 that with which one writes.
楚謂之聿 In Chǔ it is called 聿 (*lut < *[m-]rut?);
吳謂之不律 in Wú it is called 不律 (*pə.[r]ut);
燕謂之弗 in Yān it is called 弗 (*put);
筆 (*p.[r]ut > *prut > *pit* > bǐ):
秦謂之筆 in Qín it is called 筆 (*p.[r]ut)
(*SWGL* 1271b, 1273a).

Note that part of the variation involves whether the preinitial is treated as tightly or loosely attached. In these circumstances it is sometimes necessary to reconstruct more than one form for certain etyma.

The main innovations in our reconstruction of syllable onsets are summarized in the remainder of this section.

3.1.1 PHARYNGEALIZED ONSETS IN TYPE-A SYLLABLES

Type-A syllables in Old Chinese are those that give rise to the division-I, division-II, and division-IV syllables of Middle Chinese;[1] all other syllables, traditionally designated as division-III, are type B (the terminology is due to Pulleyblank 1977–1978). The syllables of Middle Chinese are divided roughly half-and-half into the two types. In his Archaic Chinese reconstruction, Karlgren reconstructed type-B syllables with a prevocalic semivowel *-j̱- ("medial yod") and reconstructed type-A syllables without this element. This solution was followed by Dǒng Tónghé (1948); Li (1971) and Baxter (1992) did the same, but wrote the "medial yod" as *-j-. This solution came to be regarded as unsatisfactory for various reasons, and alternatives were proposed (see section 4.1.1). In our reconstruction we follow Norman (1994) in reconstructing the type-A syllables with pharyngealized onsets: thus

(51) 綱 *kˁaŋ > *kang* > gāng 'guiding rope of net' (division-I, type A)
疆 *kaŋ > *kjang* > jiāng 'boundary' (division-III, type B)

(52) 更 *kˁraŋ > *kaeng* > gēng 'change (v.)' (division-II, type A)
京 *[k]raŋ > *kjaeng* > jīng 'hill; capital city' (division-III, type B)

(53) 鼎 *tˁeŋʔ > *tengX* > dǐng 'cauldron' (division-IV, type A)
整 *teŋʔ > *tsyengX* > zhěng 'arrange; orderly' (division-III, type B)

This reconstruction helps to explain two important facts that were unexplained under previous hypotheses: (1) the tendency of vowels to be lowered in type-A syllables, and (2) the resistance of initials in type-A syllables to palatalization. See section 4.1.1 for further discussion.

3.1.2 UVULAR INITIALS

For reasons set out in Sagart and Baxter (2009) and already briefly broached in section 2.3 above, we have added a set of uvular and labiouvular initials to the

inventory of Old Chinese initials, adapting a proposal of Pān Wùyún (1997). As pointed out by Pān, words with Middle Chinese fricative and stop initials tend to be kept apart in the script: for instance, Middle Chinese *s-* and *t-* generally do not occur in the same phonetic series. But among initials of the 'laryngeal' (hóuyīn 喉音) category, the glottal stop *ʼ-* (the traditional 影 Yǐng initial) and the fricatives *x-*, *h-,* and *hj-* (the traditional initials 曉 Xiǎo, 匣 Xiá, and 喻三 Yù sān = 云 Yún) not infrequently share phonetics. With phonetic 于, compare 污 *ʼwae* > wā 'impure, vile', 訏 *xju* > xū 'great', and 于 *hju* > yú 'go; at'; with phonetic 曷, 謁 *ʼjot* > yè 'go to visit', 歇 *xjot* > xiē 'cease, rest (v.)', and 褐 *hat* > hè 'coarse cloth'; with phonetic 有, 郁 *ʼjuwk* > yù 'stately, elegant', 賄 *xwojX* > huì 'property, valuables', and 囿 *hjuwH* > yòu 'park, garden'. With Pān's proposal to treat MC *ʼ-*, *x-*, and *h-*/*hj-* as reflexes of Old Chinese uvular stops **q-*, **qʰ-*, and **ɢ-*, respectively (*h-* and *hj-* are complementarily distributed in Middle Chinese), contacts between them turn out to be straightforward alternations of voicing and aspiration among homorganic stops in Old Chinese. We follow Pān and reconstruct

(54) 污 *qʷˁra > *ʼwae* > wā 'impure, vile'
訏 *qʷʰ(r)a > *xju* > xū 'great'
于 *ɢʷ(r)a > *hju* > yú 'go; at'

(55) 謁 *qat > *ʼjot* > yè 'go to visit'
歇 *qʰat > *xjot* > xiē 'cease, rest (v.)'
褐 *[ɢ]ˁat > *hat* > hè 'coarse cloth'

(56) 郁 *qʷək > *ʼjuwk* > yù 'stately, elegant'
賄 *qʷʰˁəʔ > *xwojX* > huì 'property, valuables'
囿 *[ɢ]ʷək-s > *hjuwH* > yòu 'park, garden'

However, we have felt it necessary to modify Pān's original proposal on several points. First, in Pān's theory the only source of Middle Chinese *ʼ-* is **q-*; yet the existence of relatively long phonetic series having no other Middle Chinese initial than *ʼ-*, and without a pattern of word-family contacts outside of words with MC *ʼ-*, strongly suggests that Old Chinese had a glottal stop initial distinct from **q-* and contrasting with it (see section 4.3.1). Thus we reconstruct **ʔ-* for MC *ʼ-* in the members of long phonetic series having *ʼ-* as their unique Middle Chinese initial, like the series of 央 夗 亞 嬰 意 奧 幺 夭, etc.; and **q-* in series where MC *ʼ-* alternates with other Middle Chinese laryngeals, as in (54) to (56) above, or with Middle Chinese velars, as in series like 可 夸 區 曷 今 圭 或, etc. Since we reconstruct no Old Chinese syllables beginning in a vowel, our **ʔ-* could be thought of as the phonetic realization of the zero initial. The usefulness of phonetic series for distinguishing OC **ʔ-* from **q-* should not be overstated, however: as we show in section 4.3.1, OC **q-* and **ʔ-* had already merged into a glottal stop in Proto-Mǐn, which appears to have branched off in early Hàn times (see section 2.4.1). After that merger, there was no basis in Chinese pronunciation for assigning newly created characters to the historically appropriate phonetic series.

A theory that Old Chinese had contrasting velars and uvulars has to explain why Middle Chinese velars and laryngeals, their normal reflexes, frequently co-occur in phonetic series. Pān's explanation is that the two kinds of sounds are phonetically close enough to be written with the same phonetic element. In our view, in such cases, the Middle Chinese velars are the regular reflexes of Old Chinese uvulars with certain preinitials, as shown by examples in which Middle Chinese words with velar and laryngeal initials share the same root: for example, 影 *'jaengX* > yǐng 'shadow (n.)' and 景 *kjaengX* > jǐng 'bright; image'. In Sagart and Baxter (2009), we identified the condition for the evolution of OC uvulars to MC velars as being the presence of a loosely attached preinitial: our reconstructions were *qraŋʔ and *Cə.qraŋʔ for 影 and 景. Here, for reasons detailed in note 24 of chapter 4, we modify this claim and propose that the conditioning factor was a *tightly attached* preinitial: we now reconstruct 影 as *qraŋʔ > *'jaengX* and 景 as *C.qraŋʔ > *kjaengX*. A reconstruction that would assign a velar initial to the latter and a uvular one to the former would not be able to express the root they share. For further discussion and examples, see section 4.4.5.1.

Here again, in practice, the usefulness of xiéshēng connections in determining the nature, velar or uvular, of a word with a Middle Chinese velar initial is mitigated by the fact that characters created after the change of Old Chinese uvulars to velars following tight preinitials may well have received velar phonetics even though their original Old Chinese initial may have been uvular, or vice versa. As a result, the testimony of xiéshēng connections must be weighed against other types of evidence: textual, paleographic, comparative, etymological, etc.

Third, our view of the development of OC *ɢ- in type-B syllables differs from Pān's. According to him, type-B *ɢ- evolves to MC *hj-* (the initial 喻三 Yù sān = 云 Yún). Since the majority of Middle Chinese words with this initial are labialized ("hékǒu 合口"), this line of reconstruction entails treating labialization as secondary in many words with the initial 喻三 Yù sān (= 云 Yún). In Pān's view, this is due to a tendency to labialization inherent in consonants articulated with the back of the tongue, parallel to the tendency of back vowels to be rounded. Thus Pān reconstructs 永 yǒng < MC *hjwaengX* 'long (time)' as *ɢrăŋ and 于 yú < MC *hju* 'go; at' as *ɢă; he supposes that these forms acquired secondary labialization to *ɢʷrăŋ, *ɢʷă before developing their Middle Chinese reflexes (Pān 1997:20). In our view, with very few exceptions, the Old Chinese source of MC *hj-* is labiouvular *ɢʷ-, and the labialization in most MC words with *hj-* is original. Our reconstructions for 永 yǒng and 于 yú are *[ɢ]ʷraŋʔ and *ɢʷ(r)a, respectively. We also reconstruct a nonlabialized *ɢ-, but based on xiéshēng and word-family contacts, we think that this initial evolves to MC *y-*, the traditional initial 喻四 Yù sì = 以 Yǐ (Sagart and Baxter 2009). See section 4.3.3 for details and examples.

Finally, we claim that OC *qʰ- and *ɢ- preceded by nasal prefixes *N- or *m- merged with OC *ŋ-, evolving to MC *ng-*. This is detailed in sections 4.4.1.2, 4.4.1.3, 4.4.2.2, and 4.4.2.3. The uvular and nonuvular sources of MC *ng-* can sometimes be

TABLE 3.1 Old Chinese uvular initials and their principal Middle Chinese reflexes

type A (pharyngealized)		type B (nonpharyngealized)	
OC	MC	OC	MC
*qˤ- >	*ʔ-*	*q- >	*ʔ-*
*qʰˤ- >	*x-*	*qʰ- >	*x-*
*ɢˤ- >	*h-*	*ɢ- >	*y-*
*qʷˤ- >	*ʔ(w)-*	*qʷ- >	*ʔ(w)-*
*qʷʰˤ- >	*x(w)-*	*qʷʰ- >	*x(w)-*
*ɢʷˤ- >	*h(w)-*	*ɢʷ- >	*hj(w)-*

distinguished in the script. This is the case of 五 wǔ < *C.ŋˤaʔ ‘five’ and 午 wǔ < *[m].qʰˤaʔ ‘seventh earthly branch’; when used as phonetics (apart from some characters of late origin); see section 4.4.2.2 for discussion.

The principal Middle Chinese reflexes of the uvular and labiovular consonants we reconstruct, when not preceded by any preinitials, are shown in Table 3.1.

We now turn to the main new hypotheses concerning preinitials.

3.1.3 PREINITIALS AS THE SOURCE OF PROTO-MǏN VOICELESS RESONANTS

Norman reconstructed a series of voiceless resonants *mh-, *nh-, *lh-, etc. for Proto-Mǐn to explain distinctions in tonal development; in the Northern Mǐn dialects,[2] *lh- also has a sibilant reflex different from that of *l-. These do not correspond to our Old Chinese voiceless resonants *m̥(ˤ)-, *n̥(ˤ)-, *l̥(ˤ)-, etc., which have different reflexes; rather, they reflect Old Chinese voiced resonants with a tightly attached voiceless preinitial consonant: for example, *k.r- becomes Proto-Mǐn *lh-. In some cases, the particular preinital can be identified from other evidence (such as early loanwords or evidence from the script); otherwise, we write it as *C. See the discussion in sections 4.4.4.4 and 4.4.5.4.

3.1.4 LOOSELY ATTACHED PREINITIALS AS THE SOURCE OF PROTO-MǏN “SOFTENED” STOPS

It was mentioned in section 2.4.1 that Norman (1973, 1974a) reconstructed a set of “softened” stops for Proto-Mǐn, which have distinctive segmental reflexes in Northern Mǐn dialects. Norman (1986) suggested that these might have originated as prenasalized obstruents, but we find this solution unsatisfactory and instead attribute the softening to voicing and/or lenition of the main syllable initial when preceded by a loosely attached presyllable—that is, in intervocalic position. For example:

(57)	Old Chinese	Norman’s Proto-Mǐn	Middle Chinese
	*Cə.tˤ- >	*-t	*t-*
	*Cə.dˤ- >	*-d	*d-*

Typologically, this is a more plausible explanation than prenasalization and is analogous to the lenition that occurs synchronically in Fúzhōu and some other coastal dialects. For details see section 4.5 below.

3.1.5 TIGHTLY ATTACHED PREINITIALS AS THE SOURCE OF PROTO-MǏN ASPIRATED VOICED STOPS

As also mentioned in section 2.4.1, some Mǐn dialects show a contrast between aspirated and unaspirated initials corresponding to the voiced stops and affricates of Middle Chinese; Norman accordingly reconstructed an aspiration distinction in voiced stops and affricates in Proto-Mǐn. Our hypothesis is that the aspirated reflexes are from Old Chinese tightly attached preinitials other than *N.:

(58)	Old Chinese	Norman's Proto-Mǐn	Middle Chinese
	*b- >	*b	*b-*
	*C.b- >	*bh	*b-*
	*m.p >	*bh	*b-*

Our explanation for the coexistence in Mǐn dialects of unaspirated and aspirated stops corresponding to the voiced stops of Middle Chinese is that Mǐn dialects were subject to two waves of devoicing. The early devoicing affected Old Chinese voiced stops and voiceless stops preceded by *N, which had merged with the voiced stops by the time of Proto-Mǐn. This first devoicing produced voiceless unaspirated reflexes but did not affect voiced initials with tightly attached preinitials. Then these preinitials were lost, exposing the voiced syllable initial, which became breathy and underwent a second wave of devoicing that produced aspirated reflexes; for details, see Table 4.9 in section 4.2.1.1.

3.1.6 PREINITIALS (TIGHT OR LOOSE) AS THE SOURCE OF VIETIC SOFTENING

In both native words and words borrowed very early from Chinese, Vietnamese shows a phenomenon of spirantization of initial obstruents analogous to the softening in Northern Mǐn dialects: where Vietnamese shows initial spirantization, other closely related Vietic languages have a presyllable that has been lost in Vietnamese, and it is widely agreed that the Vietnamese spirantization applied to consonants when they were in intervocalic position. For example:

(59) Rục /kəpuːl 1/, VN *vôi* [voi A1] 'chalk'

Where such presyllables occur in loans from Chinese, we take this as evidence of a presyllable in Old Chinese as well:

(60) Rục /kcoːŋ 3/, VN *giống* [zʌwŋ B1] 'seed', from
OC 種 *k.toŋʔ > *tsyowngX* > zhǒng 'seed'

The earliest Chinese loanwords were probably into Proto-Vietic rather than into Vietnamese itself, which would not yet have become a separate language. It appears that all presyllables in these early Chinese loanwords were treated in Vietnamese as if they were loosely attached.

3.1.7 PRENASALIZATION FROM OLD CHINESE NASAL PREINITIALS IN LOANS TO HMONG-MIEN

A number of early Chinese loans into Hmong-Mien show prenasalization or the reflex of prenasalization in those languages; we take this as evidence of a nasal preinitial in the Chinese source:

(61) pHM *ntam A 'carry on the shoulder', from
OC 擔 *mə-tˁam > *tam* > dān 'carry on the shoulder', pMǐn *-tɑm A

See the discussion in section 4.2.2.1.

3.1.8 *N-r(ˁ)- AND *m-r(ˁ)- AS SOURCES OF MC *d-* AND *y-*

The reconstruction of *N-r(ˁ)- and *m-r(ˁ)- solves a number of puzzles about initial consonants:

(62) *N-rˁ-, *m-rˁ- > MC *d-*
*N-r-, *m-r- > MC *y-*

See the discussion in sections 4.4.1.4 and 4.4.2.4.

3.1.9 PREINITIAL *t- PLUS VELARS AS A SOURCE OF MIDDLE CHINESE *Tsy-* INITIALS

Middle Chinese *Tsy-* initials regularly reflect Old Chinese nonpharyngealized alveolar initials *t-, *tʰ-, *d-, and *n-; another source of *Tsy-* initials is the palatalization of nonpharyngealized velar initials before the front vowels *i and *e. However, there are also contacts between velars and palatals in syllables with other vowels, which have long resisted satisfactory explanation.[3] We now attribute this palatalization to a preinitial *t before the main velar initial:

(63) 齒 *t-[kʰ]ə(ŋ)ʔ or *t-ŋ̊əʔ > *tsyhiX* > chǐ 'front teeth', Proto-Mǐn *khi B.

The fact that stop preinitials are attested in early loans to Vietic lends plausibility to this solution. See section 4.4.4 for discussion.

TABLE 3.2 Rhymes reconstructed for Old Chinese

	*-∅	*-j	*-w	*-n	*-m	*-ŋ	*-r	*-t	*-p	*-k	*-wk
*i	—	-ij	-iw	-in	-im	-iŋ	-ir	-it	-ip	-ik	-iwk
*u	-u	-uj	—	-un	-um	-uŋ	-ur	-ut	-up	-uk	—
*ə	-ə	-əj	—	-ən	-əm	-əŋ	-ər	-ət	-əp	-ək	—
*e	-e	-ej	-ew	-en	-em	-eŋ	-er	-et	-ep	-ek	-ewk
*o	-o	-oj	—	-on	-om	-oŋ	-or	-ot	-op	-ok	—
*a	-a	-aj	-aw	-an	-am	-aŋ	-ar	-at	-ap	-ak	-awk

3.2 Rhymes

Although the reconstructions of rhymes in some individual words have been changed, we have found no reason to modify the inventory of main vowels and codas set out in Baxter (1992), with two exceptions. First, we now write as *ə the vowel written in Baxter (1992) as *ɨ; more importantly, following Starostin (1989), we now recognize a coda *-r, contrasting with both *-j and *-n, and have found additional evidence for it (see section 5.5.1). The usual reflex of the *-r coda was MC *-n*, but there were evidently dialects where *-r merged with *-j instead. While Starostin did not specify the geographic location of these dialects, we now have evidence that the change *-r > *-j occurred in and near the Shāndōng peninsula (see section 5.5.1.4).

Thus, ignoring the postcodas *-ʔ and *-s, the rhymes of Old Chinese consist of combinations of one of the six main vowels (*i, *ə, *u, *e, *a, *o) with one of the codas (*zero, *-k, *-ŋ, *-j, *-t, *-n, *-r, *-w, *-wk, *-m, and *-p). Not all these combinations occur; the combinations we reconstruct are listed in Table 3.2.

The reconstruction of rhymes is discussed in detail in chapter 5.

3.3 Root structure, word structure, and affixation

3.3.1 ROOT STRUCTURE

Old Chinese words consisted of a root plus possible affixes. Word roots were either monosyllables consisting of a full syllable (Σ) or disyllables consisting of a full syllable preceded by a minor syllable (σ), that is, having the structure σ.Σ. Minor syllables σ were reduced in comparison with full syllables, in terms both of the number of structural positions they allowed and of the number of phonemes that contrasted in each position.

A full main syllable Σ included five structural positions, each of which could be filled by different sets of phonemes (Figure 3.1):

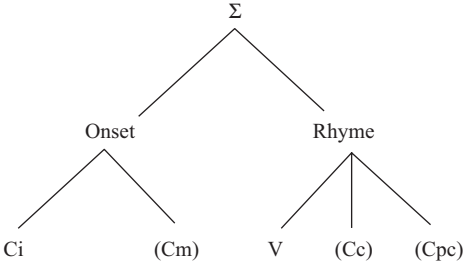


FIGURE 3.1 *Structure of OC main syllables*

The first position, **Ci** (initial), was obligatorily filled. All Old Chinese consonants except *j and *w could occur in it. A full table of the possible initial consonants is given in Table 4.1 in chapter 4.

The second position, **Cm** (medial), was either left empty or filled by *r. The *r, if present, could be part of the root, or it could be an infix *<r>, which occupied the same position. We write infixed *<r> between angled brackets to distinguish it from root *r in the medial position.

The third position, **V** (vowel nucleus), which formed the syllable's peak, was obligatorily filled by one of the six vowels *i, *e, *ə, *a, *u, and *o. The phonetic quality of the vowel we write as *ə is uncertain: it may have been a mid central vowel [ə], a high central vowel [ɨ], or even a high back unrounded vowel [ɯ].[4]

The fourth position, **Cc** (coda), was either left empty or filled by a consonant, which could be any one of the following: *m, *n, *ŋ, *r, *j, *w, *p, *t, *k, or *wk. Note that there was no coda "*wŋ."

The last position, **Cpc** (postcoda), was either empty or filled by a glottal stop. The glottal stop could only follow a sonorant (one of the six vowels or a sonorant coda): there were no sequences like *-kʔ, *-pʔ, *-tʔ, or *-wkʔ. Examples of unaffixed monosyllabic words follow:

(64) 豝 *pˤra > *pae* > bā 'sow, pig'

(65) 終 *tuŋ > *tsyuwng* > zhōng 'end'

(66) 涯 *ŋˤrar > *ngea* > yá 'river bank; limit'

In addition to the main syllable, certain words were preceded by extrasyllabic segmental material, forming a minor syllable or presyllable before the main syllable, and/or followed by a final *-s. Our provisional hypothesis is that final *s was always a morphological suffix, so we write it with a preceding hyphen. As for presyllables, sometimes we can identify them as prefixes, sometimes not. Where we cannot, the presyllables could be (1) as yet unrecognized prefixes, (2) known prefixes with unknown functions, or (3) part of the root. When we cannot tell whether a preinitial is a prefix or not, we separate it from the main syllable with a period instead of a hyphen and treat it, at least provisionally, as part of the root. Thus we write a hyphen after the preinitial *s- in

(67) 賜 *s-lek-s > *sjeH* > cì 'give'

because we take the *s- to be the valency-increasing prefix (see section 3.3.2.3 below) applied to the basic root

(68) 易 *lek > *yek* > yì 'change; exchange'

But we write a period in

(69) 千 *s.n̥ˤi[ŋ] > *tshen* > qiān 'thousand'

because in this case the *s presyllable has no clear morphological function.

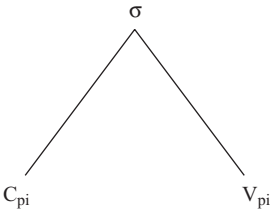


FIGURE 3.2 *Structure of OC minor syllables*

Further research may show that some presyllables now treated as part of the root were synchronically affixes in Old Chinese; others may have functioned as affixes at some earlier stage but must be treated synchronically as part of the root in Old Chinese. An analogy would be words such as English *believe* and German *glauben* 'believe'. Originally, these are from the same Proto-Germanic root *laub- with different prefixes, but synchronically they must now be considered part of the root. Still other presyllables may never have been prefixes at all.

In minor syllables there were two structural positions: **Cpi** (preinitial consonant) and **Vpi** (preinitial vowel) (Figure 3.2):

The first position, **Cpi**, must be filled by a consonant. The inventory of possible Cpi's was limited: we have evidence for *p, *t, *k, *r, *s, *m, and *N; of these, *N may be regarded as a positional allophone of either *n or *ŋ. The evidence for *r as a preinitial consonant is very limited. We reconstruct preinitial *r in

(70) 魯 *r.ŋˤaʔ > *luX* > lǔ '(place name)'
魚 *[r.ŋ]a > *ngjo* > yú 'fish (n.)'

to account for the Middle Chinese initial *l-* in 魯 lǔ < *luX*, which normally goes back to OC *r-, and for the use of 魚 *ngjo* > yú 'fish (n.)' as phonetic.

At times, the comparative evidence indicates that a preinitial consonant was present, but the consonant cannot be identified; in such cases we write it as '*C'. Still other consonants may have occurred in this position; we cannot provide a definitive list at this time. However, there is no evidence that minor syllables could include pharyngealized consonants.

The second position, **Vpi** (preinitial vowel), was either left empty (in which case the minor syllable's peak was a consonant),[5] or filled by *ə.

We call preinitials with an empty Vpi position "tightly attached" and those in which the Vpi position is filled with *ə "loosely attached." Tightly attached preinitials formed tight clusters with the major syllable's obligatory Ci consonant, and these clusters were simplified in different ways in Middle Chinese, while loosely attached preinitials were lost in Middle Chinese, as a rule (at times influencing the major syllable's initial before disappearing, as in Northern Mǐn).

Minor syllables did not occur freely outside of feet formed with a following major syllable; however, a few highly common function words are structurally identical with minor syllables with /ə/ and can be considered as such. Examples follow:

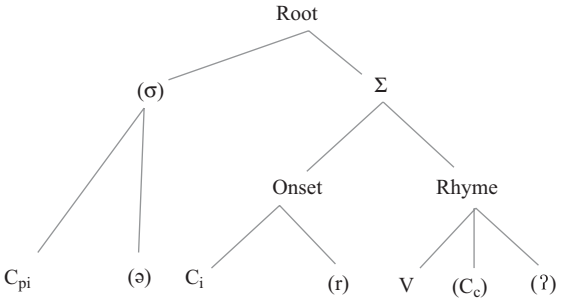


FIGURE 3.3 *Structure of OC roots*

(71) 而 *nə > *nyi* > ér 'and, but'
其 *gə > *gi* > qí 'modal particle'
之 *tə > *tsyi* > zhī '(3p object pronoun; attributive particle)'
不 *pə > *pjuw* > bù 'not'

One notes that 之 *tə did not bear stress in the Odes (Kennedy 1939). This behavior is normal if one thinks of the above forms as minor syllables. Nevertheless we treat them here as a particular type of full syllables.

The structure of Old Chinese roots is summarized in Figure 3.3.

Here are some examples of disyllabic roots with tightly attached preinitials:

(72) 川 *t.l̥u[n] > *tsyhwen* > chuān 'stream, river' (the Middle Chinese final is irregular; we would expect *tsywin*)
種 *k.toŋʔ > *toŋʔ > *tsyowngX* > zhǒng 'seed'; borrowed into Proto-Vietic as *k-coːŋʔ
板 *C.pˤranʔ > *paenX* > bǎn 'plank, board'

Here are some examples of disyllabic roots with loosely attached preinitials:

(73) 落 *kə.rˤak > *lak* > luò 'fall (v.)'
舌 *mə.lat > *zyet* > shé 'tongue'
嘗 *Cə.daŋ > *dzyang* > cháng 'taste (v.)'

There were no tones in Old Chinese (see the discussion in section 5.1). Major syllables were stressed, and any minor syllables were unstressed. This gave disyllabic words an iambic, weak-strong, rhythm. In verse, disyllables and monosyllables alike counted for one foot: a four-foot verse could consist of any combination of monosyllabic and disyllabic words.

3.3.2 AFFIXATION

In many Old Chinese words, affixes can be identified. Old Chinese had several prefixes and suffixes and one infix. All were derivational; some were quite productive. Prefixes were attached before the root's first segment, and suffixes after the last one. The infix was inserted between the Ci and the V in a major syllable, that is, in the syllable's

medial position. We separate suffixes and prefixes from roots by means of a hyphen, and isolate an infix within a root by using angled brackets "<>." Most prefixes were added to monosyllabic roots (see examples in the detailed discussion below), but there are some examples of prefixed disyllabic roots:

(74) 藍 *[N-k.]rˤam > *lam* > lán 'indigo'; cf. pHM *ŋglam
懶 *[N-kə.]rˤanʔ > *lanX* > lǎn 'lazy'; cf. pHmong *ŋglæn B 'lazy'

There are also examples of doubly prefixed roots (see discussion in section 4.6):

(75) 層 *N-s-tˤəŋ > *dzong* > céng 'in two storeys, double'
近 *s-N-kərʔ-s > *gj+nH* > jìn 'be near to (v.t.)'

The list of Old Chinese affixation processes is still an open one, but some are already well supported. We list them below.

Prefixes were consonants, each having short (*C) and long (*Cə) variants that apparently had the same morphological functions. The short variants behaved phonologically as tightly attached minor syllables, the long ones as loosely attached ones. The evidence for these variants is comparative (see section 4.2 below). The conditions of occurrence of short and long variants are not understood; for the moment we treat them as free variants. Short variants were more common. The syllabic status of words with two prefixes is uncertain, as is that of prefixed disyllabic roots.

3.3.2.1 The *N- prefix

Almost all examples of preinitial *N are prefixes. The *N- prefix typically derived stative intransitive verbs, often out of transitive verbs, and caused a following voiceless stop or affricate to become voiced. The long variant *Nə- did not have this voicing effect. Examples:

(76) 敗 *pˤra[t]-s > *paejH* > bài 'defeat (v.t.)'
敗 *N-pˤra[t]-s > *baejH* > bài 'suffer defeat'

(77) 折 *tet > *tsyet* > zhé 'bend; break (v.t.)'
折 *N-tet > *dzyet* > shé 'bend (v.i.)'

(78) 見 *[k]ˤen-s > *kenH* > jiàn 'see (v.)'
見 *N-[k]ˤen-s > *henH* > xiàn 'appear' (< 'be seen')

For further discussion and examples, see Shā Jiā'ěr [Sagart] and Bái Yīpíng [Baxter] (2010) and Sagart and Baxter (2012).

3.3.2.2 The *m- prefixes

There were several *m- prefixes in Old Chinese, with different functions (see Shā Jiā'ěr [Sagart] and Bái Yīpíng [Baxter] 2010). As with *N-, the short variants voiced a following voiceless stop or affricate in Middle Chinese.

Prefix *m_{1a}- changed a nonvolitional verb into a volitional one, at times with causative overtones:

(79) 覺 *kˁruk-s > *kaewH* > jiào ‘awaken’
學 *m-kˁruk > *haewk* > xué ‘study, imitate’

(80) 見 *[k]ˁen-s > *kenH* > jiàn ‘see (v.)’
見 *m-[k]ˁen-s > *henH* > xiàn ‘cause to appear, introduce’

(81) 晶 *tseŋ > *tsjeng* > jīng ‘bright, limpid’, 精 *tseŋ ‘pure’
淨 *m-tseŋ-s > *dzjengH* > jìng ‘cleanse (v.t.)’

Prefix *m_{1b}- changed a noun into a volitional verb:

(82) 背 *pˁək-s > *pwojH* > bèi ‘the back’
背 *m-pˁək-s > *bwojH* > bèi ‘turn the back on’

(83) 倉 *tsʰˁaŋ > *tshang* > cāng ‘granary’
藏 *m-tsʰˁaŋ > *dzang* > cáng ‘store (v.)’

(84) 朝 *t<r>aw > *trjew* > zhāo ‘morning’
朝 *m-t<r>aw > *drjew* > cháo ‘go to (morning) audience at court’

Prefix *m_{1c}- changed a verb into an agentive/instrumental noun:

(85) 判 *pʰˁan-s > *phanH* > pàn ‘divide’
畔 *m-pʰˁan-s > *banH* > pàn ‘bank between fields’

(86) 拄 *t<r>oʔ > *trjuX* > zhǔ ‘prop up, support (v.)’
柱 *m-t<r>oʔ > *drjuX* > zhù ‘pillar’

(87) 稱 *tʰəŋ > *tsyhing* > chēng ‘weigh; evaluate; call’
稱 *mə-tʰəŋ-s > *tsyhingH* > chèng ‘steelyard’; cf. pHM *nthjo̱əŋH ‘balance’

(88) 包 *pˁ<r>u > *paew* > bāo ‘wrap, bundle’
袍 *m.[p]ˁu > *baw* > páo ‘long robe’

See also the double-prefixed form 層 *m-s-tˁəŋ > *dzong* > céng ‘additional floor, field’, discussed in section 4.6.

Prefix *m_{2}- occurs in names of human body parts:

(89) 肚 *tˁaʔ > *tuX* > dǔ ‘belly, stomach’
肚 *m-tˁaʔ > *duX* > dù ‘belly’

(90) 兜 *tˁo > *tuw* > dōu ‘helmet, hood’
頭 *[m-t]ˁo > *duw* > tóu ‘head’

(91) 髀 *peʔ > *pjieX* > bì ‘femur, haunch’
髀 *m-pˁeʔ > *bejX* > bì ‘femur’

Prefix *m_{3}- occurs in names of animals:

(92) 黿 *qʷˁre > *ʼwea*, *ʼwae* > wā ‘frog’
黿 *m-qʷˁre > *hwea*, *hwae* > wā ‘frog’

(93) 鷮 *qˢruk > *'aewk* > xué ‘a kind of bird’
鷮 *m-qˢruk > *haewk* > xué ‘a kind of bird’

(94) 麑 *m-ŋˢe > *mej* > ní ‘fawn’

(95) 鹿 *mə-rˢok > *luwk* > lù ‘deer’; cf. Bùyāng 布央 /ma 0 lok 8/ ‘deer’ (Lǐ Jǐnfāng 1999:199)

3.3.2.3 The *s- prefixes

Prefix *s_1- increases valency in a verb (including transitivizing and causative functions):

(96) 烝 *təŋ > *tsying* > zhēng ‘to rise (of steam)’
升 *s-təŋ > *sying* > shēng ‘to lift up, to save, to present to’

(97) 諤 *ŋˢak > *ngak* > è ‘speak frankly’
愬 *s-ŋˢak-s > *suH* > sù ‘complain, accuse’

(98) 當 *tˢaŋ > *tang* > dāng ‘match (v.); have the value of, rank with’
商 *s-taŋ > *syang* > shāng ‘to estimate’

(99) 視 *gijʔ > *dzyijX* > shì ‘look, see’
示 *s-gijʔ-s > *zyijH* > shì ‘show (v.)’

Prefix *s_2- derives circumstantial nouns (place, time, instrument):

(100) 逆 *ŋrak > *ngjaek* > nì ‘go against, reverse’
朔 *s-ŋrak > (*srjak* >) *sraewk* > shuò ‘first day of month’ (when the moon changes from waning to waxing)

(101) 通 *l̥ˢoŋ > *thuwng* > tōng ‘penetrate’
窗 *s-l̥ˢ<r>oŋ > *tsrhaewng* > chuāng ‘window’ (< ‘where light penetrates’)

(102) 亡 *maŋ > *mjang* > wáng ‘flee; disappear; die’
喪 *s-mˢaŋ > *sang* > sāng ‘mourning, burial’ (< ‘circumstances associated with death’)

(103) 以 *ləʔ > *yiX* > yǐ ‘take, use’
鉏 *sə.ləʔ > *ziX* > yí ‘handle of plow or sickle’ (< ‘instrument of holding’)

For more discussion of the *s- prefix in Old Chinese, see Sagart and Baxter (2012).

3.3.2.4 The *t- prefixes

Prefix *t_1- occurs in certain intransitive verbs, stative or nonstative:

(104) 出 *t-kʰut > *tsyhwit* > chū ‘go or come out’

(105) 懘 *t-nip, *t-nᶜ[i]p > *tsyip*, *nep* > zhí ‘afraid, to fear’ (for initial developments, see section 4.4.4.4)

(106) 踕 *n<r>ep > *nrjep* > niè ‘unable to walk’
輒 *t-nᶜep > *tep* ‘paralysed, unable to move’

Prefix *t_2- occurs in certain inalienable nouns:

(107) 奾 *t-qoŋ > *tsyowng* > zhōng ‘father-in-law’

(108) 肘 *t-[k]<r>uʔ > *trjuwX* > zhǒu ‘elbow’

(109) 齒 *t-[kʰ]ə(ŋ)ʔ or *t-ŋ̊əʔ > *tsyhiX* > chǐ ‘front teeth’

(110) 喙 *t-l̥o[rʔ]-s, *l̥o[rʔ]-s > *tsyhwejH*, *xjwojH* > huì ‘snout’

(111) 臭 *t-qʰu(ʔ)-s > *tsyhuwH* > chòu ‘foul smell’; cf.
朽 *qʰ(r)uʔ > *xjuwX* > xiǔ ‘rot, decay’

3.3.2.5 The *k- prefixes

Prefix *k- added to verbal roots derives nonfinite forms of the verb that can be used as nouns:

(112) 方 *C-paŋ > *pjang* > fāng ‘square’
匡 *k-pʰaŋ > *khjwang* > kuāng ‘square basket’ (aspiration in the root is unexplained)

(113) 明 *mraŋ > *mjaeng* > míng ‘bright’
囧 *k-mraŋʔ > *kjwaengX* > jiǒng ‘bright window’

Prefix *k- also occurs in verbs; its function is difficult to determine:

(114) 謬 *m-riw-s > *mjiwH* > miù ‘lie, error’ (< ‘twist the truth’)
摎 *k-riw > *kjiw* > jiū ‘tie around, strangle’

(115) 卬 *ŋᶜaŋ > *ngang* > áng ‘high, lift high’
亢 *k-ŋᶜaŋ > *kang* > gāng ‘lift high’

(116) 淚 *[r][ə]p-s (dial. >) *rup-s > *lwijH* > lèi ‘tear (n.)’
泣 *k-ɻ̊əp > *khip* > qì ‘weep’

3.3.2.6 The *<r> infix

Infix *<r_1> in verbs of action marks distributed actions (actions with several agents, patients, or locations; repeated actions):

(117) 洗 *[s]ᶜərʔ > *sejX* > xǐ ‘wash’
洒 ~ 灑 *Cə.s<r>ərʔ-s > *srjeH* > *sreaH* > sǎ ‘sprinkle’; cf. VN *rảy* [zai C1] ‘sprinkle’ (where the *r*- reveals the presence of a presyllable; see section 4.5.5.1)

(118) 挾 *m-k^{ʂ}ep > *hep* > xié ‘grasp’
夾 *k^{ʂ}<r>ep > *keap* > jiā ‘press between’

(119) 見 *[k]^{ʂ}en-s > *kenH* > jiàn ‘see (v.)’
瞷 *m-[k]^{ʂ}<r>en > *hean* > xián ‘spy on, watch’

Infix *<r$_2$> in stative verbs marks intensiveness:

(120) 揭 *m-[k]at > *gjot* > jiē ‘lift’
桀 *N-[k]<r>at > *gjet* > jié ‘remarkable; hero’ (< ‘surpassing’)

(121) 腫 *toŋʔ > *tsyowngX* > zhǒng ‘swell, swollen’
重 *N-t<r>oŋʔ > *drjowngX* > zhòng ‘heavy’

(122) 厭 *ʔem > *'jiem* > yān ‘contented (adj.)’
饜 *ʔ<r>em-s > *'jemH* > yàn ‘satiated’

Infix *<r$_3$> in nouns marks distributed structure (double or multiple objects):

(123) 齊 *[dz]^{ʂ}əj > *dzej* > qí ‘uniform, equal’
儕 *[dz]^{ʂ}<r>əj > *dzreaj* > chái ‘category, equals’

(124) 脛 *m-k^{hʂ}eŋ-s > *hengH* > jìng ‘leg, shank’
牼 *m-k^{hʂ}<r>eŋ > *heang*, *k^{hʂ}<r>eŋ > *kheang* > kēng ‘shank bone’

(125) 縊 *q[i]k-s (dial. > *qek-s) > *'jieH* > yì ‘strangle’
厄 *q^{ʂ}<r>[i]k > *'eak* > è ‘part of a yoke’ (device for holding the neck of oxen or horses; two on a yoke)

3.3.2.7 The *-s suffixes

This is a very common suffix with many functions, only a few of which are well understood.

Suffix *-s$_1$ nominalizes verbs, by far the most common function of *-s:

(126) 結 *k^{ʂ}i[t] > *ket* > jié ‘tie (v.)’
髻 *k^{ʂ}i[t]-s > *kejH* > jì ‘hair-knot, chignon’

(127) 磨 *m^{ʂ}aj > *ma* > mó ‘rub, grind’
磨 *m^{ʂ}aj-s > *maH* > mò ‘grindstone’

(128) 內、納 *n^{ʂ}[u]p > *nop* > nà ‘bring or send in’
內 *n^{ʂ}[u]p-s > *nut-s > *nwojH* > nèi ‘inside’

Suffix *-s$_2$ derives denominal verbs:

(129) 冠 *k.ʔ^{ʂ}or > *kwan* > guān ‘cap (n.)’
冠 *k.ʔ^{ʂ}or-s > *kwanH* > guàn ‘cap (v.)’

(130) 衣 *ʔ(r)əj > *'j+j* > yī ‘clothes’
衣 *ʔ(r)əj-s > *'j+jH* > yì ‘wear (v.t.)’

(131) 王 *ɢʷaŋ > *hjwang* > wáng ‘king’
王 *ɢʷaŋ-s > *hjwangH* > wàng ‘to be king’

Suffix *-s_3 derives verbs of outwardly directed action out of verbs of inwardly directed action or stative verbs.

(132) 買 *mˤrajʔ > *meaX* > mǎi ‘buy’
賣 *mˤrajʔ-s > *meaH* > mài ‘sell’

(133) 受 *[d]uʔ > *dzyuwX* > shòu ‘receive’
授 *[d]uʔ-s > *dzyuwH* > shòu ‘give, hand over’

(134) 學 *m-kˤruk > *haewk* > xué ‘study; imitate’
斆 *m-kˤruk-s > *haewH* > xiào ‘teach’

(135) 好 *qʰˤuʔ > *xawX* > hǎo ‘good’
好 *qʰˤuʔ-s > *xawH* > hào ‘love, like (v.)’

(136) 惡 *ʔˤak > *'ak* > è ‘bad, ugly’
惡 *ʔˤak-s > *'uH* > wù ‘hate (v.)’

3.3.3 WORD FAMILIES

When two Old Chinese words share the same root and have different affixes, they can be said to belong to the same word family. In this section we illustrate the notion of word family with three examples.

The root *tˤəŋ ‘ascend’ occurs bare in the verb:

(137) 登 *tˤəŋ > *tong* > dēng ‘ascend’

Prefixed with *s_1-, a causative verb is formed:

(138) 增 *s-tˤəŋ > *tsong* > zēng ‘to increase (v.t.)’ (< ‘cause to ascend’).

Out of this last form—whether before or after the shift of *s-t- to *ts*- is not known—a stative verb ‘increased, augmented, doubled, high’ was derived through prefixation of *N-:

(139) 層 *N-s-tˤəŋ > *dzong* > céng ‘doubled, piled up’

Another word, also read as MC *dzong*, had a nominal meaning: ‘(additional) layer or floor’:

(140) 層 *m-s-tˤəŋ > *dzong* > céng ‘additional layer or floor’

We reconstruct *m-s-tˤəŋ with prefixed *m_{1c}-, an additional floor being then conceived of as a ‘means of increasing’ the space within a house. In the Mǐn dialects this word has

displaced 田 *lˤiŋ > *den* > tián as 'field' (Norman 1996:31): Xiàmén /tsʰan 2/, Cháozhōu /tsʰaŋ 2/, Fúzhōu /tsʰeiŋ 2/, Jiàn'ōu /tsʰaiŋ 5/, Yǒng'ān /tsʰĩ 2/. Note the aspirated initials, implying pMǐn *dzh-, the expected reflex of OC *m-s-t-. The semantic evolution appears to have been from 'means of increasing' the size of a field, to 'added terraced field above an existing field' to 'terraced field' to 'field'.

A root *pˤan 'divide' is in evidence in a set of words with the core meaning 'to divide'. The bare root does not occur as a word, but its nominal derivative with suffixed *-s_1 is seen in

(141) 半 *pˤan-s > *panH* > bàn 'half'

The original verb root was also given a distributive meaning by means of infixed *<r_1>:

(142) 班 *pˤ<r>an > *paen* > bān 'divide, distribute'

From a related root (see section 3.3.4 below), we have another word family with the verb 判 *pʰˤan-s > *phanH* > pàn 'divide' and a derived noun with the instrumental prefix *m_{1c}-:

(143) 判 *pʰˤan-s > *phanH* > pàn 'divide'
畔 *m-pʰˤan-s > *banH* > pàn 'bank between fields'

The root *truŋ 'center' is a nominal root, appearing in its bare form in

(144) 中 *truŋ > *trjuwng* > zhōng 'center'

Out of this noun a verb was derived by means of suffix *-s_2:

(145) 中 *truŋ-s > *trjuwngH* > zhòng 'hit the center'

Further, through the addition of the *N- prefix, a new verb, stative and intransitive, was derived:

(146) 仲 *N-truŋ-s > *drjuwngH* > zhòng 'middle (of three brothers, of three months)' (< 'placed in the center'); cf. pHM *ntroŋ A 'center, middle'

The nasal prefix we suppose is directly attested in the Proto-Hmong-Mien form, even though one would expect tone C corresponding to Chinese *qùshēng*, rather than tone A.

3.3.4 RELATED ROOTS

It is not uncommon for two independently reconstructible roots to have similar meanings and similar, but not identical, pronunciations. Thus next to root *tˤəŋ 'ascend', discussed in the preceding section, we have a root *təŋ 'rise':

(147) 烝 *təŋ > *tsying* > zhēng 'to rise'

The word was used in particular with reference to steam and has come to be used as a transitive verb 'to steam'. The root occurs with *s- in

(148) 升 *s-təŋ > *sying* > shēng ‘ascend’ (e.g., a reception hall; a chariot)

Out of an *s-suffixed form of the verb ‘to steam’, the name of a steaming instrument was derived through the addition of prefixed *S-:[6]

(149) 甑 *S-təŋ-s > *tsingH* > zèng ‘boiler for steaming rice’

Thus we have two roots, *tˁəŋ and *təŋ, differing in the pharyngealization of the initial. There are other cases where roots that are semantically very similar contrast in the presence or absence of aspiration:

(150) 鬻 *m-quk > *yuwk* > yù ‘nourish’
畜 *qʰuk > *xjuwk* > xù ‘nourish’

Another such example is the pair 半 *pˁan-s > *panH* > bàn ‘half’ and 判 *pʰˁan-s> *phanH* > pàn ‘divide’ in examples (141) and (143) above.

In still other cases, there appears to be an alternation between final *-ʔ and final *-k: e.g., *taʔ and *tak, both ‘to place’:

(151) 署 *m-taʔ-s > *dzyoH* > shǔ ‘to place; position’
緒 *s-m-taʔ > *zjoX* > xù ‘arrange in order’
著 *t<r>ak > *trjak* > zhuó ‘to place’
著 *t<r>ak-s > *trjoH* > zhù ‘place (n.); visible’
席 *s-m-tAk > *zjek* > xí ‘mat’ (< ‘where one puts things’?)

Phonological alternations such as these are not productive in Old Chinese. We take them to be what remains of morphological alternations that were once productive in languages ancestral to Old Chinese. They are similar to English sets such as *whole, heal*, and *health*:

(152) *whole* < Old English *hál* ‘sound, healthy’ < Proto-Germanic *hail-az
heal < Old English *hǽlan* ‘to make whole or sound’ < Proto-Germanic *hail-jan
health < Old English *hǽlþ* ‘soundness of body’ < Proto-Germanic *hail-iþa

These all come from the same Proto-Germanic root *hail- meaning ‘sound in body’, but in modern English they must probably be considered three synchronically different roots that are related only historically.

Similarly, we may expect to find explanations for Old Chinese related roots such as *taʔ and *tak in a wider comparative context. For example, alternations between final *-ʔ and final *-k in verbs are reminiscent of some aspects of the alternation between stem A and stem B in Kuki-Chin languages (for instance So-Hartmann 2009:71 for Daai Chin). More work is needed in this domain.

3.4 The nature of the pre-Qín script

As outlined in section 2.3, one of our main motivations for developing a revised reconstruction has been the discovery of large numbers of pre-Qín documents whose script is more relevant to Old Chinese reconstruction than the standard script on which previous reconstructions have largely been based. In using these pre-Qín documents, we have been led to a new understanding of the nature of the pre-Qín script, which is relevant to the problem of reconstructing Old Chinese.

For one who knows modern Chinese, it is easy to think anachronistically about the early Chinese script and to imagine that it is essentially no different from the script in use over the last 2,000 years. To learn the standard script, it is necessary to memorize several thousand characters, whose connection to pronunciation has become less and less direct as time has passed. It is important to remember that the standard script has been maintained with very strong institutional and cultural support, which was not present to the same degree in Old Chinese times. The standard script has been in use over a vast and linguistically diverse area, and its mastery has been one of the keys to government employment. It has been a centrally defined standard, supported by widely distributed reference works and other texts. The circulation of these texts was eventually facilitated by the use of paper (much less expensive than earlier writing materials), by printing, and by the development of a flourishing commercial market in books. The cultural prestige associated with the lettered class has reinforced these tendencies. All these factors have worked to maintain the standard script with minimal changes, in spite of the fact that it is difficult to learn and inconvenient in many respects.

None of these institutional and cultural supports were present in the pre-Qín period. There were widely shared conventions, of course, or else the script would not have been able to function efficiently as a means of communication, but there was no centrally defined standard. Literacy would have been an important qualification for some jobs but was probably less important as a key to prestige and high-status employment than it became later. Political fragmentation probably meant that the circulation of texts was generally confined to smaller areas. Books were bulkier and more expensive than they became later, so compared with imperial times, the familiarity with existing texts probably presented less resistance to innovation than it became later. The body of texts regarded as canonical was also much smaller, and what was canonical was probably more often recited and listened to than written and read. There was more variation from scribe to scribe (as we can clearly see from recently excavated Warring States documents); and finally, calligraphy, with its well-defined styles and models for emulation, was less developed as a distinct art.

The pre-Qín script was thus more fluid and less resistant to adaptation and modification than the script of the imperial period. Still, the writing system had to function for communication among large numbers of people, and the script must have been shaped by the functions that it served. Scripts are synchronic systems, with some of the same kinds of constraints that shape spoken languages. What, then, were the constraints that shaped the structure of pre-Qín writing?

First, the script had to be learnable. Just as no spoken language uses more than about a hundred distinct phonemes, there must have been a practical limit, imposed by memory limitations, on the number of signs that had to be learned and remembered. Without the powerful institutional supports that arose later, the number of elements that needed to be memorized outright was probably considerably smaller than in the imperial system.

Second, all other things being equal, there must have been a limit to the complexity of the relationship between the elements of the script and the corresponding elements of the spoken language. If linguistic changes complicated this relationship, the pre-Qín script was relatively free to adapt in response. If, because of a change in pronunciation, a phonetic element became less suitable to write a certain word, it was likely to be replaced by another; and the force of resistance to such modifications must have been considerably weaker than it later became.

As an example, we can take the history of ways to write the word {聞} wén 'hear'. In oracle-bone and early bronze inscriptions, the character used has a person and an ear:

(153) 

The person is said to be kneeling and holding his hands to his face (Yú Xǐngwú 1941, quoted in *GG* 9.585). In excavated Warring States documents, {聞} wén is commonly written with the character 昏 hūn 'dusk', as a phonetic loan; our reconstructions are:

(154) 聞 *mu[n] > *mjun* > wén 'hear (v.)'
昏 *m̥ˤu[n] > *xˤun > *xwon* > hūn 'dusk, dark'

The use of 昏 *m̥ˤu[n] 'dusk' to write 聞 *mu[n] 'hear' is based on the phonetic similarity of *m- and *m̥ˤ- and the presence of the same rhyme *-u[n] in both words. We also find 昏 hūn with 耳 ěr 'ear' added; this is the form 聞, which the *Shuōwén* lists as an "ancient character" (*SWGL* 5356a).

But at some point, the initial *m̥ˤ- of 昏 hūn changed to a fricative [h] or [x] (> MC *x*-), disturbing the phonetic similarity with {聞} *mu[n]; and in the Qín script (e.g., in the documents from Shuìhǔdì 睡虎地; see Jì Xùshēng 2010:877) we find a new phonetic compound, with 門 mén 'gate, door' as phonetic:

(155) 聞 *mu[n] > *mjun* > wén 'hear (v.)'
門 *mˤə[r] > *mwon* > mén 'gate, door'

Early in the Old Chinese period, 門 mén < *mˤə[r] would not have been a proper phonetic for 聞 wén < *mu[n], because its main vowel was different (*ə ≠ *u); the codas were probably different as well (*-r ≠ *-n), although this is not certain. But as the result of later sound changes, final *-r changed to *-n in most dialects, and the contrast between *-un and *-ən was lost after labial onsets, so at that point 門 mén became a suitable phonetic for {聞} wén 'hear'; and because of the late change of *m̥(ˤ) to *x(ˤ), 昏 hūn < *xwon* < *m̥ˤu[n] would have become a less suitable phonetic. This example shows how the early script, with fewer institutional barriers to innovation, was able to adapt to these sound changes, replacing the phonetic element 昏 hūn with the phonetic element 門 mén.

But even in the pre-Qín period, there were forces that would have resisted excessive fluidity in the script. Written texts were intended to be read and used by different people at different points in space and time. Records from earlier periods still needed to be read; and texts did circulate from place to place within certain geographic domains. But the domains were smaller than in imperial times: the reach of government administration was not as far, and wide circulation of texts must have been less common than it later became. And in fact, paleographers have identified significant regional differences in the script of pre-Qín documents.

Not only would the total number of written signs have been limited, but there would have been a tendency to avoid having to make graphic distinctions that were too subtle: if two graphic elements were similar in shape, they sometimes merged altogether, becoming a single element with more than one function—or perhaps they were never clearly distinguished in the first place. An example of this in the modern script is the fact that the shape of the abbreviated form of 肉 ròu 'flesh' has merged with 月 yuè 'moon', even though the two elements have very different functions; context provides enough redundancy that no confusion results. Similarly, in the pre-Qín script, 月 yuè 'moon' and 夕 xī 'night' are not clearly distinguished (Jì Xùshēng 2010:565).

We can assume that the structure of the pre-Qín script was shaped by a kind of homeostasis among these various forces. The graphic signs could not become so numerous as to be too difficult to learn, remember, produce, and recognize, but there must have been enough of them to represent the necessary distinctions. Signs whose connection to the spoken language became too indirect tended to be replaced by others whose structure was more transparent. Yet modifications of the script cannot have been too frequent or capricious, or else documents written at one time and place would become too difficult to read at another.

The system was word-based in the sense that a given graphic token in a given text represented a word-length unit, rather than a single phonetic segment as in alphabetic systems. But from the standpoint of how graphs were learned, remembered, retrieved, and read, we suggest that the system was primarily syllable-based, not word-based. Rather than memorizing something on the order of 5,000 to 10,000 graphs roughly corresponding to morphemes, which is what is required for literacy today, a person learning a variety of the pre-Qín script would have learned a set of about a thousand graphic elements, each of which could be used as a phonetic sign to represent a certain type of syllable. Many of these elements originated as pictograms, and there were a certain number of graphs constructed by combining graphs based on their denotations (the so-called huìyì 會意 'semantic compounds'). But it was the availability of a set of about a thousand phonetic elements that gave the system the power to represent the full range of vocabulary of the spoken language. When a phonetic element by itself would be ambiguous, it could be supplemented by adding a semantic element to the graph, as 耳 ěr 'ear' was sometimes added to 昏 hūn < *m̥ʿu[n] when it represented {聞} wén < *mu[n] 'to hear' (see above).

In most cases, each phonetic element represented a type of syllable with a certain position of articulation in the onset, a certain main vowel, and a certain coda: for example, the element 皮 pí 'skin' came to represent syllables of the general shape *P(r)aj; here *P represents any oral labial stop, pharyngealized or not. There might or might not have been a prevocalic *-r-, and there might or might not have been a presyllable. In recently excavated documents, according to Bái Yúlán (2008:127), the graph 皮, with no added elements, is used to represent all the following words:

{皮} *m-[p](r)aj > *bje* > pí 'skin'
{彼} *paj? > *pjeX* > bǐ 'that'
{疲} *[b](r)aj > *bje* > pí 'weary, exhausted'
{破} *p^{hs}aj-s > *phaH* > pò 'break (v.)'
{跛} *p^{s}aj? > *paX* > bǒ 'walk lame'

Similarly, the graph 白 stood for syllables of the type *P^{s}(r)ak; according to Bái Yúlán (2008:187), this graph was used, by itself, to represent all these words:

{白} *b^{s}rak > *baek* > bái 'white'
{伯} *p^{s}rak > *paek* > bó 'father's elder brother'
{柏} *p^{s}rak > *paek* > bǎi 'cypress'
{百} *p^{s}rak > *paek* > bǎi 'hundred'
{泊} *[b]^{s}ak > *bak* > bó 'calm, still'

It would be anachronistic to think of these various uses of 皮 pí and 白 bái as abbreviations of or mistakes for the phonetic compounds that later became conventional; rather, they were used to represent a certain syllable type: which particular word was intended could usually be understood from the context. Additional elements could be added to reduce ambiguity, and these eventually became conventional. But the script as we see it in the excavated documents is primarily based on using a set of graphs representing syllable types.

Some syllables could be represented by more than one phonetic element; for example, syllables of the form *ŋ(^{s})(r)aj(?) had two possible representations:

(156) 我 *ŋ^{s}aj? > *ngaX* > wǒ 'we, I'
宜 *ŋ(r)aj > *ngje* > yí 'proper; should'

These two phonetic elements seem to have been more or less interchangeable: the word now written as

(157) 義 *ŋ(r)aj-s > *ngjeH* > yì 'duty; justice'

is usually written in the Guōdiàn and Shànghǎi Museum texts as 宜 *ŋ(r)aj. (In fact, {義} *ŋ(r)aj-s 'duty; justice' is just the nominal derived from {宜} *ŋ(r)aj 'proper; should' by means of the suffix *-s.) But we also find *ŋ(r)aj-s 'duty; justice' written as

“義” in the Guōdiàn text “Xìng zì mìng chū”《性自命出》, where the corresponding passage in the parallel Shànghǎi Museum text “Xìng qíng lùn”《性情論》has “宜” (Bái Yúlán 2008:135).

Conversely, if two characters seem to represent the same syllable type but are *not* interchanged in early documents, this fact can be used as a heuristic to identify possible phonological distinctions that have been overlooked. For example, 工 gōng and 公 gōng are both pronounced *kuwng* in Middle Chinese, and they have previously been reconstructed as homonyms for Old Chinese as well. But according to Bái Yúlán (2008:254–257), the sets of words written with these two phonetics in excavated Warring States documents do not overlap—suggesting that they were not homonyms in Old Chinese after all. On closer examination, it is clear that 工 gōng was used for velar-initial syllables, as in (158), and 公 gōng for uvular-initial syllables, as in (159):

(158) 工 *kˤoŋ > *kuwng* > gōng ‘officer’
空 *kʰˤoŋ > *khuwng* > kōng ‘hollow, empty; hole’

(159) 公 *C.qˤoŋ > *kuwng* > gōng ‘impartial, just; public’; phonetic in
容 *[ɢ](r)oŋ > *yowng* > róng ‘contain’[7]

At the same time, there were some syllable types that apparently had no proper phonetic element of their own, and for which the usual criteria for a phonetic match had to be relaxed. For example, there seems to have been no separate phonetic for syllables of the form *n(ˤ)er, as in the word

(160) 臡 *nˤer > *nej* > ní ‘pickled meat with bones in it’ (also read *ner > *nye*).

So the phonetic element 難 nán < *nˤar, whose usual function is to represent syllables of the form *nˤar, was used, together with 肉 ‘flesh’, to represent {臡} *nˤer.

Similarly, the element 單 dān < *tan* < *Cə.tˤar ‘single’ normally represents syllables of the shape *Tar. But the *Shǐ jì*: Xiōngnú liè zhuàn《史記・匈奴列傳》gives this disyllabic word as the name of a kind of horse ridden by the Xiōngnú:

(161) 驒騱 diānxí ‘a kind of wild horse’

The commentaries tell us this word should be read as MC *ten-hej*; from this we can reconstruct the word (probably borrowed from the Xiōngnú language) as *tˤer.gˤe for (late) Old Chinese. Here, the character 單 dān < *tan* < *Cə.tˤar was used to write the syllable *tˤer, in spite of the difference in main vowel, because no better phonetic element was available.

We say that the phonetic elements in such examples are used *faute de mieux*, ‘for want of a better one’: they reflect the fact that although the use of a set of phonetic elements for syllable types was basic to the writing system, the coverage of the set of possible syllables was uneven. The precision with which phonetic elements represented syllable types thus varied from one region of the space of syllable types to another, and the criteria for a phonetic match were not always consistent. For example, we find

a larger degree of latitude in the use of phonetic elements for syllables with final *-m and *-p, which are relatively infrequent, than for syllables with final *-ŋ and *-k, for which many choices were available. In general, however, the practice was to pick the most suitable phonetic element that was available.

There was a tendency over time to make the system more precise: for example, in the early script it appears that 袁 yuán was used for both *Qʷan and *Qʷen syllable types:

(162) 遠 *C.gʷanʔ > *hjwonX* > yuǎn ‘far’
袁, 還 *gʷˁ<r>en > *hwaen* > huán ‘turn around; return’
還 *s-gʷen > *zjwen* > xuán ‘turn around, return; agile’

Eventually, though, 袁 yuán seems to be used for *Qʷan and 袁 huán for *Qʷen.

Such developments tended to make the system of phonetic elements more precise than it may have been at the earliest stage. But there were also forces working to reduce the precision of the system, as the script came to be more standardized from the Qín unification (221 BCE) onward. Changes in pronunciation would sometimes make words written with the same phonetic element sound less similar than they had earlier, but now the script was much less likely to adapt to changes in pronunciation (as it had earlier by writing {聞} wén ‘hear’ with 門 mén as phonetic rather than 昏 hūn).

The result was that the connection between pronunciations and phonetic elements became less and less direct as time passed, resulting in the system we have now. Moreover, when new phonetic compounds were created, the criteria for phonetic similarity would have been looser if they were defined by analogy to already existing phonetic compounds. As a result, characters of late origin are generally less informative than earlier ones about pronunciation—especially about Old Chinese pronunciation.

{ 4 }

Old Chinese onsets

We define a word onset in Old Chinese as the part of an Old Chinese word that precedes the main vowel: it includes

1. any presyllabic material that may be present, which can contain up to two consonants, including prefixes, with or without the vowel *ə;
2. the initial of the main syllable; and
3. medial *-r- (which in some cases is an infix), if present.

The only obligatory element within an onset was the initial of the main syllable. The consonants that could occupy the main-syllable initial position (with or without a pre-initial) are shown in Table 4.1 below.

In the next section we discuss some of the main developments affecting the evolution of these consonants.

4.1 The evolution of Old Chinese initial consonants: major processes

4.1.1 PHARYNGEALIZATION

Middle Chinese syllables can be divided into two main types, for which Pulleyblank (1977–1978) coined the terms "type A" and "type B." In traditional terms, type-A syllables are those in divisions I, II, or IV; type-B syllables are those in division III. In our Middle Chinese notation, type-B or division-III syllables can be recognized by the fact that they include *-i-*, prevocalic *-j-*, or both, or have an initial consonant spelled with *-y-*; type-A syllables are those that have neither *-i-* nor prevocalic *-j-* and no *-y-* in the initial.

The Old Chinese origins of the distinction between type-A and type-B syllables have been debated for decades. Karlgren (1940) reconstructed type-B syllables with a medial yod *-i̯- before the vowel, and type-A syllables without this yod; this reconstruction became traditional for a time (Li 1971 and Baxter 1992 have *-j- instead of *-i̯-). But Pulleyblank (1962–1963:99), noting that foreign loans from Chinese showed no sign of Karlgren's yod, argued for a vowel-length distinction instead: he proposed that

TABLE 4.1 Old Chinese main-syllable initial consonants

Plain: (type B)	p	t	ts				k	k^w	q	q^w	ʔ	
	p^h	t^h	ts^h	s			k^h	k^{wh}	q^h	q^{wh}		
	b	d	dz				g	g^w	ɢ	$ɢ^w$		
	m	n			l	r	ŋ	$ŋ^w$				
	m̥	n̥			l̥	r̥	ŋ̊	$ŋ̊^w$				
pharyngealized (type A):	$p^ˤ$	$t^ˤ$	$ts^ˤ$				$k^ˤ$	$k^{wˤ}$	$q^ˤ$	$q^{wˤ}$	$ʔ^ˤ$	$ʔ^{wˤ}$*
	$p^{hˤ}$	$t^{hˤ}$	$ts^{hˤ}$	$s^ˤ$			$k^{hˤ}$	$k^{whˤ}$	$q^{hˤ}$	$q^{whˤ}$		
	$b^ˤ$	$d^ˤ$	$dz^ˤ$				$g^ˤ$	$g^{wˤ}$	$ɢ^ˤ$	$ɢ^{wˤ}$		
	$m^ˤ$	$n^ˤ$			$l^ˤ$	$r^ˤ$	$ŋ^ˤ$	$ŋ^{wˤ}$				
	$m̥^ˤ$	$n̥^ˤ$			$l̥^ˤ$	$r̥^ˤ$	$ŋ̊^ˤ$	$ŋ̊^{wˤ}$				

* rare

the type-B syllables had distinctively long vowels, which diphthongized after the Old Chinese period, giving Karlgren's yod as a by-product. Zhèngzhāng Shàngfāng (1987) and Starostin (1989) also attributed the A/B distinction to vowel length, but reconstructed long vowels in type A and short vowels in type B—the reverse of Pulleyblank's proposal. Both Zhèngzhāng and Starostin cited comparisons with certain Tibeto-Burman languages that appear to have long vowels corresponding to Chinese type A and short vowels corresponding to Chinese type B.[1]

Meanwhile, Pulleyblank (1973, 1977–1978) abandoned his previous vowel-length solution and proposed instead that type-A syllables were characterized by stress on the second mora of the syllable (which he indicated by an acute accent over the vowel), and type-B syllables by stress on the first mora (indicated by a grave accent). Finally, Norman (1994), drawing an analogy to the pervasive contrast between "hard" and "soft" consonants in Russian, reconstructed pharyngealization in Chinese type-A syllables, and proposed that nonpharyngealized syllables subsequently palatalized. (Pharyngealization is a secondary articulation of either consonants or vowels, in which the pharynx is constricted by retracting the root of the tongue; the "emphatic" consonants of many varieties of Arabic are pharyngealized.) In our current reconstruction, we adopt Norman's pharyngealization hypothesis on the grounds that it has the most explanatory power.[2]

The various interpretations of the type-A/type-B distinction, and the corresponding notations, are summarized in Table 4.2, using the Middle Chinese minimal pair 銘 míng < *meng* 'inscription' (type A) and 名 míng < *mjieng* 'name' (type B).

The diversity of phonetic interpretations of type-A and type-B syllables in Old Chinese illustrates the fact that it is often easier to reconstruct the existence and distribution of phonological distinctions than to reconstruct their phonetic nature. The evidence for a distinction between type-A and type-B syllables is overwhelming, but the evidence

TABLE 4.2 Type-A and type-B syllables in various reconstructions of Old Chinese

	type A 銘 míng 'inscription'	type B 名 míng 'name'
Middle Chinese	*meng* (青)	*mjieng* (清)
Karlgren (1957)	*mieng	*mi̯ĕng
Pulleyblank (1962–1963)	*meŋ	*mēŋ
Li (1971)	*ming	*mjing
Pulleyblank (1977–1978)	*máŋ	*màŋ
Zhèngzhāng Shàngfāng (1987)	*meŋ	*měŋ
Starostin (1989)	*mēŋ	*meŋ
Baxter (1992)	*meng	*mjeng
Norman (1994)	*'meng	*meng
Zhèngzhāng Shàngfāng (2003)	*meeŋ	*meŋ
Baxter-Sagart	*m^{ɕ}eŋ	*C.meŋ

for any particular phonetic interpretation of that distinction is much more elusive. Our choice of pharyngealization as the feature characterizing type-A syllables is based on the following considerations:

1. Type-A and type-B syllables rhyme together freely in Old Chinese, suggesting that the distinction was a feature of the syllable onset rather than the rhyme.
2. In later stages of Chinese, vowels in type-A syllables have lower reflexes than in type-B syllables; cross-linguistically, it is common for vowels to be lowered when adjacent to pharyngealized consonants.[3]
3. Alveolars, velars, and laterals generally palatalized in type-B syllables but failed to palatalize in type-A syllables.
4. Hàn-time transcriptional practice, as well as loans to Kra-Dai and Hmong-Mien languages, indicate a uvular pronunciation for original velar initials in type-A syllables (Norman 1994 and references therein). The development of pharyngealized velars to uvulars has parallels in other languages.[4]

Reconstructing the relevant feature as pharyngealization accounts for all these facts in a natural way, more naturally than competing proposals.

More recently, Ferlus (2009b) proposed that the distinction between type-A and type-B syllables comes instead from an Old Chinese contrast between disyllabic words (with preinitial material), giving type A, and monosyllabic words, with no preinitial material, giving type B. Ferlus argues that when preinitials were lost, the Old Chinese distinction was replaced by a strong/weak contrast among initial consonants: strong consonants developed tense voice, while weak consonants developed lax or breathy voice. These voice qualities in turn led to diphthongizations of the type seen in Mon-Khmer

languages with voice registers, with tense voice lowering vowels and lax or breathy voice raising them.

There are problems with this account. When we reconstruct Old Chinese preinitials on the basis of comparative evidence, we find no tendency for Chinese type-A words to have presyllables or for type-B words to lack them. As shown below in section 4.2, direct evidence for preinitials comes primarily from early loans to Vietic and Lakkia and from Norman's Proto-Mǐn softened initials (e.g., pMǐn *-p-) or his voiced aspirates (e.g., pMǐn *bh-). We list below examples of words showing strong evidence for preinitials despite being type B:

(163) 牀 *k.dzraŋ > *dzrjang* > chuáng 'bed', pMǐn *dzh-
Preinitial *k- is indicated by Rục /kəciːŋ²/ 'bed'; the presence of a preinitial is confirmed by the spirantized initial in VN *giường* /zɯʌŋ A2/ 'bed' and by the aspirated initial pMǐn *dzh- in Mǐn: Xiàmén /tsʰŋ 2/, Cháozhōu /tsʰuŋ 2/, Fúzhōu /tsʰouŋ 2/, Jiàn'ōu /tsʰɔŋ 2/ (see section 4.2 for details).

(164) 種 *k.toŋʔ > *tsyowngX* > zhǒng 'seed'
Preinitial *k- is indicated by Rục /kcoːŋ 3/ 'seed'. VN *giống* /zʌwŋ B1/ 'species, breed, strain, race; sex, gender' confirms the presence of a preinitial. (Proto-Mǐn has *tš-, which is not diagnostic in this case: it could reflect either OC *t- or OC *k.t-.)

(165) 箴 *t.[k]əm > *tsyim* > zhēn 'needle'
Preinitial *t- is indicated by Lakkia /them 1/ the presence of a preinitial is confirmed by VN *găm* [ɣam A1] 'bamboo or metal needle'. (Proto-Mǐn has *tš-, which could reflect either *t- or *t.k-.)

(166) 謝 *sə-lAk-s > *zjaeH* > xiè 'decline, renounce'
Both pMǐn *-dzia C and VN *giã* /za C2/ 'say goodbye' indicate a preinitial, which can be identified as *sə- on the basis of Middle Chinese (see section 4.5.3.3).

Examples of words having no preinitials despite being type A:

(167) 斗 *tˁoʔ > *tuwX* > dǒu 'bushel; ladle', pMǐn *t-; VN *đấu* /ɗʌw B1/ 'bushel', with nonspirantized initial

(168) 節 *tsˁik > *tset* > jié 'joint', pMǐn *ts-; VN *tết* /tet D1/ 'new year festival', with nonspirantized initial (VN /t/ < Proto-Vietic *ts-; see Ferlus 1992)

(169) 繭 *kˁ[e][n]ʔ > *kenX* > jiǎn 'cocoon', pMǐn *k-; VN *kén* /kɛn B1/ 'cocoon', with nonspirantized initial

(170) 芥 *kˁr[e][t]-s > *keajH* > jiè 'mustard plant', pMǐn *k-; VN *cải* /kɑi C1/ 'cabbage', with nonspirantized initial

(171) 點 *tˁemʔ > *temX* > diǎn ‘black spot’, pMǐn *t-; VN *đốm* /ɗom B1/ ‘spot’, with nonspirantized initial

(172) 白 *bˁrak > *baek* > bái ‘white’, pMǐn *b-; VN: *bạc* /ɓak D2/ ‘silver’, with nonspirantized initial

Although it is difficult to find direct evidence for the reconstruction of pharyngealization, we do have a very suggestive comment by Hé Xiū 何休 (129–182) of Eastern Hàn, who wrote a commentary on the *Gōngyáng zhuàn* 《公羊傳》, one of the three traditional commentaries on the *Chūnqiū* 《春秋》(the *Spring and autumn annals*). The comment (cited by Zhōu Zǔmó [1943] 1966:406) has to do with the difference in pronunciation between the conjunctive adverbs 乃 nǎi ‘then’ and 而 ér ‘and, but’. Our reconstructions are:

(173) 乃 *nˁəʔ > *nojX* > nǎi ‘then’ (type A)
而 *nə > *nyi* > ér ‘and, but’ (type B)

The *Gōngyáng zhuàn* has little of the added narrative that makes the *Zuǒ zhuàn* 《左傳》 commentary so interesting as a historical text, but it does contain very explicit discussions of the text of the *Chūnqiū* itself, and often attempts to explain why one word was used in the text instead of another. One passage comments on the following text from the *Chūnqiū* (Duke Xuān 宣, year 8):

(174) 冬十月己丑葬我小君頃熊、雨不克葬、庚寅日中而克葬
‘In winter, in the tenth month, on the day jǐchǒu [twenty-sixth in the sexagenary cycle], our duke’s consort Qīng Xióng[5] was to be buried. It rained and she could not be buried; but on the day gēngyín [the next day], at noon, they succeeded in burying her.’

In a similar passage elsewhere in the *Chūnqiū* (Duke Dìng 定, year 15), in which a burial is also postponed because of rain, the text says, “乃克葬 nǎi kè zàng” ‘then they succeeded in burying him’, with 乃 nǎi instead of 而 ér. The *Gōngyáng zhuàn* addresses the meaning of 而 ér and 乃 nǎi and tries to explain why sometimes one was used and sometimes the other. The commentary takes the form of alternating questions and answers:

(175) 而者何？難也。乃者何？難也。曷為或言而？或言乃？乃難乎而也。
‘What does “而 [ér]” mean?’
‘There was a difficulty.’
‘What does “乃 [nǎi]” mean?’
‘There was a difficulty.’
‘Why [does the text] sometimes say “而 [ér]” and sometimes say “乃 [nǎi]” ’?
‘With 乃 [nǎi] the difficulty is greater than with 而 [ér]’.

The idea seems to be that both 而 ér and 乃 nǎi are used as adversative adverbs ('but', or 'instead')—referring in this case to the fact that there was a difficulty with the burial—but that 乃 nǎi is somehow stronger. Such early metalinguistic comments about pre-Qín texts are interesting in themselves, but what interests us as far as pronunciation is concerned is what Hé Xiū, the Hàn commentator, says about the pronunciation of 而 ér and 乃 nǎi:

(176) 言乃者內而深、言而者外而淺
yán 'nǎi' zhě, nèi ér shēn; yán 'ér' zhě, wài ér qiǎn.
'When "乃 nǎi [*nˤəʔ]" is spoken, it is inside and deep; when "而 ér [*nə]" is spoken, it is outside and shallow.'

"Inside and deep" is quite suitable as an impressionistic description of pharyngealized pronunciation, with a retracted tongue, as contrasted with "outside and shallow" when pharyngealization is absent.

The terms 內 nèi 'inside' and 外 wài 'outside' are also used elsewhere in the early commentarial literature to refer to type-A and type-B syllables, respectively, as are huǎnqì 緩氣 '[spoken with] slow breath' and jíqì 急氣 '[spoken with] fast breath' respectively.[6] 'Spoken with slow breath' would also be an appropriate description of a syllable beginning with a pharyngealized onset, which would probably take more time to articulate because of the additional tongue-retracting gesture involved. Such comments are probably as close as we can get to a direct phonetic description of the contrast between type A and type B.

Reconstructing type-A syllables with pharyngealized onsets obviously leads to a very large inventory of consonants, in which all plain consonants have a pharyngealized counterpart, regardless of place or manner of articulation. We are aware that such a system is typologically unusual: in languages where pharyngealization affects consonants, it usually does not affect all of them; for instance, pharyngealized aspirated stops and pharyngealized voiceless sonorants are probably quite rare. A possible alternative would be to reconstruct a discrete pharyngeal segment [ʕ] occupying a separate slot at the juncture of the onset and rhyme, a solution we have not adopted but do not wish to exclude.

The appearance of typological artificiality in the system may well be an artifact of the process of reconstruction itself. The phenomena cited above that have led us to reconstruct pharyngealization (such as the lowering of vowels and the failure of onsets to palatalize in type-A syllables) can be dated, very approximately, to some time in the Hàn dynasty: so they are arguments that the relevant feature was pharyngealization *at that time*. Having little or no relevant information on the nature of the distinction before then, we project the pharyngealization back to the earliest stage of Old Chinese. But in fact, the distinction that took the form of pharyngealization at some time in Hàn could well have been the reflex of different features in the earlier period, about which we have not yet found any other evidence. So although our reconstruction makes it appear that pharyngealization was a feature of

the earliest stage of Old Chinese and that it persisted for a millennium or more, this simply reflects our lack of evidence for the nature of the distinction during the earliest period. It is quite possible that the pharyngealization that led to the changes listed above actually existed only for a short time, and, being typologically unusual, was rather unstable and soon led to further changes.

While languages with pharyngealization tend to concentrate in the Caucasus and among the Afro-Asiatic and Salishan languages, the feature has been observed in at least one Tibeto-Burman language: the Northern Qiāng of Hóngyán 紅岩 in Sìchuān (Evans 2006a, 2006b). Amis and Atayal, two Austronesian languages of Táiwān, also have pharyngealized consonants (Maddieson and Wright 1991). Further, Norman (1994:403, n. 9), citing Jakobson ([1931] 1971), underlines the similarity between the pharyngealization contrast he proposes for Old Chinese and the process of "syllabic harmony" in certain Turkic languages whereby a pairing of consonants distinguished by palatalization, indissolubly linked with vowel harmony, is observed.

On the whole, we reconstruct Old Chinese pharyngealization in the Middle Chinese syllables of divisions I, II, and IV, and no pharyngealization in syllables of division III. But there are exceptions among words with Old Chinese nonpharyngealized sibilant initials followed by medial *-r-: OC *sr-, *tsr-, *tsʰr-, *dzr- (and other onsets that merged into this set before the Middle Chinese period). These words sometimes emerge in Middle Chinese as division-III words with retroflex sibilant initials, as expected with nonpharyngealized onsets:

(177) 蝨 *srik > *srit* > shī 'louse'

(178) 差 *tsʰraj > *tsrhje* > cī 'uneven'

(179) 愁 *[dz]riw > *dzrjuw* > chóu 'grieved'

But some such words show retroflex sibilants with division-II finals instead:

(180) 生 *sreŋ > *sraeng* > shēng 'bear, be born; live'

(181) 殺 *s<r>at > *sreat* > shā 'kill'

(182) 差 *tsʰraj > *tsrhae* > chā 'distinction; to select'

This is because words like those in examples (180), (181), and (182) shifted from the division-III category to division II at a rather late date: that is, they lost the feature represented in our notation as MC *-j-*. We call this change *Tsrj- > Tsr-* (see Baxter 1992:267–269). Loss of *-j-* in these forms was presumably motivated in part by the phonetic awkwardness of combining retroflexion and palatalization.

We can tell that words like these lost *-j-* because we often have alternative *fǎnqiè* 反切 spellings that reflect the stage where *-j-* was still present. For example, although 生 shēng is spelled in the *Guǎngyùn* as

(183) 生：所庚切: that is, *sr(joX) + (k)aeng* = *sraeng*,

in the earlier Wáng Rénxù *Qièyùn* manuscript, it is spelled as

(184) 生：所京反: that is, *sr(joX)* + (*k)jaeng* = *srjaeng*.

The change *Tsrj-* > *Tsr-* also explains the final *-aeng* in the *Guǎngyùn*'s reading *sraeng*, which is otherwise unaccounted for and has generally been regarded as irregular, since 生 shēng rhymes as *-eŋ, but *-aeng* ordinarily comes only from the Old Chinese rhyme *-aŋ. But MC *-jaeng* is the regular reflex of *-reŋ, as in

(185) 驚 *kreŋ > *kjaeng* > jīng 'be afraid'
鳴 *m.reŋ (dial. > *mreŋ) > *mjaeng* > míng 'cry (of birds or animals)'

The MC *-aeng* in 生 shēng is thus the regular result of the change *Tsrj-* > *Tsr-*: 生 *sreŋ > *srjaeng* > *sraeng*.

Another exception to the general pattern of nonpharyngealized words going to Middle Chinese division III is

(186) 三 *s.rum > *sam* > sān 'three'

Instead of MC *sam*, we would expect OC *s.rum > *srim*; and we see this regular development in

(187) 參 *srum > *srim* > shēn 'the constellation Orion' (named for the three stars in Orion's belt)

But as a numeral, 三 *s.rum has MC *s-* instead of the expected *sr-*, probably influenced by the following number 四 sì < *sijH* 'four'. As is well known, the Middle Chinese final *-am* is also unexpected; we have no clear explanation for this irregularity.

The principal effect of pharyngealization on initial consonants was to block palatalization in alveolar stops and *n-, as well as in velars and laterals (see below). In addition, pharyngealized velars retracted to uvulars after the Old Chinese period. As mentioned above, Norman (1994:404) shows that by the time of the early Buddhist transcriptions (c. 200–400 CE), Old Chinese velars in pharyngealized syllables had become uvular.[7] There is evidence that in Middle Chinese times, type-A velars were still more retracted than their type-B counterparts: in the sixth century CE, the authors of the *Qièyùn* and the *Jīngdiǎn shìwén* used different *fǎnqiè* 反切 spellers for the type-A and type-B velars.

The distinction between type-A and type-B velars disappeared in modern Chinese dialects, but loans to Proto-Hmong-Mien and Proto-Hmongic normally reflect Old Chinese type-A velars as uvulars. Examples follow:

(188) 故 *kˤaʔ-s > *kuH* > gù 'old (not new)'; cf. pHM *qu̱oH 'old'
空 *kʰˤoŋʔ > *khuwngX* > kǒng 'hollow, empty; hole'; cf. pHmong *qhəŋ B 'hole'
嫁 *s-kˤra-s > *kaeH* > jià 'go (as a bride) to one's new home; send (one's daughter) as a bride'; cf. pHmong *qua C 'marry off (one's daughter)'

The limited evidence at hand does not allow us to determine the Hmong-Mien reflexes of original Old Chinese uvulars with any degree of confidence.

For the lowering of vowels after Old Chinese pharyngealized consonants, see section 5.3.1, in the discussion of the development of rhymes.

4.1.2 PALATALIZATION

Nonpharyngealized consonants tended to palatalize on the way to Middle Chinese: this would have had the effect of enhancing the contrast between type A and type B, and possibly reducing the reliance on the typologically unusual feature of pharyngealization. Nonpharyngealized Old Chinese initial alveolar stops and nasals became palatal affricates and nasals in Middle Chinese, unless the palatalization was blocked by prevocalic *-r-:

(189)
*t-	> *tsy-*	真 *ti[n] > *tsyin* > zhēn ‘true, real’
*d-	> *dzy-*	石 *dAk > *dzyek* > shí ‘stone’
*n-	> *ny-*	入 *n[u]p > *nyip* > rù ‘enter’
*n̥-	> *sy-*	身 *n̥i[ŋ] > *syin* > shēn ‘body; self’

MC *tsy-*, *dzy-*, *ny-*, and *sy-* are reasonably interpreted phonetically as [tɕ], [dʑ], [ɲ], and [ɕ], respectively. These palatal consonants clearly existed already in the pronunciations of Zhèng Xuán 鄭玄 (127–200 CE) and Yīng Shào 應劭 (? 140–206 CE), although other Chinese pronunciations of the same epoch still had nonpalatalized alveolar stops in type-B words (Coblin 1983:55). The change to palatal consonants is regularly reflected in Norman’s Proto-Mǐn:

(190) 真 *ti[n] > *tsyin* > zhēn ‘true, real’, pMǐn *tšin A
吹 *tʰo[r] > *tsyhwe* > chuī ‘blow (v.)’, pMǐn *tšhye A
春 *tʰun > *tsyhwin* > chūn ‘springtime’, pMǐn *tšhiun A

Early Chinese loans to Vietnamese show either palatal reflexes, as in (191), or nonpalatalized ones, as in (192) and (193):

(191) 種 *k.toŋʔ > *toŋʔ > *tsyowngX* > zhǒng ‘seed’; cf. VN *giống*[8] [zʌwŋ B]

(192) 尺 *tʰAk > *tsyhek* > chǐ ‘foot (measure)’; cf. VN *thước* [tʰɯʌk D1] ‘meter’

(193) 燭 *tok > *tsyowk* > zhú ‘torch’; cf. VN *đuốc* [ɗuʌk D1] ‘candle’

Chinese loans to Hmong-Mien also show palatal affricates:

(194) 穿 *tʰo[n] > *tsyhwen* > chuān ‘bore through’; cf. pHM *chu̱en ‘to thread’

But occasionally we find the older treatment by alveolar stops:

(195) 稱 *mə-tʰəŋ-s > *tsyhingH* > chèng ‘steelyard’; cf. pHM *nthjo̱əŋH ‘balance’

Nonpharyngealized laterals also evolved to Middle Chinese palatals (see sections 4.3.4 and 4.3.5):

(196) *l- > *y-* 葉 *l[a]p > *yep* > yè ‘leaf’
*l̥- > *sy-* 首 *l̥uʔ > *syuwX* > shǒu ‘head’

(MC *y-* and *sy-* are reasonably interpreted as [j] and [ɕ], respectively.)

Old Chinese *r- preceded by nasal prefixes merged with *l-, sharing the developments of that consonant, in particular palatalization (see sections 4.4.1.4 and 4.4.2.4):

(197) *N.r- > *y-* 酉 *N-ruʔ >*luʔ > *yuwX* > yǒu ‘tenth earthly branch’
*m.r- > *y-* 蠅 *m-rəŋ > *ləŋ > *ying* > yíng ‘fly (n.)’

We might expect *N.r̥- and *m.r̥- to become MC *sy-*, but we have no clear examples.

Likewise, nonpharyngealized *ɢ- evolved to MC *y-* irrespective of the following vowel, as in 與 *ɢ(r)aʔ-s > *yoH* > yù ‘participate in’. A corresponding development is seen in Proto-Mǐn and Hmong-Mien:

(198) 羊 *ɢaŋ > *yang* > yáng ‘sheep’, pMǐn *ioŋ A, pHM *juŋ A ‘sheep/goat’

In addition, Old Chinese nonpharyngealized velar stops *k- and *g- and the nasals *ŋ- and *ŋ̊- generally became Middle Chinese palatals when immediately followed by front vowels (Pulleyblank 1962–1963:100). This change is known as “the first palatalization of velars.”[9] Examples:

(199) 旨 *kijʔ > *tsyijX* > zhǐ ‘fine-tasting’

(200) 脂 *kij > *tsyij* > zhī ‘fat, grease’

(201) 視 *gijʔ > *dzyijX* > shì ‘look, see’

(202) 腎 *Cə.[g]i[n]ʔ > *dzyinX* > shèn ‘kidney’; cf. pMǐn *-gin B ‘gizzard’ (Norman 2006:138)

(203) 瘈 *ke[t]-s > *tsyejH* > zhì ‘mad (dog)’

(204) 支 or 枝 *ke > *tsye* > zhī ‘branch (of tree), limb’; pMǐn *ki A

(205) 善 *[g]e[n]ʔ > *dzyenX* > shàn ‘good’

(206) 兒 *ŋe > *nye* > ér ‘child’

(207) 設 *ŋ̊et > *syet* > shè ‘set up’

However, we find no examples of palatalization of aspirated *k^{h}-, nor of palatalization of velars in syllables with velar codas (discussed in section 5.4):

(208) 遣 *[k]^{h}e[n]ʔ > *khjienX* > qiǎn ‘send’

(209) 棄 *[k^{h}]i[t]-s > *khjijH* > qì ‘throw away, abandon’

(210) 勁 *keŋ-s > *kjiengH* > jìng ‘strong’

In examples (199) through (207), we reconstruct velar initials because of xiéshēng and word-family contacts. For instance, we reconstruct a velar initial in (205) 善 *[g]e[n]ʔ > *dzyenX* > shàn because the *Guǎngyùn* has a character *kjenX*, with 善 *[g]e[n]ʔ as a phonetic element: it is part of a binome 搴摷 *kjenX.trjenX*, glossed as “醜長皃” (grown ugly [?]’), which would presumably reflect *krenʔ.trenʔ, palatalization having been blocked by medial *-r-. Example (207) 設 *ŋ̊et > *syet* > shè ‘set up’ is reconstructed with *ŋ̊- because it is the verb from which the noun 勢 *ŋ̊et-s > *syejH* > shì ‘circumstances; setting’ is derived by *s-suffixation, and the phonetic element in 勢 *ŋ̊et-s > *syejH* > shì is 埶 *ŋet-s > *ngjiejH* > yì ‘to plant’ (Bái Yīpíng [Baxter] 2010).[10]

At some point late in the Old Chinese period, OC *q- and *q^{h}- lost their oral closure and became *ʔ- and *χ-, respectively. It is likely that uvular *χ- from earlier *q^{h}(ˤ)- shifted to a velar [x], because it subsequently palatalized under the same conditions as the original velars, as in:

(211) 屎 *[q^{h}]ijʔ > *xijʔ > *syijX* > shǐ ‘excrement’ (see discussion of this item in sections 4.3.2 and 5.5.5.1).

Although the labiouvulars *q^{w}- and *q^{hw}- did not undergo palatalization before front vowels, *ɢ^{w}- did: thus we have *ɢ^{w}- > *hj(w)-* before nonfront vowels, and also before *r-:

(212) 院 *ɢ^{w}ra[n]-s > *hjwenH* > yuàn ‘wall around a courtyard’
圜 、圓 *ɢ^{w}<r>en > *hjwen* > yuán ‘round’.

But before front vowels, when no *-r- intervened, we have *ɢ^{w}- > *y(w)-*:

(213) 惟 *ɢ^{w}ij > *ywij* > wéi ‘(copula); namely’.
營 *[ɢ]^{w}eŋ > *yweng* > yíng ‘demarcate, encamp’

For details see section 4.3.3.

In one Old Chinese dialect, *ɾ̥- evolved to *x-*, merging with *x-* from original *q^{h}- and likewise palatalizing before front vowels. For instance:

(214) 爍 *ɾ̥ewk > *xewk > *syak* > shuò ‘melt, infuse’

This word is perhaps etymologically related to 藥 *m-r[e]wk > *yak* > yào ‘medicinal plant’.

Schuessler (2010:35) dates the first palatalization of velars to the earlier part of the Hàn dynasty. He argues that velars palatalized before *i earlier than before *e. Among Chinese dialects, only the earliest layer of Mǐn shows substantial evidence of having escaped this change:

(215) 支 or 枝 *ke > *tsye* > zhī 'branch (of tree)', pMǐn *ki A
指 *mə.kijʔ > *tsyijX* > zhǐ 'finger; point', Jiàn'ōu /ki 6/
腎 *Cə.[g]i[n]ʔ > *dzyinX* > shèn 'kidney'; pMǐn *-gin B 'gizzard'; cf. also Hakka (Sung Him Tong dialect) /kʰin 1/ 'kidney'

Proto-Mǐn must therefore have branched off before the first palatalization of velars. Evidence is insufficient to determine whether the first palatalization of velars affected the donors to Proto-Hmong-Mien and Vietnamese.

However, as mentioned in section 3.1.9, not all cases of Middle Chinese palatals with connections to Old Chinese velars can be attributed to front vowels, since superficially similar developments are also observed in words with nonfront vowels:

(216) 出 MC *tsyhwit* > chū 'go or come out', phonetic in
屈 MC *khjut* > qū 'subdue'
齒 MC *tsyhiX* > chǐ 'front teeth' (OC vowel: *ə); Xiàmén /kʰi 3/, Fúzhōu /kʰi 3/

We have concluded that examples like these illustrate an entirely distinct process. We explain the palatal variants by supposing tight consonant clusters of preinitial *t- plus velar stop (cf. section 4.4.4). We suppose that clusters of preinitial *t- plus a velar stop first simplified to alveolar stops, then palatalized like the original alveolars:

(217) 齒 *t-[kʰ]ə(ŋ)ʔ (or *t-ɦəʔ) > *tʰəʔ > *tsyhiX* > chǐ 'front teeth'
出 *t-kʰut > *tʰut > *tsyhwit* > chū 'go or come out'
箴 *t.[k]əm > *təm > *tsyim* > zhēn 'needle'
十 *t.[g]əp > *dəp > *dzyip* > shí 'ten'

Actually, these developments are not limited to velar initials; parallel examples are found with uvulars also:

(218) 妁 *t-qoŋ > *toŋ > *tsyowng* > zhōng 'father-in-law'
杵 *t.qʰaʔ > *tʰaʔ > *tsyhoX* > chǔ 'pestle' (for the reconstruction of *qʰ- in 杵 chǔ, see section 4.4.2.2)

And possibly also with labials:

(219) 箒, 帚 *[t.p]əʔ > *tuʔ > *tsyuwX* > zhǒu 'broom'.

Preemption of a nonpharyngealized initial consonant by preinitial *t- does not always result in Middle Chinese palatals; when medial *r is present, the evolution is to a Middle Chinese retroflex consonant instead:

(220) 經 *t-kʰreŋ > *tʰreŋ > *trhjeng* > chēng 'red'; cf.
輕 *[kʰ]eŋ > *khjieng* > qīng 'light (≠ heavy)'

(221) 肘 *t-[k]<r>uʔ > *truʔ > *trjuwX* > zhǒu ‘elbow’; the element 寸 on the right was originally
九 *[k]uʔ > *kjuwX* > jiǔ ‘nine’—itself originally a depiction of an elbow (see Jì Xùshēng 2010:348–349, 991)

(222) 耽 *t-nrep > *trep > *trjep* > zhé ‘hanging ears (used as N.Pr.)’; phonetic in
踿 *n<r>ep > *nrjep* > niè ‘unable to walk’

4.1.3 RETROFLEXION

The Old Chinese consonant system had no retroflex initials; retroflex consonants appeared in the course of evolution to Middle Chinese through reduction of certain Old Chinese onsets with initial or medial *r. Examples of alveolar initials followed by medial *r follow:

(223) 鎮 *t<r>i[n]-s > *trinH* > zhèn ‘press down’
鬯 *tʰraŋ-s > *trhjangH* > chàng ‘aromatic spirits’
住 *dro(ʔ)-s > *drjuH* > zhù ‘stop (v.)’
勩 *n<r>[i]k > *nrit* > nì ‘glue’
杻 *n̥<r>uʔ > *trhjuwX* > chǒu ‘handcuffs’
榛 *tsri[n] > *tsrin* > zhēn ‘hazel’
差 *tsʰraj (> *tsrhjae*?) > *tsrhae* > chā ‘distinction; to select’
沙 *sᶜraj > *srae* > shā ‘sand’

Preinitial *s followed by initial *r gives MC *sr-*, a retroflex fricative:

(224) 數 *s-roʔ > *srjuX* > shǔ ‘count (v.)’; also *s-roʔ-s > *srjuH* > shù ‘number (n.)’

Retroflex sibilant initials could also come from Old Chinese clusters with *s- preinitial and medial *-r-. Examples:

(225) 責 *s-tᶜrek > *tsᶜrek > *tsreak* > zé ‘demand payment; require’
債、責 *s-tᶜrek-s > *tsᶜrek-s > *tsreaH* > zhài ‘debt’; cf.
謫 *m-tᶜrek > *m-dᶜrek > *dᶜrek > *dreak* > zhé ‘blame, punish’

(226) 揣 *s-tʰ<r>orʔ > *tsʰ<r>orʔ > *tsʰ<r>ojʔ > *tsrhjweX* > chuǎi ‘to measure; to estimate’; same phonetic as in
喘 *[tʰ]orʔ > *tsyhwenX* > chuǎn ‘to pant’

(227) 朔 *s-ŋrak > (*srjak* >) *sraewk* > shuò ‘first day of month’; same phonetic as in
逆 *ŋrak > *ngjaek* > nì ‘go against’

(228) 札 *s-qᶜrət > *tsreat* > zhá ‘strip (n.), tablet’; cf.
乙 *qrət > *ʔrət > *ʼit* > yǐ ‘second heavenly stem’

(229) 鋤 *s-[l]<r>a > *s-d<r>a > *dzra > *dzrjo* > chú ‘hoe’; cf.
除 *[l]<r>a > *dra > *drjo* > chú ‘remove’

(230) 窗 *s-l^{ʕ}<r>oŋ > *s-t^{hʕ}<r>oŋ > *ts^{hʕ}roŋ > *tsrhaewng* > chuāng ‘window’; cf.
通 *l^{ʕ}oŋ > *t^{hʕ}oŋ > *thuwng* > tōng ‘penetrate’

4.1.4 SECONDARY VOICING

As in most reconstructions of Old Chinese, beginning with Karlgren (1940) and Dǒng Tónghé (1948), we project the Middle Chinese three-way manner distinction among stops and affricates—voiceless unaspirated, voiceless aspirated, and voiced—back onto Old Chinese; for example:

(231) *p(^{ʕ})- > *p-*
*p^{h}(^{ʕ})- > *ph-*
*b(^{ʕ})- > *b-*

This three-way distinction occurs at all places of articulation, with pharyngealized as well as nonpharyngealized consonants (Table 4.1).

However, not all Middle Chinese voiced stops and affricates reflect voicing in the Old Chinese main initial: by internal reconstruction we can infer that in some cases the Middle Chinese voicing is secondary, reflecting a voiceless stop or affricate preceded by a tightly attached nasal preinitial *N or *m. The nasal preinitial voiced a following stop or affricate before disappearing in Middle Chinese; for example:

(232) *N.ts^{h}- > *N.dz- > *dz-*
*m.p- > *m.b- > *b-*

For details, see sections 4.4.1.1, 4.4.1.2, 4.4.2.1, and 4.4.2.2.

All three stages of development are observable in loans to Hmong-Mien: earlier loans show voiceless prenasalized reflexes like pHM *mp- and *ntsh-; later loans show voiced prenasalized reflexes like pHM *mb- and *ndz-; and still more recent loans show simple voiced stops or affricates, as in these examples:

(233) 濁 *[N-t^{ʕ}]rok > *N-d^{ʕ}rok > *draewk* > zhuó ‘muddy’, pHM *ŋt̬o C ‘muddy’ (original voiceless initial retained)

(234) 淨 *N-tseŋ-s > *N-dzeŋ-s > *dzjengH* > jìng ‘clean (adj.)’, pMien *ndzəŋ C ‘clean’ (reflects *N-ts- > *N-dz-)

(235) 黃 *N-k^{wʕ}aŋ > *ŋg^{wʕ}aŋ > *g^{wʕ}aŋ > *hwang* > huáng ‘yellow’ (from 光 *k^{wʕ}aŋ > *kwang* > guāng ‘light, brightness’), pMien *ʔg^{w}i̱əŋ A ‘bright’, implying pHM *ŋk^{w}j- (and perhaps representing earlier

semantics); but cf. pHmong *ɢʷaŋ A ‘bright/light/yellow’, a later borrowing, without prenasalization.

(236) 峽 *N-kˁrep > *N-gˁrep > *gˁrep > *heap* > xiá ‘mountain pass’, Proto-Hmongic *ɢlow D ‘mountain pass’ (without prenasalization, reflecting post-Old Chinese *gˁ-)

The loose preinitials *mə- and *Nə- also show up as prenasalization in loans to Hmong-Mien, but they did not have this voicing effect in Middle Chinese, evidently because the nasals in them were not in direct contact with the initial.

In Middle Chinese, secondarily voiced stops and affricates behave like their originally voiced counterparts. Just as original *ɢˁ- and *gˁ- merged as MC *h*, so did *N.qˁ- and *N.kˁ-, *m.qˁ-, and *m.kˁ-. But just as nonpharyngealized *ɢ- and *g- remained distinct, as MC *y-* and *g-*, respectively, so nonpharyngealized *N.q- and *m.q- became MC *y-*, while *N.k- and *m.k- became MC *g-*. The developments of nonuvular initials with nasal preinitials are summarized in Table 4.3.

Note that most of the time, preinitial *N and *m with voiceless aspirated initials (e.g., *N.pʰ- and *m.pʰ-) have the same Middle Chinese reflexes as with voiceless unaspirated initials (e.g., *N.p- and *m.p-). But uvulars develop differently. Nasal preinitials simply voiced an unaspirated uvular stop: *N.q-, *m.q- > *ɢ- > MC *y-* (see sections 4.4.1.1 and 4.4.2.1), but nasal preinitials before aspirated or voiced uvulars become MC *ng-*, as shown in Table 4.4 (for details see sections 4.4.1.2, 4.4.1.3, 4.4.2.2, and 4.4.2.3).

The examples below illustrate these developments.

(237) 繘 *N.qʷi[t] > *ɢʷi[t] > *ywit* > yù ‘well-rope’; also read
繘 *C.qʷi[t] > *kʷi[t] > *kjwit* > jú ‘well-rope’

(238) 尹 *m-qurʔ > *ɢurʔ > *ywinX* > yǐn ‘govern; governor’; cf.
君 *C.qur > *kur > *kjun* > jūn ‘lord; ruler’ (The two characters are often interchanged in early documents; see *GG* 2.29.)

TABLE 4.3 MC reflexes of nonuvular obstruents with nasal preinitials

	OC	MC
nonpharyngealized	*N.p-, *N.pʰ-, *m.p-, *m.pʰ-	*b-*
	*N.t-, *N.tʰ-, *m.t-, *m.tʰ-	*dzy-*
	*N.ts-, *N.tsʰ-, *m.ts-, *m.tsʰ-	*dz-*
	*N.k-, *N.kʰ-, *m.k-, *m.kʰ-	*dzy-* before *i or *e, *g-* elsewhere
	*N.kʷ-, *N.kʷʰ-, *m.kʷ-, *m.kʷʰ-	*g(w)-*
pharyngealized	*N.pˁ-, *N.pʰˁ-, *m.pˁ-, *m.pʰˁ-	*b-*
	*N.tˁ-, *N.tʰˁ-, *m.tˁ-, *m.tʰˁ-	*d-*
	*N.tsˁ-, *N.tsʰˁ-, *m.tsˁ-, *m.tsʰˁ-	*dz-*
	*N.kˁ-, *N.kʰˁ-, *m.kˁ-, *m.kʰˁ-	*h-*
	*N.kʷˁ-, *N.kʷʰˁ-, *m.kʷˁ-, *m.kʰʷˁ-	*h(w)-*

TABLE 4.4 MC reflexes of uvular initials with nasal preinitials

	OC	MC
nonpharyngealized	*N.q-, *m.q-	*y-*
	*N.q^{w}-, *m.q^{w}-	*y(w)-* before *i and *e *hj(w)-* elsewhere
	*N.q(^{w})^{h}-, *m.q(^{w})^{h}-	*ng(w)-*
	*N.ɢ(^{w})-, *m.ɢ(^{w})-	*ng(w)-*
pharyngealized	*N.q(^{w})^{ʕ}-, *m.q(^{w})^{ʕ}-	*h(w)-*
	*N.q(^{w})^{hʕ}-, *m.q(^{w})^{hʕ}-	*ng(w)-*
	*N.ɢ(^{w})^{ʕ}-, *m.ɢ(^{w})^{ʕ}-	*ng(w)-*

(239) 午 *m-q^{hʕ}aʔ > *ŋ^{ʕ}aʔ > *ngu**X*** > wǔ ‘resist; crosswise’; the character is a pictogram that originally represented
杵 *t.q^{h}aʔ > *t^{h}aʔ > *tsyho**X*** > chǔ ‘pestle’

(240) 蟣 *m-q^{h}əjʔ > *ŋəjʔ > *ngj+jX* > yǐ ‘ant’; the phonetic is
豈 *C.q^{h}əjʔ > *k^{h}əjʔ > *khj+jX* > qǐ ‘how’

(241) 牙 *m-ɢ^{ʕ}<r>a > *ŋ^{ʕ}ra > *ngae* > yá ‘tooth’; phonetic in
與 *m-q(r)aʔ > *yo**X*** > yǔ ‘give; for; and’, pMǐn *ɣo B ‘give’

(242) 僞 *N-ɢ^{w}(r)aj-s > *ŋ^{w}(r)aj-s > *ngjweH* > wěi ‘false’; cf.
為 *ɢ^{w}(r)aj > *hjwe* > wéi ‘make, do, act as’

The change to a nasal was blocked in aspirated pharyngealized onsets with *-r-, like *m.q^{whʕ}r- and *N.q^{whʕ}r-: with these onsets, evolution was to *h-*, the same as for *ɢ^{wʕ}r-:

(243) 華 *N-q^{whʕ}ra > *hwae* > huá ‘flower (v.); flowery (adj.)’; cf.
華 *q^{whʕ}ra > *xwae* > huā ‘flower (n.)’ (later written 花)

(244) 繪 *m-q^{whʕ}rek-s > *hweaH* > huà ‘bind (v.)’; also read
繪 *q^{whʕ}rek > *xweak* > huà ‘bind (v.)’

4.2 Applying the comparative method within Chinese

Earlier reconstructions of Old Chinese initial consonants—including our own—did not use the traditional comparative method of historical linguistics; rather, they relied primarily on a sui generis method based on combining the distinctions of Middle Chinese with those that could be inferred from xiéshēng connections.[11] The present reconstruction both incorporates and goes beyond previous scholarship by systematically integrating into the reconstruction of Old Chinese onsets the phonological distinctions found in Proto-Mǐn and in the early Chinese loans to Proto-Hmong-Mien and Vietic. We show that these independent bodies of data provide convergent evidence for onset distinctions not attested in

Middle Chinese, and not detectable from the study of phonetic series. Because of the great time depths involved, and because of their abundance, these loanwords are stratified: each layer corresponds to a different phase of expansion of the Chinese world, and can be characterized by a specific set of sound correspondences with the Chinese donor. Accordingly, the earliest layers of Chinese loanwords to Hmong-Mien or Vietic can be used as a surrogate for Chinese pronunciations of the end of the Old Chinese period.[12]

By establishing sound correspondences among Middle Chinese, Proto-Mǐn, and the earliest loans to Hmong-Mien and Vietic, we bring the reconstruction of Old Chinese onsets closer to standard comparative practice. Evidence from Proto-Mǐn and the early loans to Hmong-Mien and Vietic is especially valuable for what it tells us about complex onsets, on which the testimony of Middle Chinese and of xiéshēng series is both limited and hard to interpret. The following sections examine the evidence for distinctions in complex onsets that can be gathered from Proto-Mǐn and from early loans to Hmong-Mien and Vietic.

4.2.1 PROTO-MǏN

As noted above, one of the weaknesses of traditional reconstructions of Old Chinese is that they were based on the Middle Chinese phonetic framework, ignoring evidence from modern dialects. Karlgren had assumed that apart from the Mǐn dialects, all modern varieties of Chinese were descended from the dialect of Cháng'ān 長安, the capital during the Suí 隋 (581–618) and Táng 唐 (618–907) dynasties, which he believed was represented in the Middle Chinese written sources: Middle Chinese could thus act as a surrogate for all modern dialects outside the Mǐn group. And even though Karlgren acknowledged that Middle Chinese could not account for the phonology of the Mǐn group, he did not use Mǐn data in his reconstruction of Old Chinese. He made no use of the comparative method, perhaps the most powerful tool at the historical linguist's disposal: although he did collect and compare pronunciations from modern dialects and from Chinese loanwords in other languages, this was just in order to assign phonetic values to the Middle Chinese framework already inferred from the rhyme books, the *Jīngdiǎn shìwén*, and the rhyme tables. In the comparative method, by contrast, the framework of distinctions in the parent language (not just their phonetic values) is based directly on correspondences among the daughter languages—both those attested in written sources and those with little or no written tradition.

As we have defined Old Chinese, it should be the ancestor of the Mǐn dialects as well as of Middle Chinese, so if these dialects preserve information not available from Middle Chinese, that information should be taken into consideration when reconstructing Old Chinese. Moreover, recent research shows that the Mǐn dialects are not the only modern dialects that the Middle Chinese system cannot account for. An adequate reconstruction of Old Chinese needs to take all modern dialect data into consideration. Of course, we cannot afford to ignore the evidence from early written sources, either; after all, no one would attempt to reconstruct Proto-Indo-European from modern languages

alone, ignoring ancient languages such as Greek and Sanskrit. But a reconstruction should be based on correspondences among all the attested daughter languages, ancient and modern. The dialect research of recent decades has now made it feasible to follow this path.

Jerry Norman's research reconstructing Proto-Mǐn (beginning with Norman 1973, 1974a, and 1981) has shown that Mǐn dialects preserve considerable complexity in syllable onsets that is absent in Middle Chinese and difficult to reconstruct from other evidence. This information has generally not been systematically used in reconstructing Old Chinese, but our reconstruction incorporates it, relying not just on Middle Chinese, but rather on correspondences between Middle Chinese and Mǐn. Future dialect research should make it possible to do this more precisely and comprehensively, including other dialects that preserve ancient distinctions not found in Middle Chinese. The next sections give examples of such distinctions.

4.2.1.1 Proto-Mǐn initial stops and affricates

On the basis of modern dialect correspondences, Norman (1973, 1974a) reconstructed a complex set of initial consonant distinctions for Proto-Mǐn. His reconstruction of Proto-Mǐn stops and affricates is summarized in Table 4.5 below.

It will be convenient to use the numbers in the left column of the table to refer to types of initials. In most Mǐn dialects, type-4 initials have become voiceless unaspirated, and type-5 initials have become voiceless aspirated. The type-3 and type-6 initials are referred to as "softened" because in some Mǐn dialects they have resonant or vocalic reflexes, as illustrated in Table 4.6. (The table is confined to labial stops only; the softened reflexes are shaded.) In Shíbēi, however, types 3 and 6 are voiced, and in Hépíng, types 2 through 6 are all voiceless aspirated.[13]

The Mǐn correspondences among initial consonant types are also intricately interwoven with tone correspondences. We illustrate this in Table 4.7, using just the segmental and tonal reflexes of the various Proto-Mǐn labial stops in Proto-Mǐn tone *A (corresponding to Middle Chinese píngshēng). Tonal reflexes are identified by conventional etymological numbers, followed by the tonal contour in square brackets (using Y. R. Chao's five-point scale for pitch).[14]

Where Proto-Mǐn has six types of initials, Middle Chinese has only three: both *p and *-p correspond to MC *p-*; *ph corresponds to MC *ph-*; and *b, *bh, and *-b all

TABLE 4.5 Initial stops and affricates in Norman's Proto-Mǐn (1973)

1	*p	*t	*ts	*tš	*k
2	*ph	*th	*tsh	*tšh	*kh
3	*-p	*-t	*-ts	*-tš	*-k
4	*b	*d	*dz	*dž	*g
5	*bh	*dh	*dzh	*džh	*gh
6	*-b	*-d	*-dz	*-dž	*-g

TABLE 4.6 Reflexes of Norman's Proto-Mǐn labial stops in four Northern Mǐn dialects (distinctive "softened" reflexes are shaded)

	Proto-Mǐn	MC	Jiànyáng	Jiàn'ōu	Shíbēi	Hépíng
1	*p	*p-*	p-	p-	p-	p-
2	*ph	*ph-*	pʰ-	pʰ-	pʰ-	pʰ-
3	*-p	*p-*	w-/∅-	p-/∅-	b-/ɦ-	pʰ-
4	*b	*b-*	p-	p-	p-	pʰ-
5	*bh	*b-*	pʰ-	pʰ-	pʰ-	pʰ-
6	*-b	*b-*	w-/∅-	p-/∅-	b-/ɦ-	pʰ-

TABLE 4.7 Northern Mǐn tonal reflexes of Norman's Proto-Mǐn labial stops in tone *A

		Jiànyáng	Jiàn'ōu	Shíbēi	Hépíng
*p	*A	p- 1 [53]	p- 1 [54]	p- 1 [53]	p- 1 [24]
*ph	*A	pʰ- 1 [53]	pʰ- 1 [54]	pʰ- 1 [53]	pʰ- 1 [24]
*-p	*A	w-/∅- 9 [31]	p-/∅- 3 [21ˀ]	b-/ɦ- 9 [31]	pʰ- 4 [4ˀ]
*b	*A	p- 2 [33]	p- 5 [22]	p- 5 [33]	pʰ- 2 [13]
*bh	*A	pʰ- 2 [33]	pʰ- 5 [22]	pʰ- 5 [33]	pʰ- 7 [31]
*-b	*A	w-/∅- 9 [31]	p-/∅- 3 [21ˀ]	b-/ɦ- 9 [31]	pʰ- 2 [13]

TABLE 4.8 Examples of Norman's Proto-Mǐn initials *-p, *b, *bh, and *-b

type	example	PMǐn	MC	Jiànyáng	Jiàn'ōu	Shíbēi	Hépíng
3	飛 fēi 'fly'	*-p A	*pj+j*	ye 9	yɛ 3	ɦye 9	pʰui 4
3	崩 bēng 'collapse'	*-p A	*pong*	waiŋ 9	paiŋ 3	baiŋ 9	pʰen 4
4	肥 féi 'fat'	*b A	*bj+j*	py 2	py 5	py 5	pʰi 2
4	平 píng 'level'	*b A	*bjaeng*	piaŋ 2	piaŋ 5	piaŋ 5	pʰiaŋ 2
5	皮 pí 'skin'	*bh A	*bje*	pʰui 2	pʰyɛ 5	pʰo 5	pʰui 7
5	篷 péng 'awning, sail'	*bh A	*buwng*	pʰoŋ 2	pʰoŋ 5	pʰəŋ 5	pʰuŋ 7
6	牌 pái 'raft'	*-b A	*bea*	wai 9	pai 3	bai 9	pʰæ 2
6	瓶 píng 'vase'	*-b A	*beng*	waiŋ 9	paiŋ 3	baiŋ 9	pʰen 2

correspond to MC *b-*. Examples of the correspondences for types 3 through 6 are given in Table 4.8.

Other evidence (especially from early Chinese loans to other languages, see below) indicates that these distinctions are not of recent origin, and we have taken them into account in reconstructing Old Chinese onsets. Our main hypotheses (using labial stops as an example) are:

1. Norman's Proto-Mǐn *p- reflects OC *p(ˤ)- and *C.p(ˤ)-. The distinction between OC *p(ˤ)- and *C.p(ˤ)- is reconstructed on the basis of Vietic evidence (see section 4.2.2.1 below); this distinction was lost in both Middle Chinese and Proto-Mǐn.
2. Proto-Mǐn *ph- reflects OC *pʰ(ˤ)-, *C.pʰ(ˤ)-, or *Cə.pʰ(ˤ)-. (Note that aspirated initials do not soften in Proto-Mǐn.)

3. Proto-Mǐn *b- can reflect OC *b(ˤ)- or any labial stop preceded by *N.-. Evidently, a tightly bound nasal presyllable *N.- had already voiced following obstruents and disappeared before the Proto-Mǐn stage, because in Mǐn dialects, OC *N.p(ˤ)- and *b(ˤ)- have the same reflexes.
4. Proto-Mǐn softened stops (types 3 and 6) result from the lenition of a stop or affricate in intervocalic position after a loosely attached preinitial: thus pMǐn *-p- < OC *Cə.p(ˤ)-, pMǐn *-b- < OC *Cə.b(ˤ)-.
5. Proto-Mǐn voiced aspirates (type 5) result from voiced stops or affricates preceded by a tightly bound presyllable other than *N.-, e.g., pMǐn *bh- < OC *C.b(ˤ)-; or from an *m- preinitial before any stop or affricate, e.g., OC *m.p(ˤ)- or *m.pʰ(ˤ)-.

Our hypothesis is that the aspiration contrast in most Mǐn dialects between Proto-Mǐn types 4 (*b-) and 5 (*bh-) results from the fact that these dialects were affected by two different waves of devoicing. In the first wave, Proto-Mǐn initial voiced obstruents (which included both original voiced obstruents, like *b-, and obstruents preceded by tightly attached *N.-, like *N.p-) became voiceless and unaspirated. In the second wave, initial voiced obstruents became voiceless and aspirated, as in the nearby Gàn 贛 and Hakka (Kèjiā 客家) dialects. In Mǐn, a tightly bound presyllable protected voiced obstruents from undergoing the first wave of devoicing; then the loss of those same presyllables exposed the remaining voiced stops and affricates to the second wave of devoicing, in which they became voiceless aspirates (see Table 4.9 below).

There are typological parallels for such a development in Tibetan and rGyalrong. Delayed devoicing of voiced obstruents that are part of clusters is well documented in Tibetan dialects. For instance, Sun (2003:38–39) reports that the Záduō 雜多 [rDza.rdo] dialect "underwent an important split whereby simplex O[ld] T[ibetan] voiced obstruents became devoiced, breathy and low-registered, whereas OT voiced obstruents with preradicals remained voiced."

In the Dégé 德格 [Sde.dge] dialect, the early- and late-devoicing obstruents are distinguished tonally (Gésāng and Gésāng 2002).[15] Similarly, in Tibetan loans to rGyalrong, Written Tibetan (WT) singleton voiced stops are devoiced, but when a Written Tibetan voiced stop initial followed a preinitial consonant, voicing is preserved in rGyalrong: thus WT *sb-* is reflected as rGyalrong /zw-/ < /zb-/. This shows that in the Tibetan dialect that was the source of rGyalrong loans, singleton voiced stops had devoiced, but voiced clusters still had not (Xiàng Bólín [Guillaume Jacques] 2008:114).

Table 4.9 summarizes the assumed sequence of changes as they apply to Old Chinese onsets with stops or affricates under four conditions: plain voiced (*b-); voiceless, preceded by tightly bound *N (*N.p-); voiced, preceded by tightly bound *C (*C.b-), and voiceless, preceded by *m (in this case, aspirated *m.pʰ-).

As for the softened initials, Norman (1986) observed that words with softened initials in Mǐn often had prenasalized onsets when borrowed into Hmong-Mien languages, and proposed that the Mǐn softened initials (types 3 and 6 in Table 4.8) may have been

TABLE 4.9 Sources and development of Norman's Proto-Mǐn *b and *bh

	平 píng 'level'	別 bié 'be separated'	雹 báo 'hail (n.)'	被 bèi 'coverlet'
Middle Chinese	*bjaeng*	*bjet*	*baewk*	*bjeX*
Norman's Proto-Mǐn	*b A	*b D	*bh D	*bh B
Old Chinese	*breŋ	*N-pret	*C.[b]ˁruk	*m-pʰ(r)ajʔ
voicing after *m and *N	—	Nb-	—	mb-
loss of *N: *Nb- > b	—	b-	—	—
first devoicing: b- > p- (L = low register)	p- L	p- L	—	—
loss of presyllabic *C and *m	—	—	b-	b-
second devoicing: b- > pʰ-[a]	—	—	pʰ- L	pʰ- L
result in Xiàmén and Fúzhōu (L = low register)	p- L	p- L	pʰ- L	pʰ- L

a. The change of *b- to *pʰ- probably involved an intermediate stage *b- > *bʱ-, omitted here.

TABLE 4.10 Yáo correspondences to Proto-Mǐn softened stops

type	example	Proto-Mǐn	Yao	OC
3	沸 fèi 'boil'	*-p	bwei 5	*Nə.p[u][t]-s
3	早 zǎo 'early'	*-ts	dzyou 3	*Nə.tsˁuʔ
3	賭 dǔ 'bet, wager'	*-t	dou 3	*mə.tˁaʔ
3	擔 dān 'carry on the shoulder'	*-t	daam 1	*mə-tˁam
3	轉 zhuǎn 'return'	*-t	dzwon 5	*mə-tronʔ
6	步 bù 'step, stride'	*-b	bia 6	*mə-bˁa-s
6	婦 fù 'daughter-in-law'	*-b	bwaŋ 4	*mə.bəʔ
6	字 zì 'letter, character'	*-dz	dzaaŋ 6	*mə-dzə(ʔ)-s
6	舌 shé 'tongue'	*-dž	byet 6	*mə.lat

prenasalized at some point; see the examples in Table 4.10. (The Yáo voiced stops and affricates like those in Table 4.10 reflect Proto-Hmong-Mien prenasalized stops and affricates.)[16]

However, we also find Hmong-Mien prenasalization corresponding to Proto-Mǐn voiced aspirates (type 5 in Table 4.8, like *bh-), as shown in Table 4.11; this suggests that it is not prenasalization per se that is responsible for softening.

From a phonetic point of view, we think it is more plausible to attribute the softening to lenition in intervocalic position (a possibility also mentioned by Norman) than to prenasalization as such. The softening in Northern Mǐn is similar to the synchronic morphophonemic changes that affect medial consonants in certain compound words in Fúzhōu (Féng Àizhēn 1998):

TABLE 4.11 Loanword correspondences to Proto-Mǐn voiced aspirated stops

type	example	pMǐn	pHM	OC
5	柱 zhù ‘pillar’	*dh	*ɲɟæu ‘pillar’ (cf. also Proto-Kra *m-tʂu A ‘pillar’)	*m-t<r>oʔ
5	秫 shú ‘glutinous millet’	*džh	*mblut ‘glutinous/sticky’	*m.lut ~ *mə.lut[a]
5	鼻 bí ‘nose’	*bh	*mbruiH ‘nose’	*m-bi[t]-s

[a] Here the Mǐn forms reflect OC *m.lut, but Middle Chinese reflects OC *mə.lut (see section 4.5.2.4). There are other examples of alternation between tightly bound and loosely bound presyllables.

(245) 毛筆 máobǐ ‘writing brush’, Fúzhōu /mo 53/ + /pɛiʔ 24/ → /mo 21 βɛiʔ 24/
被告 bèigào ‘defendant’, Fúzhōu /pɛi 242/ + /ko 212/ → /pɛi 53 o 212/
書店 shūdiàn ‘bookstore’, Fúzhōu /tsy 55/ + /taiŋ 212/ → /tsy 53 laiŋ 212/

In our system, initials with a loosely bound presyllable *Cə.p(ˁ)- or *Cə.b(ˁ)- produce Proto-Mǐn softened *-p- or *-b-, respectively, while onsets like *C.b(ˁ)-, with a tightly bound presyllable (other than *N; see Table 4.9) produce Proto-Mǐn *bh-, as do *m.p(ˁ)- and *m.pʰ(ˁ)-. In either case, the presyllabic consonant *C.- could be a nasal or something else. For example, Norman (1986:383) cites a word for ‘cockroach’ (see example (246) below) where Northern Mǐn dialects reflect Proto-Mǐn *-dzɑt D in Norman’s reconstruction (1981:60), while several other Mǐn dialects and Cantonese show a presyllable with /k/, implying perhaps OC *kə-dzˁ-. It is not clear what character (if any) corresponds to this etymon:

(246) Proto-Mǐn *-dzɑt D ‘cockroach’, Northern Mǐn: Jiàn’ōu /tsuɛ 4/, Zhènghé 政和 /tsuai 5/, Chóng’ān 崇安 /luai 8/; also Shàowǔ /tsʰai 6/ (Norman 1982:548), Hépíng /tʰai 4/ (Norman 1995:122), Zhènqián 鎮前 /tsua 5/, Jiànyáng /loi 8/, Wǔfū 五夫 /luai 8/ (Norman 1996:37), Liándūncūn 連墩村 /lue 8/ (Norman 2002:357).
Cf. Fú’ān 福安 /sat 8/ ~ /ka 1 sat 8/, Fúzhōu /ka 6 sak 8/, Xiàmén /ka 1 tsuaʔ 8/; Cantonese /ka-tsat 8, kat-tsat 8/ ‘cockroach’

Some researchers have tried to explain the variety in Mǐn correspondences to Middle Chinese initials as the result of different layers of borrowing from nearby dialects: for example, the voiced stops of Shíbēi (which correspond to softened initials in Jiànyáng) have been attributed to the influence of the nearby Wú 吳 dialects, which are characterized by having initial voiced obstruents (Hirata 1988). This explanation of the softened initials has been quite convincingly refuted by Norman (2000). For example, the voiced initial in Shíbēi /baiŋ 9/ for 崩 bēng < MC *pong* ‘collapse’ cannot have been borrowed from Wú, because in Wú the initial of this word is voiceless; moreover, a number of the words with softened initials in Mǐn are characteristic Mǐn dialect words that are not found in Wú at all.

However, among those words where Northern Mǐn softened initials correspond to voiced obstruents in Middle Chinese and Wú, at least some must have been borrowed after the Old Chinese period. For example, in words corresponding to Middle Chinese syllables of the types *Tsij* and *Tsi*, Shíbēi has the final /i/ and Jiànyáng has /oi/ in the colloquial layer, presumably inherited from Old Chinese (data are from Akitani 2004 and Norman 1971); see Table 4.12. (Underlining in the Jiànyáng tones indicates abruptness; a colon indicates that the tone is extra long.) The corresponding finals in the literary layer are /u/ and /o/, respectively, as illustrated in Table 4.13.

But there are examples where softened initials appear with the literary finals, as in the shaded boxes of Table 4.14. (The reflexes of Norman's Proto-Mǐn softened *-dz in Shíbēi and Jiànyáng are /dz/ and /l/, respectively.)

Another form with softened initials in Northern Mǐn is the first syllable of 菩薩 púsà < MC *bu-sat* 'bodhisattva': Shíbēi /bu 2 sa 7/, Hépíng /wo 2 sai 7/, with the reflexes of Proto-Mǐn softened *-b. But clearly, this word cannot predate the introduction of Buddhism in the first century CE. More research is needed on the various layers of vocabulary in Northern Mǐn; for now, when Northern Mǐn shows type-6 correspondences corresponding to a Middle Chinese voiced obstruent initial, we only reconstruct

TABLE 4.12 Northern Mǐn colloquial finals corresponding to MC *Tsij* and *Tsi*

	Middle Chinese	Shíbēi	Jiànyáng
姊 zǐ 'older sister'	*tsijX*	tɕi 21	tsoi 21
死 sǐ 'die (v.)'	*sijX*	ɕi 21	soi 21
四 sì 'four'	*sijH*	ɕi 33	soi 32:
絲 sī 'silk'	*si*	ɕi 53	soi 55

TABLE 4.13 Northern Mǐn literary finals corresponding to MC *Tsij*

	Middle Chinese	Shíbēi	Jiànyáng
資 zī 'property'	*tsij*	tsu 53	tso 55
私 sī 'private'	*sij*	su 53	so 55
次 cì 'second (adj.)'	*tshijH*	tsʰu 33	tho 32:

TABLE 4.14 Northern Mǐn softened initials with literary finals (C = colloquial, L = literary)

	Middle Chinese	Shíbēi		Jiànyáng	
		C	L	C	L
自 zì 'self'	*dzijH*	tɕi 45	dzu 45	tsoi 43:	lo 43:
字 zì 'written character'	*dziH*	dʑi 45	—	loi 43:	lo 43:
瓷 cí 'porcelain'	*dzij*	—	dzu 53	—	lo 55
慈 cí 'loving, kind'	*dzi*	—	dzu 53	—	lo 33:

an Old Chinese loose presyllable when there is additional evidence for it outside of Northern Mǐn, since in those cases borrowing from a dialect with voiced obstruents actually is a realistic possibility.

4.2.1.2 Proto-Mǐn resonants

Another area where Mǐn syllable onsets show more complexity than Middle Chinese is in words where Middle Chinese has a (voiced) resonant initial. In Mǐn dialects we find two contrasting types of correspondences to Middle Chinese initial resonants: based on both segmental and tonal contrasts, Norman (1973) reconstructed voiceless resonant initials *lh-, *mh-, *nh-, etc. for Proto-Mǐn, contrasting with voiced *l-, *m-, *n-. Similar contrasts must also be reconstructed, in some of the same words, for Proto-Hakka, the ancestor of the Hakka dialects. Here, for purposes of illustration, we will confine ourselves to cases of Proto-Mǐn *l- and *lh-, in words of the traditional píngshēng category (Proto-Mǐn tone *A) only, in three Northern Mǐn dialects (Liándūncūn,[17] Shíbēi, and Hépíng) and one Hakka dialect (Méixiàn 梅縣); see Table 4.15. In the Northern Mǐn dialects, Norman's Proto-Mǐn *l- becomes [l], and Proto-Mǐn *lh- becomes a sibilant (usually [s]); they sometimes contrast tonally as well. In Hakka dialects, Norman's *lh- generally has the high-register tone (here, tone 1) that is characteristic of syllables with voiceless initials.

As shown in the last column of Table 4.15, we reconstruct Norman's Proto-Mǐn voiced resonants as Old Chinese voiced resonants, and Norman's Proto-Mǐn voiceless resonants as Old Chinese voiced resonants with a voiceless preinitial consonant (represented by *C). (Note, then, that our Old Chinese voiceless resonants like *l̥(ˤ)- do not correspond to Norman's Proto-Mǐn voiceless resonants like *lh-.) We suppose that OC *C.r- was actually still *C.r in Proto-Mǐn, and that in Northern Mǐn, *r developed a fricative variant, perhaps [z] or [ʐ], when a voiceless preinitial was present: after the preinitial was lost, this fricative devoiced to give the [s] initial seen in the Liándūncūn, Shíbēi, and Hépíng forms in Table 4.15.

In the earliest layer of Chinese loanwords to Vietnamese, there was a very similar development from *r to a fricative after preinitial *k: in Vietnamese, OC *k.r- evolved to modern (orthographic) *s-* [ʂ], as in 力 *k.rək 'strength', VN *sức* [ʂɯk D1] (pronounced /kʰrɨk⁷/ in the closely related Vietic language Rục). As we will see in the next section, this presyllabic *C- often survives in early Chinese loanwords to other languages. Note

TABLE 4.15 Norman's Proto-Mǐn *l and *lh (tone *A) in three Northern Mǐn dialects, Méixiàn (Hakka), and Old Chinese

	PMǐn	MC	Liándūncūn	Shíbēi	Hépíng	Méixiàn	OC
犁 lí 'plow'	*l A	*lij*	lai 2	li 5	læ 2	lai 2	*[r][i]j
流 liú 'flow (v.)'	*l A	*ljuw*	lau 2	lɔ 5	liu 2	liu 2	*ru
聾 lóng 'deaf'	*lh A	*luwng*	soŋ 2	səŋ 5	suŋ 7	luŋ 1	*C.rˤoŋ
鱗 lín 'fish scale'	*lh A	*lin*	saiŋ 2	saiŋ 5	sem 7	lin 1	*C.r[ə][n]

also that Proto-Mǐn voiceless resonants like *lh- < OC *C.r(ˢ)- generally have the same tonal development as Proto-Mǐn *bh- < *C.b(ˢ)-, which supports the idea that the voiceless *C.- before the resonant was still there in Proto-Mǐn.

This hypothesis also helps account for interesting properties of Norman's voiceless nasals in Southern Mǐn, described in Norman (1973). While Norman's plain nasal initials *m, *n, and *ŋ tend to denasalize to /b/, /l/, and /g/ in Xiàmén and Cháozhōu, his voiceless nasals *mh, *nh, and *ŋh tend to escape this change. Moreover, the nasality from a voiceless nasal spreads rightward, nasalizing the adjacent vowel, as shown in Table 4.16.

Our interpretation is that denasalizations *m > /b/, *n > /l/-, and *ŋ > /g/ affected nasals that were word-initial, with no presyllable, but that this development was blocked in onsets like *C.m(ˢ)-, where a preinitial consonant was present. We assume that the (necessarily nonnasal) preinitial both prevented anticipation of the opening gesture of the velum and shortened the nasal consonant, leading to a spill of nasality onto the adjacent vowel. This is similar to the situation in Lakkia, where nasality spreads rightward in clusters having a nasal as their second element (see sections 2.5.3 and 4.2.2.3). See also Michaud, Jacques, and Rankin (2012), where the same idea is presented, for examples in other languages of Asia, Europe, and America.

4.2.1.3 Mǐn affricates corresponding to Middle Chinese fricatives

Mǐn dialects sometimes have affricate initials corresponding to the Middle Chinese fricatives *s-* (traditional 心 Xīn) and *sy-* (traditional 書 Shū or 審三 Shěn sān). Here we will confine ourselves to correspondences with MC *sy-*. Table 4.17 shows forms with initial *sy-* in Middle Chinese and initial *tš- or *tšh- in Norman's Proto-Mǐn. In addition to the Mǐn dialects Fúzhōu and Xiàmén, we also give forms from the Gǔzhàng 古丈 variety of Wǎxiāng 瓦鄉, an unusual dialect spoken in northwestern Húnán; where Mǐn dialects have an unaspirated affricate corresponding to MC *sy-*, Wǎxiāng also frequently shows an unaspirated affricate.[18] The correspondence of Proto-Mǐn *tš- to MC *sy-* appears to reflect Old Chinese initial *s.t-, as revealed by xiéshēng and etymological connections. Similar evidence indicates that the

TABLE 4.16 Tightly attached preinitials blocking denasalization and spreading nasality rightward in Southern Mǐn

	Norman's pMǐn	Xiàmén	Cháozhōu
磨 *mˢaj > *ma* > mó 'rub, grind'	*m	bua 2	bua 2
南 *nˢ[ə]m > *nom* > nán 'south'	*n	lam 2	lam 2
鵝 *ŋˢa[r] > *nga* > é 'goose'	*ŋ	gia 2	go 2
肉 *k.nuk > *nyuwk* > ròu 'meat, flesh'	*nh	—	nĕk 8
麻 *C.mˢraj > *mae* > má 'hemp'	*mh	muã 2	muã 2
艾 *C.ŋˢa[t]-s > *ngajH* > ài 'Artemisia; moxa'	*ŋh	hiã 6	hiã 6

TABLE 4.17 Affricate correspondences to MC *sy-* and their Old Chinese origins

	pMĭn	MC	Fúzhōu	Xiàmén	Gŭzhàng	OC
水 shuǐ 'water'	*tš	*sywijX*	tsy 3	tsui 3	tsu 3	*s.turʔ
升 shēng 'liter'	*tš	*sying*	tsiŋ 1	tsin 1	tsaŋ 1	*s-təŋ
書 shū 'writing'	*tš	*syo*	tsy 1	tsu 1	tɕiəu 1	*s-ta
室 shì 'chamber'	*tš	*syit*	[seiʔ 7]	tsit 7	tɕi 7	*s.ti[t]
手 shǒu 'hand'	*tšh	*syuwX*	ts^{h}ieu 3	ts^{h}iu 3	ɕiəɯ 3	*n̥uʔ
首 shǒu '(head:) M for poems'	*tšh	*syuwX*	[sieu 3]	ts^{h}iu 3	—	*l̥uʔ
試 shì 'try'	*tšh	*syiH*	ts^{h}ei 5	ts^{h}i 5	sɪ 5	*l̥ək-s
舒 shū 'slow, easy'	*tšh	*syo*	ts^{h}y 1	ts^{h}u 1	—	*l̥a

correspondence of Proto-Mĭn *tšh- to MC *sy-* usually reflects an Old Chinese initial voiceless resonant.

These examples should make it clear that not only Mĭn but also at least the Wăxiāng dialects have systematic distinctions that cannot be accounted for in terms of the Middle Chinese of our written sources. If Old Chinese is assumed to be ancestral to these dialects as well, then evidence from these dialects must be taken into consideration when reconstructing Old Chinese, in accordance with the principles of the comparative method.[19]

4.2.2 EARLY LOANS TO OTHER LANGUAGES

Although China is still quite diverse linguistically, in ancient times it must have been even more so. In particular, the population of China south of the Yángzǐ 揚子 was originally non-Chinese speaking, and Chinese was introduced only gradually (Gernet 1990:25–26). Considering the minority languages that still remain in the area, it is plausible that languages of at least the following families were spoken in the area south of the Yángzǐ, and would have been in contact with Chinese from an early period: Kra-Dai (= Tai-Kadai); Hmong-Mien, also called Miáo-Yáo; Austroasiatic; and Tibeto-Burman. Obviously, Chinese was also in contact from an early date with non-Chinese languages to the north; these languages too may preserve early loanwords that could be helpful in reconstructing Old Chinese. Here we focus on Chinese loanwords in Hmong-Mien, Vietic, and Kra-Dai, taking advantage of important recent research on these families.[20] In general, those early Chinese loans that can be identified confirm the idea that Old Chinese syllable onsets were rather complex, including presyllabic consonants and minor presyllables.

4.2.2.1 Vietic

Work by Ferlus (1976, 1982) has shown that Proto-Vietic, the language ancestral to a subgroup of Austroasiatic languages including Vietnamese, Mường, Thavưng, and Rục, allowed presyllables with a minor vowel; these are preserved in some languages,

TABLE 4.18 Vietic initial consonant correspondences

Rục ↔ Vietnamese correspondences	gloss	Rục	Vietnamese	
p- ↔ ɓ-	four	po:n^{3}	bốn	[ɓon B1]
t- ↔ ɗ-	tail	tuej^{2}	đuôi	[ɗuʌi A1]
k- ↔ k-	fish (n.)	ka:^{3}	cá	[ka A1]
c- ↔ tɕ-	ripe	ci:n^{3}	chín	[tɕin B1]
s- ↔ t-	arm, hand	si:^{1}	tay	[tai A1]
CVp- ↔ v-	lime	kəpu:l^{1}	vôi	[voi A1]
CVt- ↔ z-	testicles	katą́:l	dái	[zai B1]
CVk- ↔ ɣ-	bear (n.)	caku:^{4}	gấu	[ɣʌu B1]
CVc- ↔ z-	bed	kəci:ŋ^{2}	giường	[zɯʌŋ A2]
CVs- ↔ z-	snake	pəsiŋ^{3}	rắn	[zan B1]

such as Rục. In Vietnamese, however, intervocalic consonants (between the presyllable and the main vowel) were lenited, and then the presyllable was lost, as shown in Table 4.18.[21]

Given this pattern, the presence in Vietnamese of one of the initial voiced fricatives corresponding to stops (or [s]) elsewhere can be taken as evidence that a presyllable was once present. When Vietic presyllables or Vietnamese lenited initials occur in loanwords from Chinese, we take it as evidence that the original Chinese donor also had a presyllable; when the presyllable is preserved in some Vietic language, we take its identity into consideration in reconstructing the initial consonant of the Old Chinese presyllable.[22]

As we saw above, the Mĭn dialects preserve traces of some presyllables. Tight presyllables before voiced obstruents (including obstruents voiced secondarily by preinitial *m) give Proto-Mĭn voiced aspirates like *bh-, reflected in most dialects as voiceless aspirates: *C.b(ˁ)- > b(ˁ)- > pʰ- (as in Table 4.9). Loosely attached presyllables cause intervocalic lenition, resulting in Proto-Mĭn softened initials. Presyllables reconstructed on the basis of Mĭn evidence often show evidence of a presyllable in Vietic also, although Vietic does not seem to distinguish between tight and loose presyllables; see the examples in Table 4.19.

Preinitial *k in the Chinese word for 'bandit' is further supported by the loan to Lakkia /kjak 8/ < *gj- 'bandit' (see section 4.2.2.3 and Table 4.23).

4.2.2.2 Hmong-Mien

There is agreement among researchers on Hmong-Mien languages that Proto-Hmong-Mien possessed a three-way contrast in initial stops and affricates of voiceless unaspirated, voiceless aspirated, and voiced—the same as Middle Chinese—bisected by a prenasalization contrast, prenasalized vs. nonprenasalized: altogether a six-way distinction: *p-, *ph-, *b-, *mp-, *mph-, *mb-. This pattern is well preserved in Hmongic, but has undergone a mutation in Mienic according to the reconstruction of L-Thongkum (1993), which Ratliff (2010) follows on this point (see Table 4.20).

TABLE 4.19 Vietic correspondences of Old Chinese tightly and loosely bound presyllables

	MC	pMĭn	OC	Rục	Vietnamese	
牀 chuáng ‘bed’	*dzrjang*	*dzh	*k.dzraŋ	kəci:ŋ²	*giường*	[zɯʌŋ 21]
賊 zéi ‘bandit’	*dzok*	*dzh	*k.dzˤək	kəcʌk	*giặc*	[zak 32]
脰 dòu ‘neck’	*duwH*	*-d	*kə.dˤok-s	kadɔ:k	*dọc* ‘stem’	[zawk 32]
步 bù ‘step’	*buH*	*-b	*mə-bˤa-s	—	*vã* ‘go on foot’	[vɑˀ 35]
補 bǔ ‘mend’	*puX*	*-p	*Cə-pˤaʔ	təpa:³	*vá*	[vɑ 35]

TABLE 4.20 Development of Hmong-Mien stop series (H = high-register tone, L = low-register tone)

pHM	pHmong	pMien
*p-	*p-	*p- (H)
*ph-	*ph-	*ph- (H)
*b-	*b-	*b- (L)
*mp-	*mp-	*ʔb- (H)
*mph-	*mph-	*bh- (H)
*mb-	*mb-	*mb- (L)

TABLE 4.21 Chinese nasal preinitials and Proto-Hmong-Mien prenasalization

Chinese	Proto-Hmong-Mien
仲 *N-truŋ-s > *drjuwngH* > zhòng ‘middle (of brothers)’	*ntroŋ ‘center, middle’
晴 *N-tsʰeŋ > *dzjeng* > qíng ‘clear (weather)’	*ntshjl̥əŋ ‘clear’
鼻 *m-bi[t]-s > *bjijH* > bí ‘nose’	*mbruiH ‘nose’
樹 *m-toʔ-s > *dzyuH* > shù ‘tree’	*ntjɥəŋH ‘tree’
沸 *Nə.p[u][t]-s > *pj+jH* > fèi ‘boil (v.)’	*mpɻ̥æiH ‘boil (v.i.)’
早 *Nə.tsˤuʔ > *tsawX* > zǎo ‘early’	*ntsl̥ouX ‘early’
滑 *Nə-gˤrut > *hweat* > huá ‘slippery’	*ɴɢɻ̥at ‘smooth/slippery’
繅 *mə-tsˤawʔ > *tsawX* > zǎo ‘bleach; wash’	*ntsæwX ‘wash (hands)’
稱 *mə-tʰəŋ-s > *tsyhingH* > chèng ‘steelyard’	*nthjɥəŋH ‘balance (n.)’
紵 *mə-draʔ > *drjoX* > zhù ‘ramie; flax’	*nduH ‘ramie/hemp’

Because early Hmong-Mien speakers had a set of prenasalized initials, they were able to use them to render Chinese words with nasal preinitials. The Hmong-Mien languages do not, however, show any distinction between our two nasal preinitials *N and *m. Moreover, even though Ratliff distinguishes between tightly and loosely attached prenasals in Proto-Hmong-Mien (2010:12, 209), this distinction does not consistently correspond to the Chinese distinction between tightly and loosely attached nasal preinitials. For example, all the examples in Table 4.21 have tightly attached preinitials in Proto-Hmong-Mien.

TABLE 4.22 Correspondence of Proto-Hmong-Mien voiceless sonorants and Mĭn voiceless sonorants

example	Hmong-Mien	pMĭn	OC
面 miàn < *mjienH* 'face'	pMien *hmienA 'face'	*mh	*C.me[n]-s
年 nián < *nen* 'harvest; year'	pHM *hŋu̥əŋH 'year'	*nh	*C.nˤi[ŋ]
李 lǐ < *liX* 'plum'	pHM *hli̥əŋX 'plum'	*lh	*C.rəʔ

Like Old Chinese, Proto-Hmong-Mien contrasted voiced and voiceless sonorants; in addition Proto-Hmong-Mien had a third, preglottalized series: *ʔm-, *ʔn-, *ʔl-, etc., and this three-way distinction among sonorants persisted under various phonetic configurations in the daughter languages Proto-Hmongic and Proto-Mienic. One would expect, then, that Hmong-Mien would represent Old Chinese voiceless sonorants by means of its own voiceless sonorants when borrowing Chinese words, if they were borrowed early enough. Indeed, this appears to be true of OC *l̥-, for which Hmong-Mien has *hl- in a few good examples ('bridge', 'big', 'to scald'; see section 4.3.5). There are few clear examples of voiceless nasals like *n̥-, however.[23] Rather, Proto-Hmong-Mien voiceless sonorants like *hm- and *hn- more commonly correspond to Old Chinese clusters of a voiceless preinitial and a sonorant, according to the correspondences uncovered by Norman (1991). Examples are given in Table 4.22.

4.2.2.3 Lakkia

In section 2.5.3, we cited the observation that Lakkia simplifies inherited consonant clusters having a nasal as their second element by preserving the first consonant and transferring the nasality onto the vowel (Solnit 1988, Edmondson and Yang 1988, L-Thongkum 1992). This behavior also affects early Chinese loanwords, allowing us to reconstruct stop preinitials we would otherwise not be able to detect:

(247) 溺 *kə.nˤewk-s > *newH* > niào 'urine', Lakkia /kjĩ:w 5/

(248) 亢 *k-ŋˤaŋ > *kang* > gāng 'lift high', Lakkia /khã:ŋ 3/

(249) 攝 *kə.n̥ep > *syep* > shè 'catch, grasp', Lakkia /khjɛ̃:p 7/

We reconstruct a loosely attached cluster in (247) 'urine' because the Proto-Mĭn initial is *n; if the Proto-Mĭn initial had been *nh, we would have reconstructed *k.n-. In Table 4.23 below, we show that in Chinese loanwords, Lakkia also simplifies clusters of two obstruents by retaining the first one; within Chinese, however, the coronal consonant in a cluster wins, no matter what its position.

That the preinitials revealed by Lakkia were present in the Chinese donor language is clearly demonstrated by the converging testimony of other conservative languages,

TABLE 4.23 Preservation of initial consonants in Lakkia

Chinese	Lakkia	VN	Rục	pMĭn
箴 *t.[k]əm > *tsyim* > zhēn ‘needle’	them 1	*găm*	—	*tš
紙 *k.teʔ > *tsyeX* > zhǐ ‘paper’	khjei 3	*giấy*	kəcáy	*tš
賊 *k.dzˤək > *dzok* > zéi ‘bandit’	kjak 8	*giặc*	kəcʌ́k	*dzh
牀 *k.dzraŋ > *dzrjang* > chuáng ‘bed’	—	—	kəciːŋ	*dzh

notably the Vietic language Rục (Nguyễn Phú Phong et al. 1988) and by spirantization in Vietnamese. When the onset is fully voiceless, Lakkia shows an aspirate (‘needle’, ‘paper’); when a voiceless preinitial is followed by a voiced initial, the preinitial assimilates in voicing before the cluster simplifies, leaving a low-register tone (as in ‘bandit’, *k.dzˤək > *g.dzˤək > *g- > /kjak 8/). Lakkia therefore constitutes an important source of evidence on Old Chinese complex onsets.

4.2.3 INFERRING OLD CHINESE MANNER DISTINCTIONS FROM COMPARATIVE EVIDENCE

As the preceding sections have shown, the evidence from Chinese dialects and early loanwords can be combined to advance our understanding of Old Chinese onset distinctions. In general, Proto-Mĭn allows us to distinguish between singleton onsets, tight cluster onsets, and loose cluster onsets, with two provisos, already underlined:

1. Old Chinese stops or affricates with preinitial *N- are treated by Proto-Mĭn as singleton voiced stops or affricates: for example, *N.p(ˤ)- merges with *b(ˤ)-.
2. Old Chinese voiceless stops preceded by voiceless preinitials in tight clusters are not distinguished from the corresponding singleton onsets: that is, OC *t-, *C.t-, *k.t-, and *s.t- all go to Proto-Mĭn *t-, *ts-, or *tš-, depending on the presence or absence of pharyngealization and of medial *-r-.

Examples:

(250) 真 *ti[n] > *tsyin* > zhēn ‘true, real’ pMĭn *tš-

(251) 點 *tˤemʔ > *temX* > diǎn ‘black spot’ pMĭn *t-

(252) 水 *s.turʔ > *sywijX* > shuǐ ‘water; river’ pMĭn *tš-

(253) 債 *s-tˤrek-s > *tsreaH* > zhài ‘debt’ pMĭn *ts-

(254) 紙 *k.teʔ > *tsyeX* > zhǐ ‘paper’ pMĭn *tš-

(255) 登 *k-tˤəŋ > *tong* > dēng ‘a kind of sacrificial vessel’ pMĭn *t-

(256) 正 *C.teŋ > *tsyeng* > zhēng ‘first (month)’ pMĭn *tš-

(257) 刀 *C.tˤaw > *taw* > dāo ‘knife’ pMĭn *t-

TABLE 4.24 Vietnamese distinction between Old Chinese voiceless obstruent initials with and without a tightly attached nonnasal presyllable

Chinese	Vietnamese		
隻 *tek > *tsyek* > zhī ‘single’	*chiếc*	[tɕiʌk D1]	not spirantized
點 *tˁemʔ > *temX* > diǎn ‘black spot’	*đốm*	[ɗom B1]	
責 *s-tˁrek > *tsreak* > zé ‘blame’	*dức*	[zɯk D1]	spirantized
紙 *k.teʔ > *tsyeX* > zhǐ ‘paper’	*giấy*	[zʌi B1]	
正 *C.teŋ > *tsyeng* > zhēng ‘1rst (month)’	*giêng*	[ziʌŋ A1]	
刀 *C.tˁaw > *taw* > dāo ‘knife’	*dao*	[zɑu A1]	

Here Vietnamese usefully complements Mĭn by exhibiting nonspirantized initials *đ-* [ɗ] and *ch-* [c] for singleton onsets, and spirantized ones *d-* and *gi-* (both now pronounced [z]) for tight cluster onsets (Table 4.24).

Early loans to Hmong-Mien provide little evidence on whether Old Chinese preinitials were tightly or loosely attached, but when combined with evidence from Middle Chinese, Proto-Mĭn, and Vietic, the Hmong-Mien evidence allows us to distinguish between cluster onsets with and without nasal preinitials. Thanks to Mĭn and Vietnamese, it is further possible to distinguish Old Chinese tight clusters with *N (plain voiced stops in Proto-Mĭn, not spirantized in Vietnamese) from those with *m (aspirated voiced stops in Proto-Mĭn, spirantized in Vietnamese). The basic principles for inferring Old Chinese onsets from this comparative evidence are summarized in Table 4.25 below, using labial initials as examples. (For Vietnamese, “H” indicates high-register tone, “L” low-register tone.)

In the following sections we discuss the reconstruction of Old Chinese onsets in more detail, distinguishing singleton onsets, onsets with tightly attached preinitials, onsets with loosely attached preinitials, and complex onsets.

TABLE 4.25 Manner distinctions for labial stop initials in Middle Chinese, Proto-Mĭn, Vietnamese, and Proto-Hmong-Mien, and corresponding Old Chinese onset types

MC	pMĭn	VN	pHM prenasalized	pHM not prenasalized
p-	*p	*b-* [ɓ] H	(no examples)	OC *p(ˢ)-
p-	*p	*v-* [v] H	(no examples)	OC *C.p(ˢ)-
p-	*-p	*v-* [v] H	OC *mə.p(ˢ)-	OC *Cə.p(ˢ)-
ph-	*ph	*ph-* [f] H	OC *mə.pʰ(ˢ)-	OC *pʰ(ˢ)-,*C.pʰ(ˢ), *Cə.pʰ(ˢ)
b-	*b	*b-* [ɓ] L	OC *N.p(ˢ)-, *N.pʰ(ˢ)-, *N.b(ˢ)-	OC *b(ˢ)-
b-	*bh	*v-* [v] L	OC *m.p(ˢ)-, *m.pʰ(ˢ)-, *m.b(ˢ)-	OC *C.b(ˢ)-
b-	*-b	*v-* [v] L	OC *mə.b(ˢ)-	OC *Cə.b(ˢ)-

TABLE 4.26 Reflexes of singleton onsets (illustrated with labials)

OC	MC	pMĭn	pHM	VN
*p(ˤ)-	*p-*	*p	*p-	*b-* [ɓ] H
*pʰ(ˤ)-	*ph-*	*ph	*ph-	*ph-* [f] H
*b(ˤ)-	*b-*	*b	*b-	*b-* [ɓ] L
*m(ˤ)-	*m-*	*m	*m-	*m-* [m] L
*m̥(ˤ)-	*xw-* (E?), *x-* (W?)	*x	—	—

4.3 Singleton onsets

Singleton onsets are those that occur without presyllables. The general pattern of development is illustrated with labial initials in Table 4.26; detailed tables of reflexes for each type of singleton onset are given at the end of each subsection below. In these tables, a dash "—" indicates that we lack clear examples; in the Vietnamese column, "H" represents high-register tones (*ngang*, *hỏi*, or *sắc*); "L" represents low-register tones (*huyền*, *ngã*, or *nặng*). If reflexes are enclosed in brackets, this means that our hypotheses would lead us to expect such reflexes, but we know of no actual examples. (This does not apply to the brackets around IPA [International Phonetic Alphabet] symbols in the Vietnamese columns, which are simply phonetic transcriptions of the Vietnamese orthography.) In the Middle Chinese column, "E" and "W" indicate the assumed reflexes of an eastern and a western dialect, respectively.

4.3.1 VOICELESS UNASPIRATED OBSTRUENTS: TYPE *p(ˤ)-

Voiceless unaspirated obstruents generally remain as such in Middle Chinese, Mĭn, and early loans. In Middle Chinese, when not followed by *-r-, nonpharyngealized alveolar stops *t-, *tʰ-, and *d- (but not the sibilant obstruents *ts-, *tsʰ-, *s-, or *dz-) are palatalized to MC *tsy-*, *tsyh-*, and *dzy-*, respectively (see section 4.1.2):

(258) 隻 *tek > *tsyek* > zhī 'single', VN *chiếc* [ciʌk D1] 'classifier for vehicles'
炙 *tAk-s > *tsyaeH* > zhì 'roast, broil', pHM *ci C
真 *ti[n] > *tsyin* > zhēn 'true, real', pMĭn *tšin A

When followed by *-r- (including the *<r> infix), both pharyngealized and nonpharyngealized alveolar obstruents (including sibilants) become retroflex *tr-*, *tsr-*, etc. in Middle Chinese (see section 4.1.3):

(259) 卓 *tˤrawk > *traewk* > zhuō 'high; splendid'
著 *t<r>ak > *trjak* > zhuó 'to place'
生 *sreŋ > *srjaeng* > *sraeng* > shēng 'bear, be born; live'

Old Chinese *p(ˤ)-, *tˤ-, and *ts(ˤ)- were borrowed into Proto-Vietic as *p-, *t-, and *ts- respectively, but in Vietnamese, Proto-Vietic *p- and *t- became *b-* [ɓ] and *đ-* [ɗ], respectively, with high-register tone and implosive articulation (Ferlus 1982). Examples:

(260) 斧 *p(r)aʔ > *pjuX* > fǔ 'axe', VN *búa* [ɓuʌ B1] 'axe'
邊 *pˤe[n] > *pen* > biān 'side', VN *bên* [ɓen A1] 'side; party; team; area, place'
氐 *tˤijʔ > *tejX* > dǐ 'bottom', VN *đáy* [ɗâi B1] 'bottom'
點 *tˤemʔ > *temX* > diǎn 'black spot', VN *đốm* [ɗôm B1] 'spot'

The gap left by the Vietnamese change *t- > *đ-* [ɗ] was then filled when Proto-Vietic *ts- (and also *s-) became *t-* [t]:

(261) 節 *tsˤik > *tset* > jié 'joint of bamboo'; pMǐn *ts-; VN *tết* [tet D1] (< Proto-Vietic *ts-) 'New Year festival'
箭 *[ts]en-s > *tsjenH* > jiàn 'arrow'; VN *tên* [ten A1] (< Proto-Vietic *ts-) 'arrow'

(In early Vietnamese loans, it is not unusual for Chinese qùshēng to be reflected as tone *A, as in 'arrow'.)

In both Middle Chinese and Proto-Mǐn, the distinction between the voiceless unaspirated uvular stops *q-, *qʷ-, *qˤ-, and *qʷˤ- on the one hand and glottal stops *ʔ-, *ʔʷ-, *ʔˤ-, and *ʔʷˤ- on the other is lost. As for Proto-Hmong-Mien and early loans to Vietic, we cannot determine from present evidence whether they maintained this distinction or also lost it. It is possible that Proto-Tai (PT, Pittayaporn 2009) reflected *q- (etc.) as *k- and *ʔ- (etc.) as *ʔ-, but the evidence is unbalanced, and there are few clear examples of the former development:

(262) 黿 *qʷˤre > *'wea* > wā 'frog', PT *krwe A 'small frog' (Chinese also has 黿 *m-qʷˤre > *hwea* 'frog' with the animal prefix *m-, supporting the uvular initial)
臆 *ʔ(r)ək > *'ik* > yì 'bosom', PT *ʔɤk D 'chest'
腰 *ʔew > *'jiew* > yāo 'waist', PT *ʔje:w A 'waist'
燕 *ʔˤe[n]-s > *'enH* > yàn 'swallow (n.)', PT *ʔe:n B 'swallow'
甇 *ʔˤaŋ-s > *'angH* > àng 'basin', PT *ʔa:ŋ B 'basin'
温 *ʔˤun > *'won* > wēn 'warm; gentle', PT *ʔun B 'warm'
饜 *ʔ<r>em-s > *'jemH* > yàn 'satiated', PT *ʔi:m B 'satiated'

Nevertheless, the Old Chinese distinction between voiceless unaspirated uvulars (*q- etc.) and glottal stops (*ʔ- etc.) is often recoverable from word-family alternations, and from the phonetic elements of the script—except for characters created after the merger of *q- and *ʔ- (Sagart and Baxter 2009). When Middle Chinese words with

initial ′- have word-family contacts with Middle Chinese velars, we normally reconstruct a uvular initial, assuming that uvulars shifted to velars after a tightly attached nonnasal preinitial: *C.q- > *k*-, etc.[24] Examples:

(263) 影 *qraŋʔ > *'jaengX* > yǐng ‘shadow (n.)’
景 *C.qraŋʔ > *kjaengX* > jǐng ‘bright; image’
鏡 *C.qraŋʔ-s > *kjaengH* > jìng ‘mirror’

(264) 翁 *qˤoŋ > *'uwng* > wēng ‘old man’
公 *C.qˤoŋ > *kuwng* > gōng ‘father; prince’

However, word-family contacts between MC initial ′- and *k*- can also result from the prefixation of *k- to a root beginning in OC *ʔ-. In the following set, contra Sagart and Baxter (2009), we reconstruct *ʔ- rather than *q-, because if the main syllable had been OC *quj, we would expect them to be written with the phonetic 貴 (also used to write *kuj):

(265) 威 *ʔuj > *'jw+j* > wēi ‘awe-inspiring’
畏 *ʔuj-s > *'jw+jH* > wèi ‘fear (v.)’
鬼 *k-ʔujʔ > *kjw+jX* > guǐ ‘ghost’

Compare, with 貴 representing a velar or uvular initial:

(266) 貴 *kuj-s > *kjw+jH* > guì ‘precious; expensive’
醜 *qʰˤuj-s > *xwojH* > huì ‘wash the face’
遺 *[ɢ](r)uj > *ywij* > yí ‘leave; reject’

In general, we reconstruct MC initial ′- as *ʔ- rather than *q- in words that lack word-family contacts with velars or uvulars and are written with phonetic elements used only for MC initial ′-:

(267) 一 *ʔi[t] > *'jit* > yī ‘one’
衣 *ʔ(r)əj > *'j+j* > yī ‘clothes’
因 *ʔi[n] > *'jin* > yīn ‘rely on’
央 *ʔaŋ > *'jang* > yāng ‘center (n.)’

Additional examples of Old Chinese voiceless unaspirated obstruents are listed below.

(268) 得 *tˤək > *tok* > dé ‘obtain’; pMǐn *t-; pHM *təuk ‘get’[25]

(269) 酒 *tsuʔ > *tsjuwX* > jiǔ ‘wine’; pMǐn *ts-; pHmong *cow B

(270) 蝨 *srik > *srit* > shī ‘louse’; pMǐn *š- (pMǐn reflexes of *sr- fluctuate between *š- and *s-.)

(271) 沙 *sˤraj > *srae* > shā ‘sand’, pMǐn *s-

(272) 故 *kˤaʔ-s > *kuH* > gù ‘old (not new)’; pHM *qu̱oH ‘old’

(273) 金 *k(r)[ə]m > *kim* > jīn ‘metal, bronze’; pMǐn *k-; VN *kim* [kim A1] ‘metal, needle’; pHM *kjeəm ‘gold’

TABLE 4.27 Correspondences for Old Chinese singleton voiceless unaspirated obstruents

OC	MC	pMĭn	VN	pHM
*p(ˢ)-	*p-*	*p	*b-* [ɓ] H	*p
*tˢ-	*t-*	*t	*đ-* [ɗ] H	*t
*t(ˢ)r-	*tr-*		—	*tr
*t-	*tsy-*	*tš	*ch-* [tɕ] H	*c
*ts(ˢ)-	*ts-*	*ts	*t-* [t] H	*ts
*ts(ˢ)r-	*tsr-*	*ts ~ tš	—	—
*s(ˢ)-	*s-*	*s	*t-* [t] H	—
*s(ˢ)r-	*sr-*	*s ~ *š	—	—
*k(ʷ)ˢ-	*k-* *k- > *tsy-*F	k	*c-* ~ *k-* [k]- H	*q
*k(ʷ)-				*kj
*q(ʷ)(ˢ)-	ʼ-	*ʔ	—	*ʔ
*ʔ(ʷ)(ˢ)-				

(274) 貴 *kuj-s > *kjw+jH* > guì ‘precious; expensive’; pMĭn *k-; VN *củi* [kui C1] ‘high price’

(275) 芥 *kˢr[e][t]-s > *keajH* > jiè ‘mustard plant’; pMĭn *k-; VN cải [kɑi C1] ‘cabbage’

(276) 媼 *ʔˢuʔ > *ʼawX* > ǎo ‘old woman’; pHM *ʔəuX ‘elder sister/wife’

The correspondences for these onsets are given in Table 4.27.

4.3.2 VOICELESS ASPIRATED OBSTRUENTS: TYPE *pʰ(ˢ)-

Old Chinese voiceless aspirated obstruents generally remain as such in later reflexes, with the exceptions noted below. In Middle Chinese, prevocalic *-r- blocks palatalization, and causes retroflexion in a preceding alveolar, as with voiceless unaspirated obstruents. When not followed by *-r-, nonpharyngealized alveolar stops *t- etc. palatalize in Middle Chinese, Proto-Mĭn and Hmong-Mien, but sibilants such as *ts- do not. Unlike with *k-, there is no evidence that OC *kʰ- palatalizes before a front vowel:

(277) 企 *kʰeʔ > *khjieX* > qǐ ‘stand on tiptoe’

(278) 輕 *[kʰ]eŋ > *khjieng* > qīng ‘light (≠ heavy)’

The aspirated uvular stops *q(ʷ)ʰ(ˢ)- become MC *x-*, presumably by way of a fricative like [χ] or [x]:

(279) 香 *qʰaŋ > *xaŋ > *xjang* > xiāng ‘fragrance’

(280) 好 *qʰˢuʔ > *xawʔ > *xawX* > hǎo ‘good’

But when nonpharyngealized, that fricative regularly palatalizes to Middle Chinese *sy-* before front vowels (including the front-vowel reflexes of *-a and *-ak for which we use the notations *-A and *-Ak respectively; see sections 5.4.1.1 and 5.4.1.2):

(281) 屎 *[qʰ]ijʔ > *xijʔ > *syijX* > shǐ ‘excrement’; also read 屎 *qʰij > *xjij* > shǐ ‘moan’, with irregular failure to palatalize[26]

(282) 襫 *[qʰ](r)Ak > *xek(?) > *syek* > shì ‘raincoat of straw’; the phonetic is
奭 *[qʰ](r)Ak > *syek* > shì ‘red’, which is probably related to
赤 *[t-qʰ](r)Ak > *tsyhek* > chì ‘red’; cf.
赫 *qʰˢrak > *xaek* > hè ‘red, fiery’

As noted by Norman (1973), the Mǐn dialects occasionally have Proto-Mǐn *kh- for *qʰ-:

(283) 猏 *qʰəjʔ > *xj+jX* > xǐ ‘swine’; Jiàn’ōu, Shíbēi, Jiànyáng /kʰy 3/; Zhènghé /kʰui 3/; Chóng’ān /kʰəu 3/

(284) 虎 *qʰˢraʔ > *r̥ˢaʔ > *xuX* > hǔ ‘tiger’; Zhènqián, Jiàn’ōu /kʰu 3/, Jiànyáng /kʰo 3/.

(285) 薅 *qʰˢu > *xaw* > hāo ‘weed (v.)’, pMǐn *kh-: Xiàmén /kʰau 1/; the phonetic is said to be an abbreviation of
好 *qʰˢuʔ > *xawX* > hǎo ‘good’; also written
茠 *qʰˢu > *xaw* > hāo ‘weed (v.)’ whose phonetic is
休 *qʰ(r)u > *xjuw* > xiū ‘rest (v.)’

(286) 脅 *qʰ<r>ep > *xjaep* > xié ‘flank, side of the body’; Jiànyáng, Shíbēi /kʰe 7/; Shàowǔ, Hépíng, Chóng’ān /kʰie 7/, all ‘wing’.[27]

There appears to be a dialectal distinction in the treatment of *qʰ(ˢ)r-. The majority of words show MC *x-*, as for *qʰ(ˢ)-:

(287) 虩 *qʰrak > *xjaek* > xì ‘fear’

(288) 孝 *qʰˢ<r>uʔ-s > *xaewH* > xiào ‘filial’

(289) 赫 *qʰˢrak > *xaek* > hè ‘red, fiery’

(290) 險 *qʰr[a]mʔ > *xjaemX* > xiǎn ‘precipitous, dangerous’

In a more limited set of cases, *qʰr- evolves to MC *trh-*:

(291) 絺 *qʰrəj > *trhij* > chī ‘fine cloth’; cf.
希 *qʰəj > *xj+j* > xī ‘thin, sparse’

(292) 蓄, 畜 *qʰ<r>uk > *trhjuwk* > chù ‘store (v.)’; cf.
畜 *qʰuk > *xjuwk* > xù ‘nourish’
畜 *qʰuk-s > *xjuwH* > xù ‘domestic animal’

This alternation between *x-* and *thr-* from OC *qʰr- is similar to the dialectal alternation between *x-* and *th-*/*trh-* reflexes of voiceless resonants *l̥, *r̥, *n̥ (see section 4.3.5.1

below). With the latter there are grounds to suppose that the *x-* reflexes are western and the *th-* or *trh-*, eastern. We suppose that this is also the pattern for the reflexes of OC *qʰr-.

More examples of Old Chinese voiceless aspirated obstruents are listed below:

(293) 蜂 *pʰ(r)oŋ > *phjowng* > fēng 'bee'; pMĭn *ph-

(294) 騙 *phen(ʔ)-s > *phjienH* > piàn 'to fool, to cheat'; VN *phỉnh* [fiŋ C1] 'coax'

(295) 奉 *pʰ(r)oŋʔ > *phjowngX* > fèng 'hold with both hands; to present; receive'; pHmong *phu̱ɛŋ B 'to carry in two hands'

(296) 片 *pʰˁe[n]-s > *phenH* > piàn 'half; partial'; pHM *phəan A 'classifier for quilts'

(297) 炭 *[tʰ]ˁa[n]-s > *thanH* > tàn 'charcoal, coal', pMĭn *th-

(298) 穿 *tʰo[n] > *tsyhwen* > chuān 'bore through'; pHM *chu̱en A 'to thread'

(299) 尺 *tʰAk > *tsyhek* > chĭ 'foot (measure)'; VN *thước* [tʰɯʌk D1] 'meter'

(300) 春 *tʰun > *tsyhwin* > chūn 'springtime'; pMĭn *tšh-

(301) 秋 *tsʰiw > *tshjuw* > qiū 'autumn; crop'; pMĭn *tsh-

(302) 草 *[tsʰ]ˁuʔ > *tshawX* > cǎo 'rough, coarse', VN *tháu* [tʰau B1] 'scrawling' (note that we have VN *th-* [tʰ] for OC *tsʰ(ˁ)-, parallel to *t-* [t] for OC *ts(ˁ)-.)

(303) 苦 *kʰˁaʔ > *khuX* > kǔ 'bitter'; pMĭn *kh-; VN *khó* [xɔ B1] 'hard, bitter'

(304) 空 *kʰˁoŋʔ > *khuwngX* > kǒng 'hollow, empty; hole'; pHmong *qhəŋ B 'hole'

TABLE 4.28 Correspondences for Old Chinese aspirated singleton onsets

OC	MC	pMĭn	VN	pHM
*pʰ(ˁ)-	*ph-*	*ph	*ph-* [f] H	—
*tʰˁ-	*th-*	*th	—	—
*tʰ(ˁ)r-	*trh-*		—	—
*tʰ-	*tsyh-*	*tšh	*th-* [tʰ] H	—
*tsʰ(ˁ)-	*tsh-*	*tsh	*th-* [tʰ] H	—
*tsʰ(ˁ)r-	*tsrh-*		—	—
*k(ʷ)ʰˁ-	*kh-*	*kh	*kh-* [x] H	—
*q(ʷ)ʰˁ-	*x-*	*x ~ *kh	—	—
*q(ʷ)ʰr-	*trh-* (E), *x-* (W)		—	—
*q(ʷ)ʰ-	*x-*; *qʰ- > *sy-*^{F}		—	—

(305) 化 *q^{wh§}<r>aj-s > *xwaeH* > huà ‘transform’; pMĭn *x-

(306) 華 (later written 花) *q^{wh§}ra > *xwae* > huā ‘flower (n.)’; pMĭn *x-

The reflexes of aspirated singleton onsets are summarized in Table 4.28. (Here and below, a superscript “^{F}” in the Middle Chinese column means “before a front vowel.”)

4.3.3 VOICED OBSTRUENTS: TYPE *b(§)-

Old Chinese singleton voiced stops and affricates mostly remain voiced in Middle Chinese, Proto-Mĭn, and Hmong-Mien. In Proto-Mĭn, they evolve into Norman’s plain (unaspirated, unsoftened) voiced stop series *b-, *d-, etc. (Norman 1973), which in most modern Mĭn dialects devoice into unaspirated voiceless stops. In Vietnamese, Old Chinese voiced stops and affricates first devoiced into voiceless unaspirates with low tones: *p- L, *t- L, etc. Then *p- and *t- became implosives [ɓ] and [ɗ] (orthographic ‘*b*’ and ‘*đ*’). In Middle Chinese, nonpharyngealized alveolar and velar stops were palatalized under the same conditions as for voiceless stops; and alveolar obstruents became retroflex before *-r-. Here is an example of a palatalizing *g-:

(307) 視 *gijʔ > *dzyijX* > shì ‘look, see’; simplex of the causative verb
示 *s-gijʔ-s > *zyijH* > shì ‘show (v.)’, used as phonetic for velar-initial words, such as
祁 *[g]rij > gij > qí ‘(place name)’

Pharyngealization had more conspicuous effects on the development of OC *g- and *ɢ- than on their voiceless counterparts. In Middle Chinese, the reflexes of *g§- and *ɢ§- are merged into a voiced fricative, the traditional Xiá 匣 initial (MC *h-* in our notation):

(308) 紅 *g§oŋ > *huwng* > hóng ‘pink’

(309) 后 *ɢ§(r)oʔ > *huwX* > hòu ‘sovereign; queen’

This merger occurred in the context of the late Old Chinese retraction of pharyngealized velars (see section 4.1.1), illustrated by Proto-Hmong-Mien in:

(310) 下 *g§raʔ > *haeX* > xià ‘down’; pHM *ɢaX ‘low/short’

In contrast, nonpharyngealized *g- remains *g-* in Middle Chinese, unless palatalized (when it becomes *dzy-*):

(311) 逑 *g(r)u > *gjuw* > qiú ‘come together; mate (n.)’

(312) 其 *gə > *gi* > qí ‘modal particle’

(313) 矜 *griŋ > *gin* > qín ‘kind of lance’

Old Chinese nonpharyngealized *ɢ- evolves to MC *y-* (Sagart and Baxter 2009) and pMĭn *∅- (on Mĭn reflexes see the further discussion below). Middle Chinese *y-* from *ɢ- can be distinguished from other sources of MC *y-* (primarily OC *l-) by its xiéshēng and word-family contacts to Middle Chinese velars, glottal stop, and *x-*. Thus we reconstruct *ɢ- in

(314) 羊 *ɢaŋ > *yang* > yáng 'sheep'; pMĭn *ioŋ A; pHM *juŋ A 'sheep/goat'

because it is is phonetic in

(315) 羌 *C.qʰaŋ > *khjang* > qiāng 'western tribes'
姜 *C.qaŋ > *kjang* > jiāng 'a family name'[28]

In contrast, 昜 *laŋ > *yang* > yáng 'bright'—a homonym of 'sheep' in Middle Chinese—has xiéshēng contacts to MC *d-*, *th-*, *sy-*, *dr-*, a pattern characteristic of Old Chinese laterals: accordingly we reconstruct 昜 as *laŋ. Although 羊 'sheep' and 昜 'bright' are both common phonetic elements, they write mutually exclusive sets of words in paleographical materials (Bái Yúlán 2008:82–86, 265–268) and their respective phonetic series host mostly nonoverlapping word families.

In Mĭn, OC nonpharyngealized *g- and (probably) *gʷ- go to pMĭn *g-:

(316) 舅 *[g](r)uʔ > *gjuwX* > jiù 'mother's brother', pMĭn *g-; VN *cậu* [kʌu B2]
橋 *[g](r)aw > *gjew* > qiáo 'bridge', pMĭn *g-; pHM *ɟow, VN *cầu* [kʌu A2]

Nonpharyngealized *ɢ- and *ɢʷ- become pMĭn *∅-:

(317) 羊 *ɢaŋ > *yang* > yáng 'sheep', pMĭn *ioŋ A

(318) 夜 *[ɢ]Ak-s > *yaeH* > yè 'night', pMĭn *ia C

(319) 有 *[ɢ]ʷəʔ > *hjuwX* > yǒu 'have, exist', pMĭn *iu B

But it appears that pharyngealized *gˁ-, *gʷˁ-, *ɢˁ-, *ɢʷˁ- become Proto-Mĭn *ɦ-:[29]

(320) 旱 *[g]ˁa[r]ʔ > *hanX* > hàn 'dry, drought', pMĭn *ɦɑn B

(321) 話 *[g]ʷˁrat-s > *hwaejH* > huà 'speak; words', pMĭn *ɦua C

(322) 畫 ~ 劃 *gʷˁrek > *hweak* > huà 'draw (v.)', pMĭn *ɦuak D (cf. the derived noun 畫 *C-gʷˁrek-s > *hweaH* > huà 'drawing (n.)', pMĭn *ɣwa C, example (695), section 4.4.5.3)

While *ɢ- with no following *-r- becomes Proto-Mĭn *∅-, we reconstruct *ɢr- as a source of Proto-Mĭn *z-. Our hypothesis is that although initial *r- becomes Proto-Mĭn *l- (section 4.3.4), *r was protected from this change in Mĭn if it was preceded by a consonant: in particular, the combinations *ɢr-, *m.r-, and *N.r- become Proto-Mĭn *z-. (For discussion of *m.r-, and *N.r-, see sections 4.4.1.4 and 4.4.2.4). Likely examples of *ɢr- are given below:

(323) 翼 (*ɢʷrəp) > *ɢrəp > (dial.) *ɢrək > *yik* > yì ‘wing’; pMǐn *zit D

(This word evidently involves a dissimilation of the initial *ɢʷ- and a dialectal change from *-əp to *-ək; see section 5.7; Proto-Mǐn *-it often corresponds to MC *-ik*.[30])

(324) 鹽 *[ɢr][o]m > *yem* > yán ‘salt (n.)’, pMǐn *z-; the phonetic in this character is
監 *[k]ˢram > *kaem* > jiān ‘inspect’; cf.
鹹 *Cə.[g]ˢr[o]m > *heam* > xián ‘salty’[31]

Other examples of MC *y-* from *ɢ-:

(325) 亦 *ɢ(r)Ak > *yek* > yì ‘also’

(326) 已 *ɢ(r)əʔ > *yiX* > yǐ ‘cease; already’

(327) 异 *ɢ(r)ək-s > *yiH* > yì ‘different’

(328) 欲 *ɢ(r)ok > *yowk* > yù ‘desire (v.)’

(329) 與 *ɢ(r)aʔ-s > *yoH* > yù ‘participate in’

Old Chinese nonpharyngealized *ɢʷ- normally develops to MC *hj-*, unlike either *ɢ- or *gʷ-:

(330) 王 *ɢʷaŋ > *hjwang* > wáng ‘king’

(331) 往 *ɢʷaŋʔ > *hjwangX* > wǎng ‘go to’

(332) 佑 *[ɢ]ʷəʔ-s > *hjuwH* > yòu ‘assist’

(333) 為 *ɢʷ(r)aj > *hjwe* > wéi ‘make, do, act as’

(334) 于 *ɢʷ(r)a > *hju* > yú ‘go; at’

But when immediately followed by a front vowel, *ɢʷ- becomes MC *y(w)-*:

(335) 惟 *ɢʷij > *ywij* > wéi ‘(copula); namely’

(336) 役 *ɢʷek > *ywek* > yì ‘war expedition; service’

This development is blocked by *-r-:

(337) 帷 *ɢʷrij > *hwij* > wéi ‘curtain’

Additional examples of Old Chinese singleton voiced obstruents:

(338) 縛 *bak > *bjak* > fù ‘bind (v.)’; VN *buộc* [ɓuʌk D2] ‘to tie, bind’

(339) 平 *breŋ > *bjaeng* > píng ‘even (adj.)’; pMǐn *b-; VN *bằng* [ɓaŋ A2] ‘even, level’; pMien *beŋ A ‘level’

(340) 白 *bˢrak > *baek* > bái ‘white’; pMǐn *b-; VN *bạc* [ɓak D2] ‘silver’; pMien *bæk D ‘white’

(341) 石 *dAk > *dzyek* > shí ‘stone’; pMǐn *džiok D

TABLE 4.29 Correspondences for Old Chinese singleton voiced stops

OC	MC	pMĭn	VN	pHM
*b(ˤ)	*b-*	*b	*b-* [ɓ] L	*b
*dˤ	*d-*	*d	*đ-* [ɗ] L	—
*d(ˤ)r	*dr-*			—
*d	*dzy-*	*dž	—	—
*dz(ˤ)	*dz-*	*dz	—	*dz
*dz(ˤ)r	*dzr-*		—	—
*g(ʷ)ˤ	*h-*	*ɦ	—	—
*g(ʷ)	*g-* *g- > *dzy-*F	*g	—	—
*ɢ(ʷ)ˤ	*h-*	*ɦ	—	—
*ɢ	*y-*	*∅	—	*j
*ɢr	*y-*	*z	—	—
*gʷ	*hj-, y-*F	*∅	—	*w

(342) 住 *dro(ʔ)-s > *drjuH* > zhù ‘stop (v.)’; pMĭn *diu C; VN *đõ* [dɔ C2] ‘to stop’

(343) 餈 *dzij > *dzij* > cí ‘rice or millet cake’, pMĭn *dz-

(344) 叢 *dzˤoŋ > *dzuwng* > cóng ‘collect; thicket’, pMĭn *dz-

(345) 逑 *g(r)u > *gjuw* > qiú ‘come together; mate (n.)’

(346) 葵 *gʷij > *gjwij* > kuí ‘mallow’

(347) 芋 *[ɢ]ʷ(r)a-s > *hjuH* > yù ‘taro (Colocasia antiquorum?)’, pMĭn *io C; pHM *wouH

(348) 院 *ɢʷra[n]-s > *hjwenH* > yuàn ‘wall around a courtyard’; pMĭn *yan C

The reflexes of singleton voiced stops are summarized in Table 4.29.

4.3.4 VOICED RESONANTS: TYPE *m(ˤ)-

Singleton voiced resonants acquire low-register tones in voicing-conditioned tone splits, as in Vietnamese. In Proto-Mĭn they are reflected as plain sonorants, never as aspirated sonorants. Old Chinese *n- develops retroflex and palatal reflexes under the same conditions as the alveolar stops, and *ŋ- palatalizes under the same conditions as the velar stops. Example:

(349) 兒 *ŋe > *nye* > ér ‘child’

Example (349) ‘child’ cannot be from *neʔ, as the character 兒 is the head of a phonetic series with mostly *ŋˤ- words, such as the following, perhaps from a related root:

(350) 倪 *ŋˤe > *ngej* > ní ‘young and weak’

In Middle Chinese, OC *l- palatalizes to *y*-, *lˤ- becomes *d*-, and both *l- and *lˤ- become *dr*- when followed by medial/infixed *r. We reconstruct laterals in the following based on xiéshēng contacts or loan graphs:

(351) 夷 *ləj > *yij* > yí ‘level, peaceful’; written in early texts as
尸 *l̥əj > *syij* > shī ‘corpse’ (for the rhyme, see section 5.5.5.1)

(352) 逃 *lˤaw > *daw* > táo ‘flee’

(353) 除 *[l]<r>a > *drjo* > chú ‘remove’

(354) 櫂 *lˤrewk-s > *draewH* > zhào ‘oar’

(355) 大 *lˤa[t]-s > *dajH* > dà ‘big’; pMǐn *d-; sometimes written in received texts as
世 *l̥ap-s > *l̥at-s > *syejH* ‘generation’ (Gāo Hēng 1989:633–634).

Scattered forms in Vietnamese, Hmong-Mien and Proto-Mǐn retain the original laterals:

(356) 蜕 *lot > *ywet* > yuè ‘exuviae of insects or reptiles’, VN *lột* [lot D2] ‘to skin; to throw off’

(357) 田 *lˤiŋ > *den* > tián ‘field; to hunt’, pHM *ljiŋ ‘field’

(358) 澤 *lˤrak > *draek* > zé ‘marsh; moisture’, Xiàmén /laʔ 8/ ‘moist’

(359) 條 *lˤiw > *dew* > tiáo ‘branch (n.), shoot (n.)’, Xiàmén /liau 2/ ‘a long strip’

Old Chinese laterals are most faithfully preserved in the Wǎxiāng 瓦鄉 dialect of northwest Húnán. There, modern laterals frequently appear corresponding to OC *lˤ-, *lˤr-, and *lr-, as in the following examples from the Gǔzhàng dialect (data from Wǔ and Shěn 2010:15, 24):

(360) 地 *[l]ˤej-s > *dijH* > dì ‘earth, ground’, Gǔzhàng /li 22/

(361) 大 *lˤa[t]-s > *dajH* > dà ‘big’, Gǔzhàng /lu 22/

(362) 桃 *C.lˤaw > *daw* > táo ‘peach’, Gǔzhàng /laɔ 13/

(363) 田 *lˤiŋ > *den* > tián ‘field; to hunt’, Gǔzhàng /lɛ 13/

(364) 糖 *C.lˤaŋ > *dang* > táng ‘sugar’, Gǔzhàng /loŋ 13/

(365) 讀 *C.lˤok > *duwk* > dú ‘read (v.)’, Gǔzhàng /luʔ 53/

(366) 遲 *l<r>ə[j] > *drij* > chí ‘slow’, Gǔzhàng /li 13/

(367) 腸 *lraŋ > *drjang* > cháng ‘intestines’, Gǔzhàng /lioŋ 13/

(368) 蟲 *C.lruŋ > *drjuwng* > chóng ‘insect’, Gǔzhàng /liaɔ 13/

Since Wǎxiāng and Mǐn reflect the change *l- > *y*- but not (or not always) the change *lˤ- > *d*- or *lˤr- > *dr*-, it would appear that the change *l- > *y*- was the first to occur.

The earliest evidence for *lˢ- > *d-* is from the first century CE (for details see Sagart 1999c:30–31).

These changes removed all laterals from the consonant inventory of mainstream Chinese: then at some point before Middle Chinese, *r(ˢ)- shifted to *l-*, filling the gap. Because the Wǎxiāng and Mǐn dialects branched off before the gap was created, these dialects also preserve nonlateral reflexes of Old Chinese *r. Wǎxiāng examples:

(369) 黎 *C.r[ə][j] > *lij* > lí ‘pear tree, pear’, Gǔzhàng /za 13/
漏 *[Nə-r]ˢok-s > *luwH* > lòu ‘leak (v.)’, Gǔzhàng /za 22/
來 *məˌrˢək > məˌrˢə > *rˢə > *loj* > lái ‘come’, Gǔzhàng /zɛ 13/
淋 *r[ə]m > *lim* > lín ‘water (v.)’, Gǔzhàng /zɛ 13/

These reflexes may be compared with the Mǐn treatment of OC *m.r-, *N.r- and *ɢr- as Proto-Mǐn *z- (see sections 4.4.1.4 and 4.4.2.4), and with the Northern Mǐn treatment of *C.r- as [s], probably via an earlier [z] (section 4.4.5.4). As a singleton consonant, however, *r(ˢ)- did become a lateral [l] in Mǐn dialects.[32]

Hmong-Mien retains *r(ˢ)- as [r]; Vietnamese has orthographic *r-* [z] with low-register tone. Additional examples of Old Chinese voiced resonants:

(370) 磨 *mˢaj > *ma* > mó ‘rub, grind’; pMǐn *m-; VN *mài* [mɑi A2] ‘to file, sharpen, whet’

(371) 買 *mˢrajʔ > *meaX* > mǎi ‘buy’; pMǐn *m-; pHM *mɛj X ‘buy’[33]

(372) 馬 *mˢraʔ > *maeX* > mǎ ‘horse’; pMǐn *m-; pHmong *mjæn B ‘horse’

(373) 望 *maŋ-s > *mjangH* > wàng ‘look at from a distance’; pHM *maŋH ‘look at’

(374) 難 *nˢar > *nan* > nán ‘difficult’; pMǐn *n-; VN *nàn* [nɑn A2] ‘difficulty’

(375) 二 *ni[j]-s > *nyijH* > èr ‘two’; pMǐn *ń-

(376) 髯 *nam > *nyem* > rán ‘whiskers’, pHmong *ɲaŋ A ‘beard’

(377) 逆 *ŋrak > *ngjaek* > nì ‘go against’; pMǐn *ŋ-; VN *ngược* [ŋɯʌk D2] ‘go against’

(378) 銀 *ŋrə[n] > *ngin* > yín ‘silver’; pMǐn *ŋ-; pHM *ŋʷi̯ən A ‘silver’

(379) 腸 *lraŋ > *drjang* > cháng ‘intestines’; pMǐn *d-; pMien *ɢljaŋ A ‘intestines’[34]

(380) 易 *lek-s > *yeH* > yì ‘easy’; pMǐn *∅-

(381) 離 *raj-s > *ljeH* > lì ‘reject’; VN *rẫy* [zʌi C2] ‘repudiate (one’s wife)’

(382) 簾 *rem > *ljem* > lián ‘bamboo curtain’; VN *rèm* [zɛm A2] ‘door curtain, bamboo curtain’

TABLE 4.30 Correspondences for Old Chinese singleton voiced resonants

OC	MC	pMĭn	VN	pHM
*m(ˤ)-	*m-*	*m	*m-* [m] L	*m-
*nˤ-	*n-*	*n	*n-* [n] L	—
*n(ˤ)r-	*nr-*			—
*n-	*ny-*	*ń	—	pHmong *ɲ-
*ŋ(ʷ)ˤ-	*ng-*	*ŋ	*ng-* [ŋ] L	*ŋ-
*ŋ-	*ng-, ny-*[F]			
*lˤ-	*d-*	*d ~ *l	**l-* [l] L	*lj- ~ *d-
*l(ˤ)r-	*dr-*			*ɢl-
*l-	*y-*	*∅		*l-
*r(ˤ)-	*l-*	*l	**r-* [z] L	pMien *r-

(383) 梁 *raŋ > *ljang* > liáng ‘beam; bridge’; VN *rường* [zɯʌŋ A2] ‘beam, girder ’

(384) 鹵 *rˤaʔ > *luX* > lǔ ‘salty (sc. land)’; pMĭn *l-

(385) 流 *ru > *ljuw* > liú ‘flow (v.)’; pMĭn *l-; pMien *rl̥əu C ‘to flow’

(386) 淋 *r[ə]m > *lim* > lín ‘water (v.)’; pMĭn *l-; pMien *rəm A ‘to water’

(387) 令 *riŋ-s > *ljengH* > lìng ‘issue a command’

The reflexes of singleton voiced resonant onsets are summarized in Table 4.30.

4.3.5 VOICELESS RESONANTS: TYPE *m̥(ˤ)-

In Middle Chinese, words with resonant initials not infrequently have xiéshēng and/or word-family contacts with words having voiceless obstruent initials. In such cases, we reconstruct the voiceless obstruents as voiceless resonants in Old Chinese:

(388) 劳 *m̥ˤut > *xwot* > hū ‘careless; confused’; cf.
勿 *mut > *mjut* > wù ‘don’t’

(389) 兄 *m̥raŋ > *xjwaeng* > xiōng ‘elder brother’; cf.
孟 *mˤraŋ-s > *maengH* > mèng ‘eldest, great’

(390) 灘 *n̥ˤar > *than* > tān ‘foreshore’; cf.
難 *nˤar > *nan* > nán ‘difficult’

(391) 饟 *n̥aŋ > *syang* > xiǎng ‘bring food to’; cf.
壤 *naŋʔ > *nyangX* > rǎng ‘cultivated soil’

(392) 犧 *ŋ̊(r)a[j] > *xje* > xī ‘sacrificial animal’; cf.
我 *ŋˤajʔ > *ngaX* > wǒ ‘we, I’

(393) 湯 *l̥ˤaŋ > *thang* > tāng ‘hot liquid’; cf.
昜 *laŋ > *yang* > yáng ‘bright’

(394) 體 *ɾ̥ˤijʔ > *thejX* > tǐ ‘body; limbs’; cf.
豊 *[r]ˤijʔ > *lejX* > lǐ ‘ritual vessel’

(395) 寵 *ɾ̥oŋʔ > *trhjowngX* > chǒng ‘favor, grace’; cf.
龍 *[mə]-roŋ > *ljowng* > lóng ‘dragon’

Where we have *m̥(ˤ)- and *n̥ˤ-, Karlgren often reconstructed *χm- and *t’n-, respectively; Dǒng Tónghé (1948) substituted *m̥- for Karlgren’s *χm-, and the reconstruction of voiceless resonants was further extended by Li 1971.

However, where we reconstruct voiceless resonants like *m̥(ˤ)-, Starostin (1989) and Zhèngzhāng (2003) instead reconstructed clusters with *s-, like *sm-; and Mei (2012) reconstructs *s-m-, where *s- is regarded as a prefix. Aside from the fact that the semantics of the relevant words usually do not match the functions we associate with the prefix *s-, we prefer the voiceless resonant reconstruction in these cases, since there is no evidence, internal or external, pointing to *s- in these words in the Old Chinese period. Some of the Old Chinese voiceless resonants might reflect *s- clusters at the Sino-Tibetan stage, but the evidence for such Sino-Tibetan *s-clusters comes from outside Chinese and is thus not directly relevant to Old Chinese. On the other hand, there is excellent evidence that clusters of OC *s- plus resonants had different reflexes (see section 4.4.3.4). The matter is discussed in more detail in Sagart and Baxter (2012).

4.3.5.1 Dialect reflexes of coronal voiceless resonants *n̥(ˤ)-, *l̥(ˤ)-, and *ɾ̥(ˤ)-

As the examples above show, the coronal voiceless resonants usually have coronal reflexes in Middle Chinese:

(396)

OC	MC	OC	MC
*n̥- > *l̥- > *ɾ̥- >	*sy-*	*n̥ˤ- > *l̥ˤ- > *ɾ̥ˤ- >	*th-*
	trh-		

But there is good evidence for an alternative development of these initials to a fricative [x] (or perhaps [h]), which became MC *x-*. This development can be located in the central and western regions of the country, while the coronal reflexes in (396) were probably found along the coast. Thus we have alternations like these:

(397) 漢 *n̥ˤar-s > *xanH* > Hàn ‘(river name)’ (also written as “灘” in excavated documents)
灘 *n̥ˤar > *than* > tān ‘foreshore’; cf.
難 *nˤar > *nan* > nán ‘difficult’

(398) 隋 *l̥oj-s > *xjwieH* > huì ‘shred sacrificial meat’; cf.
隋 *l̥ˤojʔ > *thwaX* > tuǒ ‘shred sacrificial meat’

We have unusually detailed evidence for a dialect pronunciation of 天 tiān < *then* < *l̥ˤi[n] with Middle Chinese initial *x*-:[35]

(399) 天 *l̥ˤi[n] > *then* ~ *xen* > tiān 'heaven'

We reconstruct *l̥ˤ- in 天 tiān because it is apparently phonetic in such words as these:

(400) 吞 *l̥ˤən > *thon* > tūn 'to swallow'
舔 *l̥ˤ[i]mʔ > *themX* > tiǎn 'to lick, to lap' [not in *GSR*], VN *liếm* [liʌm B1] (note the high-register tone)

One piece of evidence for a pronunciation of 天 tiān with initial *x*- comes from the *Hòu Hàn Shū* 《後漢書》, where the character 天 is used to transcribe the first syllable of *Hinduka*, an Iranian name for India, in the toponym 天竺 Tiānzhú < MC *then-trjuwk*. Moreover, as Bodman (1954:28) pointed out, the "Shì tiān 釋天" chapter of the *Shì míng* 《釋名》 (c. 200 CE) by Liú Xī 劉熙 gives sound glosses for two different pronunciations for 天 tiān: 顯 xiǎn < *xenX* 'display, manifest' and 坦 tǎn < *thanX* 'level, at ease'. By Liú Xī's time these were perhaps pronounced *xˤenʔ and *tʰˤanʔ, respectively:

(401) 顯 *qʰˤenʔ; Hàn: *xˤenʔ > MC *xenX*
坦 *[tʰ]ˤa[n]ʔ; Hàn: *tʰˤanʔ > MC *thanX*

These sound glosses probably corresponded to Hàn-time pronunciations of 天 OC *l̥ˤi[n] as something like *xˤen and *tʰˤen, respectively. The *Shì míng* passage is as follows:

(402) 天，豫、司、兗、冀以舌腹言之：天，顯也，在上高顯也。青、徐以舌頭言之：天，坦也，坦然高而遠也。(Hǎo Yìxíng et al. 1989:1006)
The sky (天 tiān) is pronounced in Yù 豫, Sī 司, Yǎn 兗, and Jì 冀 with the belly of the tongue: the sky 天 [*xˤen] is 顯 'brilliant' [*xˤenʔ]; it is high and brilliant above. In Qīng 青 and Xú 徐, it is pronounced with the head of the tongue: the sky 天 [*tʰˤen] is 坦 'flat' [*tʰˤanʔ]; it is high and far away, as if flat.

The approximate positions of the regions mentioned in this passage are mapped in Figure 4.1. The regions with initial *x*- are to the west of the solid line; those with *th*- are to the east. Thus it appears that OC *l̥ˤ- evolved to MC *th*- in coastal regions and to *x*- in more interior regions.

As Pulleyblank pointed out (1962–1963:117–118), additional evidence for a central-western pronunciation of 天 tiān 'sky' with *x*- comes from the word 祆 xiān < MC *xen*, used for the Zoroastrian religion and for its primary god Ahura Mazda. On the basis of Dien (1957), it appears that this word originates as a western pronunciation of 天 tiān 'sky, heaven'; it was also used in Buddhist texts to refer to devas. The

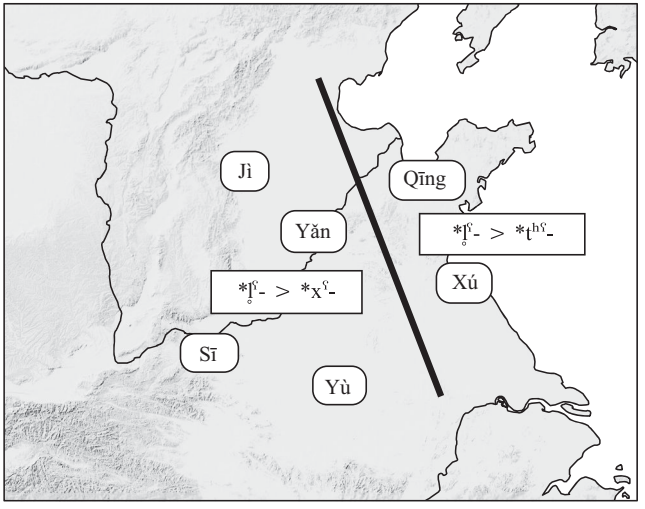


FIGURE 4.1 *Regions mentioned in the* Shì míng's *entry for* 天 *tiān 'sky'*

character 祆 xiān is glossed as follows in the Buddhist lexical work *Yīqiè jīng yīnyì* 《一切經音義》 by the monk Huìlín 慧琳 (who died in 820 CE):

(403) 祆神、上顯堅反、考聲云、胡謂神為天、今關中人謂天神為祆也。
祆神 ['Xiān deity']: the first [word] is pronounced 顯堅反 [MC *x(enX) + (k)en = xen*]. The *Kǎo shēng* 《考聲》 says: the Iranians call deities 天 [heaven]; nowadays people within the pass [i.e., in modern Shǎnxī and Gānsù] call heavenly deities 祆 [MC *xen*]."[36]

Another indication of the western pronunciation of 天 OC *l̥ˤi[n] with *x-* is from Bái 白, a Tibeto-Burman language of Yúnnán, which borrowed the word as /xẽ 55/. Similarly, Bái has /x/ for OC *l̥ˤ- in this example (Bái forms are from Huáng Bùfán 1992):

(404) 湯 *l̥ˤaŋ > *thang* > tāng 'hot liquid'; Bái /xã 55/

It is not surprising that the Bái, located in the southwest, would have borrowed their forms from a western dialect of Chinese that treated *l̥ˤ- as [x].

There is evidence that the geographical distribution of the two Middle Chinese reflexes *th-* and *x-* of OC *n̥ˤ- was similar to that of the reflexes of *l̥ˤ-. The name of the Hàn river: 漢 *n̥ˤar-s > *xanH* > Hàn, has MC *x-* from OC *n̥ˤ-, and this river flows through the central region where *l̥ˤ- is treated as *x-*.[37]

On the other hand, for nonpharyngealized *n̥- and *l̥- (and, before a front vowel, for *ŋ̊-), Proto-Mǐn regularly has *tšh-, which is also the regular reflex of Old Chinese nonpharyngealized *tʰ-: this suggests that there may have been an early coastal dialect with [tʰˤ] for *n̥ˤ- and *l̥ˤ-, and [tʰ] for nonpharyngealized *n̥- and *l̥-.

Additional examples of Old Chinese voiceless resonants:

(405) 身 *n̥i[ŋ] > *syin* > shēn ‘body; self’; used in excavated documents as a phonetic element to write
仁 rén < *nyin* < *niŋ

(406) 手 *n̥uʔ > *syuwX* > shǒu ‘hand’; pMǐn *tšhiu B

The nasal initial in 手 shǒu ‘hand’, first proposed by Unger (1995) and Zhèngzhāng (1995), accounts for the word-family contacts in (407):

(407) 杻 *n̥<r>uʔ > *trhjuwX* > chǒu ‘shackles, handcuffs’
狃 *Cə.n<r>uʔ > *nrjuwX* > niǔ ‘animal tracks; claws’ (for the onset see section 4.5.5.3 below)

(408) 退 *n̥ˢ[u]p-s > *thwojH* > tuì ‘withdraw (≠ advance)’; written in Mǎwángduī silk manuscripts (Western Hàn) with the phonetic
內 *nˢ[u]p-s > *nwojH* > nèi ‘inside’ (e.g., as “芮” in *Lǎozǐ* 9; see Gāo Míng 1996:261)

(409) 尸 *l̥əj > *syij* > shī ‘corpse’; used in oracle-bone and bronze inscriptions as a loan graph for
夷 *ləj > *yij* > yí ‘foreigner (especially to the east)’

Evidence for OC *l̥- can sometimes be drawn from contact languages:

(410) 梯 *l̥ˢ[ə]j > *thej* > tī ‘stairs’; pHM *hlæ A ‘bridge’

(411) 湯 *l̥ˢaŋ > *thang* > tāng ‘hot liquid’; pHmong *hlaŋ A ‘to scald’

(412) 蛻 *l̥ˢot-s > *thwajH* > tuì ‘exuviae of insects or reptiles’; VN *lốt* [lot D1] ‘exuviae’ (note high-register tone)

The Proto-Mǐn reflex of *l̥- is *tšh-:

(413) 首 *l̥uʔ > *syuwX* > shǒu ‘head’, pMǐn *tšh-: Xiàmén /tsʰiu 3/ ‘classifier of odes or hymns’

(414) 賒 *l̥A > *syae* > shē ‘trade on credit’, pMǐn *tšh-: Cháozhōu /tsʰia 1/

(415) 試 *l̥ək-s > *syiH* > shì ‘test, try’, pMǐn *tšh-: Xiàmén /tsʰi 5/

Note that in Middle Chinese, *l̥-, *n̥-, and *s.t- all merge as *sy-*; but Proto-Mǐn regularly has *tšh- < OC *l̥- and *n̥-, contrasting with *tš- < OC *s.t- (see section 4.2.1.3).

Old Chinese *ɾ̥- has a split development in Middle Chinese that is similar to the dialectal split of *qʰr- (see section 4.3.2): one dialect (‘Eastern’, by analogy to the split in *qʰr-) has MC *th-* for pharyngealized *ɾ̥ˢ- and *trh-* for nonpharyngealized *ɾ̥-:

(416) 獺 *ɾ̥ˢat > *that* > tǎ ‘otter’

(417) 體 *ɾ̥ˢijʔ > *thejX* > tǐ ‘body; limbs’

(418) 瘳 *ɾ̥iw > *trhjuw* > chōu ‘recover’

TABLE 4.31 Correspondences for Old Chinese singleton voiceless resonants

OC	MC (E)	MC (W)	pMǐn	VN	pHM
*m̥(ˢ)-	*x(w)-*	*x(w)-*	*x	—	—
*n̥ˢ-	*th-*	*x-*	*th	—	—
*n̥(ˢ)r-	*trh-*	*x-*	*th	—	—
*n̥-	*sy-*	*x-*	*tšh	—	—
*ŋ̊ˢ-	—	—	—	—	—
*ŋ̊-	*x-, sy-*^{F}	*x-*	*x?, *tšh^{F}	—	—
*l̥ˢ-	*th-*	*x-*	*th	*l-* [l] H	*hl
*l̥(ˢ)r-	*trh-*	*x-*	*th	—	—
*l̥-	*sy-*	*x*	*tšh	*th-* [t^{h}] H	—
*r̥ˢ-	*th-*	*x-*	*th	—	—
*r̥-	*trh-*	*x-, sy-*^{F}	—	*th-* [t^{h}] H	—

(419) 攄 *r̥a > *trhjo* > shū ‘extend’

(420) 离 *r̥aj > *trhje* > chī ‘mountain demon’

But another dialect, which we suppose is western, has *x-* for both *r̥ˢ- and *r̥-; when nonpharyngealized *r̥- precedes a front vowel, we have *r̥- > *x- > *sy-*, as in example (214) above:

(421) 虺 *[r̥]ˢu[j] > *xwoj* > huī ‘exhausted, weary’; cognate with
儳 *[r]ˢuj-s > *lwojH* > lèi ‘exhausted’

(422) 虺 *r̥u[j]ʔ > *xjw+jX* > huǐ ‘sound of thunder’; cognate with
雷 *C.rˢuj > *lwoj* > léi ‘thunder’

The reflexes of Old Chinese voiceless resonants are summarized in Table 4.31. Note that our Old Chinese voiceless resonants should not be confused with the *mh-, *nh-, *lh-, etc. reconstructed by Norman (1973) for Proto-Mǐn; in our reconstruction these Proto-Mǐn initials reflect Old Chinese voiced resonants preceded by voiceless presyllables *C.m-, *C.n-, *C.r-, etc. (see section 4.4.5.4).[38]

4.4 Tightly attached onsets

4.4.1 ONSETS WITH PREINITIAL *N

4.4.1.1 Preinitial *N plus voiceless unaspirated obstruents: type *N.p(ˢ)-

A well-known morphological alternation in Old Chinese between transitive/dynamic verbs and the corresponding intransitive/stative verbs manifests itself in Middle Chinese as an alternation between voiceless and voiced obstruent initials, respectively:

(423) 見 *kenH* ‘to see’: 現 *henH* ‘to appear’

(424) 別 *pjet* ‘to separate, distinguish’: 別 *bjet* ‘be separated’

(425) 敗 *paejH* ‘to defeat’: 敗 *baejH* ‘suffer defeat’

(426) 壞 *kweajH* ‘to destroy, ruin’: 壞 *hweajH* ‘to be destroyed’

(427) 斷 *twanX* ‘to cut in two’: 斷 *dwanX* ‘to be cut in two’

(428) 折 *tsyet* ‘to break, to bend’ (v.t.): 折 *dzyet* ‘to bend’ (v.i.)

(429) 屬 *tsyuwk* ‘to assemble’: 屬 *dzyuwk* ‘be attached to’

(430) 夾 *keap* ‘to press between’: 狹 *heap* ‘narrow’

(431) 置 *triH* > zhì ‘put, place; set upright’: 直 *drik* > zhí ‘straight’

In some cases the alternation is between a noun with a voiceless initial and a stative/intransitive verb with a voiced initial:

(432) 光 *kwang* > guāng ‘light, brightness’: 黃 *hwang* > huáng ‘yellow’

When borrowed into Proto-Hmong-Mien, the voiced/intransitive members of such pairs show prenasalization:

(433) 狹 *N-kˁ<r>ep > *heap* > xiá ‘narrow’, pHM *ᴺᴳep ‘narrow’

(434) 直 *N-t<r>ək > *drik* > zhí ‘straight’, pHmong *ndzjæw C ‘straight’[39]

(435) 黃 *N-kʷˁaŋ > *hwang* > huáng ‘yellow’, pMĭn *ɦ-; pMien *ʔgʷi̯əŋ A < *NKʷ- ‘bright’[40]

In such cases we reconstruct the transitive or nominal form as a root with a voiceless initial and attribute the Middle Chinese voiced-initial forms to an Old Chinese intransitivizing/stativizing nasal prefix *N- that voiced a following voiceless stop or affricate in the evolution to Middle Chinese (see section 3.3.2.1 and Sagart and Baxter 2012).[41] We assume that synchronically this was a nasal element that assimilated its place of articulation to that of the following segment. In the examples above, this Chinese prefix *N- is reflected in Hmong-Mien as prenasalization. (Hmong-Mien prenasalization can also represent the Old Chinese *m- prefix; see sections 4.4.2 and 4.5.2.)

Presumably, the nasal prefix voiced the following obstruent and was subsequently dropped: for example, *Np- > *Nb- > *b- (= MC *b*-). Earlier loans to Proto-Hmong-Mien show the earlier *Np- stage, as in (435) above (with pHM *NKʷ- < OC *N-kʷˁ-), while later loans reflect the voiced prenasalized *Nb- stage, as in (433) (with pHM *ᴺᴳ- < OC *N-kˁ-). There is a similar phenomenon in Vietnamese: although Vietnamese does not reflect Old Chinese *N- directly, some loans from Chinese such as *N-p- have a high-register tone, indicating a voiceless initial, as in (436), which we presume is the earlier development; while others, which we take to represent a later stage, have a low-register tone, indicating a voiced initial, as in (437).

(436) 庳 *N-peʔ > *bjieX* > bì ‘low, short’, VN *bé* [ɓɛ B1] ‘small, little, tiny’ (high-register tone)

(437) 舊 *N-kʷəʔ-s > *gjuwH* > jiù ‘old’, pMǐn *g-; VN *cũ* [ku C2] ‘old’ (low-register tone)

Thus we reconstruct the stative/intransitive members of examples (423)–(432) above as follows:

(438) 現 *N-[k]ˢen-s > *Ngˢen-s > *gˢen-s > *henH* > xiàn ‘appear’

(439) 別 *N-pret > *Nbret > *bret > *bjet* > bié ‘be separated (v.i.)’, pMǐn *b-

(440) 敗 *N-pˢra[t]-s > *Nbˢrat-s > *bˢrat-s > *baejH* > bài ‘suffer defeat’

(441) 壞 *N-[k]ˢ<r>ujʔ-s > *Ngˢruj-s > *gˢruj-s > *hweajH* > huài ‘be destroyed’

(442) 斷 *N-tˢo[n]ʔ > *Ndˢonʔ > *dˢonʔ > *dwanX* > duàn ‘be cut in two’

(443) 折 *N-tet > *Ndet > *det > *dzyet* > shé ‘bend (v.i.)’, pMǐn *dž-

(444) 屬 *N-tok > *Ndok > *dok > *dzyowk* > shǔ ‘be attached to’

(445) 狹 *N-kˢ<r>ep > *Ngˢrep > *gˢrep > *heap* > xiá ‘narrow’, pMǐn *ɦ-

(446) 直 *N-t<r>ək > *Ndrək > *drək > *drik* > zhí ‘straight’, pMǐn *d-

(447) 黃 *N-kʷˢaŋ > *Ngʷˢaŋ > *gʷˢaŋ > *hwang* > huáng ‘yellow’, pMǐn *ɦ-

Like Middle Chinese, Proto-Mǐn does not distinguish Old Chinese singleton voiced stops (like *b-) from original voiceless stops prefixed with *N- (like *N.p-). As a rule, when the Proto-Mǐn reflex of an *N- prefixed form is a stop, that stop belongs to Norman’s plain (unaspirated, unsoftened) voiced series: *b-, *d-, etc.

(448) 別 *N-pret > *Nbret > *bret > *bjet* > bié ‘be separated (intr.)’, pMǐn *b-

(449) 重 *N-t<r>oŋʔ > *Ndroŋʔ > *droŋʔ > *drjowngX* > zhòng ‘heavy’, pMǐn *d-; reconstructed with *N-t- because of
腫 *toŋʔ > *tsyowngX* > zhǒng ‘swell, swollen; tumor’

(450) 直 *N-t<r>ək > *Ndrək > *drək > *drik* > zhí ‘straight’, pMǐn *d-

(451) 折 *N-tet > dzyet > shé ‘bend (v.i.)’, pMǐn *dž-

(452) 狹 *N-kˢ<r>ep > *Ngˢrep > *gˢrep > *heap* > xiá ‘narrow’; pMǐn *ɦap D

(453) 黃 *N-kʷˢaŋ > *Ngʷˢaŋ > *gʷˢaŋ > *hwang* > huáng ‘yellow’, pMǐn *ɦuoŋ A

(454) 拳 *N-kro[n] > *gjwen* > quán ‘fist (< rolled-up hand)’, pMǐn *g-; cf.
卷 *[k](r)o[n]ʔ > *kjwenX* > juǎn ‘roll (v.)’

(455) 近 *N-kərʔ > *Ngərʔ > *gərʔ > *gj+nX* > jìn ‘near’, pMǐn *g-; cf. the derived transitive form
近 *s-N-kərʔ-s > *s-Ngərʔ-s > *s-gərʔ-s > *gərʔ-s > *gj+nH* > jìn ‘be near to (v.t.)’; cf. VN *gần* [ɣʌn A2], Rục /tŋkɛŋ/ (Gérard Diffloth, personal communication)

In (455), the voiceless *k and the nasal preinitial *N- in 近 jìn 'near' are visible in Rục /tŋkɛŋ/ 'near'.[42] Note the spirantized initial *g*- [ɣ] in Vietnamese, indicating the presence of a preinitial. The /t/ in the Rục form may correspond regularly to OC *s- (there is no preinitial /s/ in Rục; see Nguyễn Phú Phong et al. 1988). In Chinese, preinitial *s- is lost before velar initials unless a front vowel follows (see section 4.4.3.1).

It would make sense if the *N- prefix also occurred before voiceless fricatives, not just before stops and affricates, but we have no clear examples. In the present system, there are two voiceless fricatives in Old Chinese: *s- and *sᶴ-; but we do not know of any pairs such as *s*-: *z*- or *s*-: *dz*- in Middle Chinese that would contrast transitive/dynamic and intransitive/stative verbs. This raises the possibility that *N- did not voice a following *s-. We also have no clear grounds to reconstruct *N before the Old Chinese glottal stops *ʔ(ʷ)(ᶴ)-.

Additional examples of Old Chinese voiceless unaspirated obstruents with preinitial *N-:

(456) 共 *N-k(r)oŋʔ-s > *Ng(r)oŋʔ-s > *g(r)oŋʔ-s > *gjowngH* > gòng 'together, all'; pMĭn *g-; cf.
廾 *k(r)oŋʔ > *kjowngX* > gǒng 'join the hands'

(457) 舊 *N-kʷəʔ-s > *Ngʷəʔ-s > *gʷəʔ-s > *gjuwH* > jiù 'old'; pMĭn *g-; VN *cũ* 'old'; cf.
久 *[k]ʷəʔ > *kjuwX* > jiǔ 'a long time'

The reflexes of *N- plus voiceless unaspirated obstruents are summarized in Table 4.32.

TABLE 4.32 Correspondences for Old Chinese voiceless unaspirated obstruents with preinitial *N

OC	MC	pMĭn	VN	pHM
*N.p(ᶴ)-	*b-*	*b	*b-* [ɓ]	—
*N.tᶴ-	*d-*	*d	*đ-* [ɗ]	—
*N.t(ᶴ)r-	*dr-*	*d	*đ-* [ɗ]	*ndzj-
*N.t-	*dzy-*	*dž	—	—
*N.ts(ᶴ)-	*dz-*	*dz	—	—
*N.ts(ᶴ)r-	*dzr-*	—	—	—
*N.k(ʷ)ᶴ-	*h-*	*ɦ	—	*NK-, *NG-
*N.k(ʷ)-	*g-*	*g	*c-* [k]	—
*N.q(ʷ)ᶴ-	*h-*	—	—	—
*N.q-	*y-*	—	—	—
*N.qʷ-	*hj, y-*[F]	—	—	—

4.4.1.2 Preinitial *N plus voiceless aspirated obstruents: type *N.pʰ(ˁ)-

Although there are few clear examples, we assume that voiceless aspirated obstruents with tightly prefixed *N- have the same reflexes as the voiceless unaspirated obstruents: *N.pʰ- > MC *b*-, etc.

This is a change from our position in Shā Jiā'ěr [Sagart] and Bái Yīpíng [Baxter] (2010). At issue were cases like the following, where in verbs borrowed from Chinese, Mien has alternations of voiceless aspirated and voiced initials:

(458) /khɔi 1/ < *kh- 'to open' (v.t.), from 開 *[k]ʰˁəj > *khoj* > kāi 'to open (v.t.)'; cf.
/gɔi 1/ < *ŋkh- 'to open' (v.i.)' (Downer 1973:14–16; Ratliff 2010:208)

Mien initial /g/ here reflects an earlier prenasalized voiceless stop *ŋkh-, suggesting that the Chinese source form also had the *N- prefix. Since in example (458) Middle Chinese has only a single form *khoj* corresponding to both the transitive and intransitive forms in Mien, in our 2010 paper we proposed that *N- had no effect on a following aspirated stop in Middle Chinese, so that OC *kʰ and *N-kʰ- merged into MC *kh*-.

However, we now reconstruct a loosely attached counterpart of *N-, written as *Nə- (see section 4.5.1). In Hmong-Mien, *N- and *Nə- are not distinguished: both are reflected as prenasalization. But in Middle Chinese, the intervening vowel *ə of *Nə- prevented the nasal from voicing the following stop. Thus we now reconstruct:

(459) 開 *[k]ʰˁəj > *khoj* > kāi 'to open (v.t.)'; cf. Mien /khɔi 1/ < *kh- 'to open' (v.t.);
開 *Nə-[k]ʰˁəj > *khoj* > kāi 'to open (v.i.)'; cf. Mien /gɔi 1/ < *ŋkh- 'to open' (v.i.)'

Given this analysis, we can assume that tightly prefixed *N- did voice a following aspirated stop or affricate, as might be expected: *N-pʰ- > *b*-, *N-tʰ- > *d*-, *N-kʰ- > *g*-, etc. Evidence for such onsets is limited but does exist:

(460) 曲 *kʰ(r)ok > *khjowk* > qū 'to bend, bent'
局 *N-kʰ(r)ok > *gjowk* > jú 'bent, curved', pMĩn *g-[43]

Another likely example is

(461) 晴 *N-tsʰeŋ > *Ndzeŋ > *dzeŋ > *dzjeng* > qíng 'to clear (of weather)'; cf. pHM *ntshjiaŋ 'clear'. Evidently from the same root as
清 *tsʰeŋ > *tshjeng* > qīng 'clear (adj.)'

The development is different with *N- plus aspirated uvulars *qʰ- etc. Just as singleton *q(ʷ)ʰ(ˁ)- weakened to a fricative, becoming MC *x*- (probably by way of uvular [χ]), OC *N-qʰ(ˁ), phonetically [ɴqʰ(ˁ)], probably weakened to [ɴχ] and then to [ɴ], ultimately merging with original OC *ŋ(ˁ)- when the velar-uvular contrast was lost.

TABLE 4.33 Correspondences for Old Chinese voiceless aspirated initials with preinitial *N

OC	MC	pMĭn	VN	pHM
*N.p$^{h(ʕ)}$-	[*b-*]	[*b]	[*b-* H, *b-* L]	—
*N.t$^{h(ʕ)}$-	[*d-*]	[*d]	[*đ-* H, *đ-* L]	—
*N.ts^{hʕ}-	[*dz-*]	[*dz]	[*t-* H, *t-* L]	—
*N.ts^{h}-	*dz-*	*dz	[*t-* H, *t-* L]	*ntshj-
*N.k^{hʕ}-	[*h-*]	—	—	—
*N.k^{h}-	*g-*	*g	[*c-* H, *c-* L]	*ŋkh-
*N.q$^{h(ʕ)}$-	*ng-*	—	—	—

This sequence results in transitive vs. intransitive pairs contrasting MC *x-* vs. *ng-*, as in

(462) 嚇 *q^{hʕ}<r>ak > *xaek* > hè ‘to frighten’ vs.
愕 *N-q^{hʕ}ak (> ʁχ^{ʕ}ak) > *ngak* > è ‘scared’

External support for this analysis comes from the word 阿魏 ‘asafoetida’, a loan from Tocharian B *aŋkwaṡ* into Chinese (Bailey 1946:786, cited in Pulleyblank 1962–1963:99). Our Old Chinese reconstruction for the second character is a good match for the second part of Tocharian *aŋkwaṡ*:

(463) 阿 *q^{ʕ}a[j] > *ʔaj > *ʔa = MC *'a* > ē (‘slope, river bank’)
魏 *N-q^{h}uj-s > *N-q^{h}wəj-s > *ʁχwəj-s > *ŋwəj-s > *ngjw+jH* > wèi ‘high’

The reflexes of *N- with voiceless aspirated initials are summarized in Table 4.33; reflexes that are assumed but unattested are enclosed in square brackets.

4.4.1.3 Preinitial *N plus voiced obstruents: type *N.b$^{(ʕ)}$-

Evidence for voiced obstruents preceded by *N- is very scarce. In the Hmong-Mien languages, our primary source of information on Old Chinese nasal preinitials, we have not found any pairs contrasting transitive/dynamic verbs in *b, *d, *dz, *g, etc. with stative/intransitive counterparts in *mb, *nd, *ndz, *ŋg, etc. Perhaps this is because these onsets had already merged with singleton voiced obstruents (e.g., *N-b- > *b-) before the time of the earliest loans to Hmong-Mien. The only voiced obstruents where preinitial *N produces a different reflex in Middle Chinese are the voiced uvulars *ɢ$^{(w)}$(^{ʕ})-: preinitial *N before these produces MC *ng-*:

(464) 雅 *N-ɢ^{ʕ}raʔ > *ngaeX* > yǎ ‘proper, refined’; in pre-Qín documents, written the same as, and probably derived from,
夏 *[ɢ]^{ʕ}raʔ > *haeX* > xià ‘great’

(465) 僞 *N-ɢ^{w}(r)aj-s > *ngjweH* > wěi ‘false’; the root appears to be
為 *ɢ^{w}(r)aj > *hjwe* > wéi ‘make, do, act as’

The semantics of 為 wéi involve the idea of change from an original form to a modified one, which may then be thought of as ‘made up’, ‘false’.

4.4.1.4 Preinitial *N plus voiced resonants: type *N.r(ˢ)-

We know of no examples of voiced nasals or laterals preceded by *N-. Perhaps such onsets existed in Old Chinese but merged with their unprefixed counterparts at an early date.

However, we do reconstruct the combinations *N.r(ˢ)- and *m.r(ˢ)- to account for cases where there is evidence of an *r(ˢ)- initial, but Middle Chinese shows initial *y-* or *d-* —the reflexes usually associated with lateral *l- and *lˢ-, respectively. Such examples can be accounted for if we assume that in the line of development leading to Middle Chinese, original *r(ˢ)- changed to *l(ˢ)- after a tightly attached nasal preinitial (*N- or *m-):

(466) *N-r- > *Nl- > *l- > MC *y-*
*N-rˢ- > *Nlˢ- > *lˢ- > MC *d-*
*m-r- > *m l- > *l- > MC *y-*
*m-rˢ- > *m lˢ- > *lˢ- > MC *d-*

In Proto-Mǐn, however, the reflex of nonpharyngealized *N.r- or *m.r- seems to be *z-, not the *∅- that we would expect from original OC *l-; this suggests that Mǐn had split off while there was still a rhotic in the initial (the *N-r- or *m-r- stage), before the processes listed in (466) had occurred. When it was in initial position, OC *r(ˢ)- eventually became [l] in Mǐn dialects, but *r(ˢ) escaped this change when it was non-initial (see the discussion of initial *r- in section 4.3.4). Here are some of the examples we reconstruct with *N.r(ˢ)-; examples with preinitial *m are given in section 4.4.2.4.

(467) 游 *[N-]ru > *Nlu > *lu > *yuw* > yóu ‘float, swim’; pMǐn *z-; cf.
流 *ru > *ljuw* > liú ‘flow (v.)’

(468) 斿 *[N.]ru > *Nlu > *lu > *yuw* > yóu ‘pendants of a banner’, also read *[r]u > *ljuw*; cf.
旒 *[r]u > *ljuw* > liú ‘pendants of a banner or cap’

(469) 隨 *N-rˢuj > *N-rˢwəj > *Nlˢwəj > *lˢwəj > *dwoj* > tuí ‘exhausted’; cf.
儽 *[r]ˢuj-s > *lwojH* > lèi ‘exhausted’

(470) 淫 *N.r[ə]m > *Nləm > *ləm > *yim* > yín ‘excess; licentious’
婪 *[r]ˢ[ə]m > *lom* > lán ‘to covet’

The reflexes observed under this hypothesis are summarized in Table 4.34.

4.4.1.5 Preinitial *N plus voiceless resonants: type *N.m̥(ˢ)-

We would expect preinitial *N to occur before voiceless resonants also, but we know of no examples of this.

TABLE 4.34 Correspondences for Old Chinese voiced resonants with preinitial *N

OC	MC	pMĭn	VN	pHM
*N.m(ˢ)-	—	—	—	—
*N.n(ˢ)-	—	—	—	—
*N.ŋ(ˢ)-	—	—	—	—
*N.l(ˢ)-	—	—	—	—
*N.rˢ-	*d-*	—	—	—
*N.r-	*y-*	*z	—	—

4.4.2 ONSETS WITH PREINITIAL *m

Old Chinese had several homophonous *m- prefixes (see section 3.3.2.2), one of them (*m_{1a}-) a prolific verb prefix indicating volitional action. There are also cases where we must reconstruct a preinitial *m that cannot be identified with any of the known prefixes; in such cases we write "*m." with a following period instead of a hyphen.

Like *N, tightly attached preinitial *m voices a following obstruent. In Middle Chinese, *m produces the same reflexes as *N: for example, *N.p(ˢ)- and *m.p(ˢ)- both become MC *b*-; likewise for aspirates, *N.pʰ(ˢ)- and *m.pʰ(ˢ)-, both become MC *b*-. In Hmong-Mien, too, preinitial *m- shows up as prenasalization, like preinitial *N. But in the Mĭn dialects, *N-p- and *m-p- produce different reflexes: the former yields pMĭn *b-, while the latter evolves to pMĭn *bh-. Likewise, in Vietnamese, *m differs from *N in that *m produces a spirantized initial, while *N does not. The details are given in the following sections.

4.4.2.1 Preinitial *m plus voiceless unaspirated obstruents: type *m.p(ˢ)-

Norman reconstructed Proto-Mĭn voiced aspirates like *bh- to account for cases where some Mĭn dialects have an aspiration contrast in words that have voiced initials in Middle Chinese, as in the contrasting pairs in (471) and (472).

(471) 舅 MC *gjuwX* > jiù 'mother's brother', pMĭn *g-: Xiàmén /ku 6/, Jiànyáng /kiu 5/, Shíbēi /kiu 1/
臼 MC *gjuwX* > jiù 'mortar', pMĭn *gh-: Xiàmén /kʰu 6/, Jiànyáng /kʰiu 1/, Shíbēi /kʰiu 1/

(472) 平 MC *bjaeng* > píng 'even (adj.)', pMĭn *b-: Xiàmén /pĩ 2/, Fúzhōu /paŋ 2/
平 MC *bjaeng* > píng 'make even', pMĭn *bh-: Xiàmén /pʰĩ 2/, Fúzhōu /pʰaŋ 2/

Norman's solution was to project this aspiration contrast back to Proto-Mĭn voiced stops and affricates: for example, *g- ≠ *gh- and *b- ≠ *bh- (Norman 1973).

We have a somewhat different account. As explained in section 4.2.1.1 (Table 4.9), we believe that the situation in Mǐn dialects like Xiàmén and Fúzhōu results from two waves of devoicing: a first wave, which produced voiceless unaspirates (*b > *p), and a second wave, which produced voiceless aspirates, as sketched again here in Table 4.35.

In Table 4.35, stage 1 is Old Chinese. At stage 2, obstruents become voiced after either *N- or *m-. At stage 3, *Nb- merges with original *b-, but *mb- remains unchanged. At stage 4, the first devoicing changes initial *b- to unaspirated *p- (with low-register tone), but since the *b in *mb- is not initial, it is not affected. At stage 5, preinitial *C and *m are lost, and the resulting *b- fills the gap left by the first devoicing in stage 4. Stage 6 is a second devoicing, resulting in voiceless aspirates (with low-register tone); this wave of devoicing is probably connected to that which also produced voiceless aspirates in Gàn, Hakka, and such Mǐn dialects as Shàowǔ.[44] Stage 7 shows the result in a dialect like Xiàmén or Fúzhōu. The aspirated reflex /pʰ/ in such dialects is what led Norman to reconstruct voiced aspirates like pMǐn *bh-; we suspect, however, that the actual contrast at the Proto-Mǐn stage was not *b- ≠ *bh-, as in Norman's reconstruction, but rather *b- ≠ *m.b- or *C.b-, as at stage 3 above.

The following examples illustrate the development of Old Chinese voiceless stops with preinitial *m-:

(473) 抱 *[m-p]ˤuʔ > *mbˤuʔ > *bˤuʔ > *bawX* > bào 'carry in the arms' (volitional), pMǐn *bh-; cf.
包 *pˤ<r>u > *paew* > bāo 'wrap, bundle'

(474) 樹 *m-toʔ > *dzyuX* > shù 'plant (v.); place upright' (volitional); cf. the derived noun
樹 *m-toʔ-s > *mdoʔ-s > *doʔ-s > *dzyuH* > shù 'tree', pMǐn *džh-; cf. pHM *ntjuᵚəŋH 'tree'. The root is probably the same as in
拄 *t<r>oʔ > *trjuX* > zhǔ 'prop up, support (v.)'
柱 *m-t<r>oʔ > *drjuX* > zhù 'pillar' (instrumental), pMǐn *dh-; cf. pHM *ŋɟæu A 'pillar', Proto-Kra *m-tʂu A 'pillar' (Ostapirat 2000)[45]

(475) 頭 *[m-t]ˤo > *mdˤo > *dˤo > *duw* > tóu 'head (body part)', pMǐn *dh-; cf.
兜 *tˤo > *tuw* > dōu 'helmet, hood'

TABLE 4.35 OC *N.p- > /p/ (L), *C.b- > /pʰ/ (L), and *m.p- > /pʰ/ (L) in Xiàmén and Fúzhōu

1	OC	*b-	*N.p-	*C.b-	*m.p-
2	voicing after *N and *m	—	N.b-	—	m.b-
3	Nb- > b-	—	b-	—	—
4	1st devoicing: b- > p- L	p- L	p- L	—	—
5	C.b > b-, m.b- > b-	—	—	b-	b-
6	2nd devoicing: b- > pʰ- L	—	—	pʰ- L	pʰ- L
7	Xiàmén, Fúzhōu	p- L	p- L	pʰ- L	pʰ- L

Old Chinese pharyngealized *m.kˤ- becomes Norman's pMĭn *ɣ- rather than his *gh-, but as he notes (Norman 1974a:28), pMĭn *ɣ- shows the same pattern of tonal reflexes as his voiced aspirates; this suggests that its development was parallel to them at some stage. Nonpharyngealized *m.k(ʷ)- becomes Norman's pMĭn *gh-, as in (478) below.

(476) 蟹 *m-kˤreʔ > *mgˤreʔ > *gˤreʔ > *heaX* > xiè 'crab' (with animal prefix), pMĭn *ɣ-; cf. VN *cáy* [kai B1] 'kind of brackish water crab, fiddler crab', apparently reflecting an unprefixed form OC *kˤreʔ (otherwise unattested, as far as we know).

(477) 合 *m-kˤop > *hop* > hé 'come together; bring together' (volitional), pMĭn *ɣ-; cf. VN *góp* [ɣɔp D1] 'to contribute; to pay jointly with others', *gọp* [ɣɔp D2] 'join, integrate, lump together' (we suspect that VN *góp* is an earlier loan, and *gọp* a later one). Cf.
合 *kˤop > *kop* > gě 'together; put together; combined'[46]

(478) 忌 *m-k(r)ək-s > *mg(r)ək-s > *g(r)ək-s > *giH* > jì 'warn; avoid' (volitional), pMĭn *gh-: Xiàmén /kʰi 6/, Cháozhōu /kʰi 6/; cf. the related form
誡 *kˤrək-s > *keajH* > jiè 'warn'

We have *m-q- > MC *y-*, pMĭn *ɣ- in:

(479) 與 *m-q(r)aʔ > *yoX* > yǔ 'give; for; and', Xiàmén /hɔ 6/ 'give' < pMĭn *ɣ-

As noted earlier, in its tonal behavior, pMĭn *ɣ- behaves like the pMĭn voiced aspirate initials.

Norman's Proto-Mĭn voiced aspirates like *bh- have other sources as well (e.g., onsets of the type *C.b(ˤ)-; see section 4.4.5.3); we reconstruct them with *m plus a voiceless initial when there is direct evidence (usually from Hmong-Mien) for a nasal preinitial; or when we can infer that the root initial was voiceless, as when there are related forms with voiceless initials (as in the examples above). For example, we reconstruct 樹 shù < *dzyuH* 'tree' (pMĭn *džh-) with *m-t- because of Proto-Hmong-Mien *ntjuŋH 'tree' and because of the related form 拄 *t<r>oʔ > *trjuX* > zhǔ 'prop up, support (v.)': the *m- prefix originates in the volitional verb 樹 shù < *dzyuX* < *m-toʔ 'to plant'. We suppose that 樹 shù < *dzyuH* 'tree' originally referred to planted trees, as opposed to trees in general (木 *C.mˤok > *muwk* > mù 'tree, wood').

Because Proto-Mĭn distinguishes Old Chinese voiceless initials with preinitial *m- from those with *N-, there are minimal pairs in Mĭn contrasting the volitional function of *m and the stative/intransitive function of *N:

(480) 定 *N-tˢeŋ-s > *dengH* > dìng ‘become fixed; settled (v.i.)’ (intransitivizing *N-): pMǐn *d-: Jiàn’ōu /tiã 6/ ‘tranquil, quiet’, Xiàmén /tiã 6/ ‘steady, motionless’
定 *m-tˢeŋ-s > *mdˢeŋ-s > *dˢeŋ-s > *dengH* > dìng ‘make fixed, settle (v.t.)’ (volitional *m-), pMǐn *dh-: Jiàn’ōu /tʰiaŋ 6/ ‘fix (a date or time) in advance’ (Lǐ Rúlóng and Pān Wèishuǐ 1998:192); Xiàmén /tʰiã 6/ ‘to take a little food or medicine so as to make one’s self feel somewhat more comfortable’, /tʰiã 6 tã 3/ 定膽 (‘to settle one’s gallbladder’ >) ‘to take some slight means of keeping up one’s spirits’ (Douglas 1899:552)

In this case, the voiceless root initial is indicated by:

(481) 丁, 釘 *tˢeŋ > *teng* > dīng ‘nail (n.)’
釘 *tˢeŋ-s > *tengH* > dìng ‘nail (v.)’
定 *tˢeŋ-s > *tengH* > dìng ‘ready-cooked (food)’

Two apparent counterexamples to the usual Proto-Mǐn treatment are

(482) 肚 *m-tˢaʔ > *duX* > dù ‘belly’, pMǐn *d- (Xiàmén /tɔ 6/, Cháozhōu /tou 4/, Fúzhōu /tou 6/, Jiàn’ōu /tu 6/); cf.
肚 *tˢaʔ > *tuX* > dǔ ‘belly, stomach’

(483) 挾 *m-kˢep > *hep* > xié ‘grasp’, pMǐn *gap D ‘pinch’; pMien *ʔɟəp D < *nc- ‘to pick up food with chopsticks’; VN *gắp* [ɣap D1] ‘to pick up with chopsticks, pull out (bullet from wound)’; cf.
夾 *kˢ<r>ep > *keap* > jiā ‘press between’
柫 *C.kˢ<r>ep > *kaep* > jiā ‘chopsticks’, also read *kˢep > *kep* ‘chopsticks’;[47] cf. Maleng Kha Pong (Ferlus) /təkap⁷/ < Proto-Vietic *t-kap ‘baguettes à griller’ (‘spits for grilling’); and cf.
狹 *N-kˢ<r>ep > *heap* > xiá ‘narrow’, pMǐn *ɦap D[48]

In both 肚 dù < *duX* ‘belly’ and 挾 xié < *hep* ‘grasp’, a nasal preinitial is indicated by voicing alternations in word families, and the semantics point to an *m- prefix: but in that case we would expect Proto-Mǐn initials *dh- and *ɣ- rather than *d- and *g-. (The Proto-Mǐn *g- is unusual in a type-A syllable in any case.) We suspect that these forms are either not Proto-Mǐn, or not part of the indigenous layer in Proto-Mǐn.[49] In any case, as the basic word for ‘belly’, the Mǐn dialects tend to retain the Old Chinese term 腹 *p(r)uk > *pjuwk* > fù, or compounds like 腹肚 fùdù ‘belly’ + ‘stomach’.

In Vietnamese, preinitial *m plus voiceless unaspirated initials produces spirantized initials, with high-register tones in earlier loans and low-register tones in later loans. With high-register tone:

(484) 競 *m-kraŋʔ-s > *gjaengH* > jìng ‘strive; compete’; VN *ganh* [ɣaiŋ A1] ‘emulate’

With low-register tone:

(485) 肚 *m-tˁaʔ > *duX* > dù ‘belly’, VN *dạ* [zɑ B2] ‘stomach, abdomen’

Both high-register and low-register forms seem to have survived in Vietnamese in the reflexes of 合 *m-kˁop > *hop* > hé ‘come together; bring together’; see example (477) above.

The *m- animal prefix is responsible for the voicing alternations in

(486) 鼃 *qʷˁre > *'wea* > wā and *m-qʷˁre > *ɢʷˁre > *hwea* > wā ‘frog’

(487) 鷮 *qˁruk > *'aewk* > xué and 鷮 *m-qˁruk > ɢˁruk > *haewk* > xué ‘a kind of bird’

Additional examples of the *m- preinitial:

(488) 尹 *m-qurʔ > *ɢurʔ > *ywinX* > yǐn ‘govern; governor’; related to
君 *C.qur > *kjun* > jūn ‘lord; ruler’ (the two words are often written the same in early documents)

(489) 均 ~ 韵 ~ 韻 *[m-qʷ]<r>i[n]-s > *hwinH* > yùn ‘harmony, rhyme’;[50] cf.
均 *C.qʷi[n] > *kjwin* > jūn ‘even, equal’
鈞 *C.qʷi[n] > *kjwin* > jūn ‘potter’s wheel’
匀 *[N-q]ʷi[n] > *ywin* > yún ‘even, uniform’
旬 *s-N-qʷi[n] > *zwin* > xún ‘ten-day cycle’ (circumstantial noun; see sections 3.3.2.3 and 4.6)

(490) 載 *[m-ts]ˁəʔ-s > *dzojH* > zài ‘load on a vehicle (v.t.)’; cf.
載 *[ts]ˁəʔ-s > *tsojH* > zài ‘be conveyed in a vehicle’

The reflexes of preinitial *m- before voiceless unaspirated initials are summarized in Table 4.36.

TABLE 4.36 Correspondences for Old Chinese voiceless unaspirates with preinitial *m

OC	MC	pMǐn	VN	pHM
*m.p(ˁ)-	*b-*	*bh	*v-* [v]	—
*m.tˁ-	*d-*	*dh	*d-* [z]	—
*m.t(ˁ)r-	*dr-*	*dh	*d-* [z]	—
*m.t-	*dzy-*	*džh	—	*ntj-, *ŋŋ-
*m.ts(ˁ)-	*dz-*	[*dzh]	—	—
*m.k(ʷ)ˁ-	*h-*	*ɣ	*g-* [ɣ]	—
*m.k(ʷ)-	*g-*	*gh	—	—
*m.q(ʷ)ˁ-	*h-*	—	—	—
*m.q-	*y-*	*ɣ	—	—

4.4.2.2 Preinitial *m plus voiceless aspirated obstruents: type *m.pʰ(ˤ)-

Evidence for onsets like *m.pʰ(ˤ)- comes primarily from word-family contacts between Middle Chinese voiced and voiceless aspirated initials. Comparative evidence is too scanty to establish solid correspondences. In Middle Chinese, the *m- voiced a following obstruent:

(491) 奉 *m-pʰ(r)oŋʔ > *b(r)oŋʔ > *bjowngX* > fèng ‘present (v.) with both hands’; cf.
奉 *pʰ(r)oŋʔ > *phjowngX* > fèng ‘hold with both hands; to present; receive’

(492) 撤 *m-tʰret > *dret > *drjet* > chè ‘remove, take away’; cf.
撤 *tʰret > *trhjet* > chè ‘remove, take away’

(493) 社 *m-tʰAʔ > *dAʔ > *dzyaeX* > shè ‘sacrifice to the spirit of the soil’; cf.
土 *tʰˤaʔ > *thuX* > tǔ ‘earth’[51]

(494) 藏 *m-tsʰˤaŋ > *dzˤaŋ > *dzang* > cáng ‘store (v.)’
倉 *tsʰˤaŋ > *tshang* > cāng ‘granary’

(495) 脛 *m-kʰˤeŋ-s > *gˤeŋ-s> *hengH* > jìng ‘leg, shank’
牼 *kʰˤ<r>eŋ > *kheang* > kēng ‘shank bone’

As with *N-qʰ- (section 4.4.1.2), we find evidence that *m-qʰ- evolves to MC *ng-*. Consider these two words, which are homonyms in both Modern Standard Chinese and Middle Chinese:

(496) 五 wǔ < *nguX* ‘five’
午 wǔ < *nguX* ‘seventh earthly branch’

These have usually been reconstructed as homophones for Old Chinese as well (Karlgren: *ngo, Li: *ngagx), but we reconstruct them as *C.ŋˤaʔ and *[m].qʰˤaʔ, respectively. Sino-Tibetan comparisons strongly suggest that the velar nasal is original in 五 wǔ < *nguX* and other words written with this phonetic:

(497) 五 *C.ŋˤaʔ > *nguX* > wǔ ‘five’, Written Tibetan (WT) *lnga*, Written Burmese (WB) ŋɑ³ (Huáng Bùfán 1992:267), Lepcha /fəŋo/ (Plaisier 2007), Mizo (Lushai) *pa-nga* (Lorrain and Savidge 1898:158), Proto-Tibeto-Burman *l/b-ŋa (Matisoff 2003:149)
吾 *ŋˤa > *ngu* > wú ‘I, my’, WT nga, WB ŋa, Lahu ŋà, Proto-Tibeto-Burman *ŋa ‘I, me’ (Matisoff 2003:487)

Both 五 wǔ and 午 wǔ are frequently used as phonetic elements, and if they really were homophones in Old Chinese, we would expect that as phonetic elements they should be more or less interchangeable; but substitutions of one for the other appear to be rather late.[52] While 五 and 午 eventually came to be pronounced the same, the xiéshēng and word-family connections of 午 are not indicative of a velar nasal root initial during the Old Chinese period.

First, consider the graphic connections of the character 杵 chǔ < MC *tsyhoX* ‘pestle’, which includes 午 wǔ as a phonetic, as recognized in the *Shuōwén* (*SWGL*

2545b). The root initial in 'pestle' is shown by Northern Mǐn to involve an aspirated stop: Jiànyáng /khy 3/, Shíbēi /khy 3/ 'pestle'. Although 午 wǔ is most commonly used to represent the cyclical term 'seventh earthly stem', this is a loangraph use, and the character originally represented 杵 chǔ < MC *tsyhoX* 'pestle'. Our reconstruction is as in (498).

(498) 杵 *t.q^{h}aʔ > *t^{h}aʔ > *tsyhoX* > chǔ 'pestle' (for this onset see section 4.4.4.2), Jiànyáng /khy 3/, Shíbēi /khy 3/
午 *[m].q^{hʕ}aʔ > *nguX* > wǔ 'seventh earthly branch'

The forms below are from Shāng-time oracle bones and bronze inscriptions, respectively (Jì Xùshēng 2010:1021):

(499) Shāng forms for 午 wǔ < *nguX* 'seventh earthly branch':



As for etymological connections, multiple word-family contacts are found between the phonetic series of 午, 戶, and 互 (examples (500)–(505) below). The most likely common ground to the forms below is a uvular root initial:

(500) 'stop'
禦 *m-q^{h}(r)aʔ > *ngjoX* > yù 'withstand; hinder; stop'
迄 *N-q^{ʕ}aʔ-s > *huH* > hù 'shut in, stop up'
戶 *m-q^{ʕ}aʔ > *huX* > hù 'to stop, to check'

(501) 'place'
許 *q^{h}(r)aʔ > *xjoX* > xǔ 'place (n.)'
所 *s-q^{h}<r>aʔ > *srjoX* > suǒ 'place (n.); that which'
處 *t.q^{h}aʔ > *tsyhoX* > chǔ 'be at'
處 *t.q^{h}aʔ-s > *tsyhoH* > chù 'place (n.)'

(502) 'sound of hewing wood'
許許 ~ 滸滸 ~ 所所 *q^{hʕ}aʔ- q^{hʕ}aʔ > *xuX-xuX* > hǔ hǔ 'sound of hewing wood'

Example (502) occurs in Ode 165.3 of the *Shījīng* (Xiǎo yǎ: Fá mù 小雅・伐木), in the line "伐木許許 fá mù hǔ-hǔ" 'they hew the wood, [sounding like] *q^{hʕ}aʔ- q^{hʕ}aʔ'. The Máo text writes 'sound of hewing wood' as 許許, for which the *Jīngdiǎn shìwén* gives the pronunciation *xuX-xuX* (< *q^{hʕ}aʔ- q^{hʕ}aʔ); some versions of the *Jīngdiǎn shìwén* write the expression instead as 滸滸 *xuX-xuX* (Huáng Zhuō 1980:67). The *Shuōwén* glosses 所 suǒ not as 'place' (its usual meaning) but as 'the sound of hewing wood' (伐木聲也 fá mù shēng yě); it notes that the character consists of 斤 jīn 'axe' with 戶 *m-q^{ʕ}aʔ > *huX* > hù 'door' as phonetic element, and quotes the line from Ode 165.3 as "伐木所所" (*SWGL* 6375b).[53]

These examples support reconstructing uvular root initials in most words written with phonetic 午. It appears that *m.q^{hʕ}- had merged with *ŋ^{ʕ}- at least by the time of the *Shuōwén* (100 CE), because words with *ng-* from original *ŋ(^{ʕ})- appear as sound glosses in its entry for 午 wǔ:

(503) 午：牾也。五月陰气午逆陽，冒地而出
午 [*nguX*] < *[m].q^{hʕ}aʔ] means 牾 [*nguH* < *ŋ^{ʕ}ak-s] 'oppose'. In the fifth [五 *nguX* < *C.ŋ^{ʕ}aʔ] month, the dark qì opposes [逆 *ngjaek* < *ŋrak] the bright, covers the earth, and comes out (*SWGL* 6639b).

It is after this merger that we begin to find 午 and 五 used interchangeably as phonetic elements. For example, we take the following to be from the same root:

(504) 禦 *m-q^{h}(r)aʔ > *ngjoX* > yù 'withstand; hinder'

(505) 圉 ~ 圄 *m-q^{h}<r>aʔ > *ngjoX* > yǔ 'prison'

In (505), the character 圄 contains the phonetic 吾 *ŋ^{ʕ}a > *ngu* > wú 'I, my', with original *ŋ^{ʕ}-; our reconstruction predicts that this should be a late graph, because in the early script a character with *ŋ^{ʕ}- should not be used to write a word with the onset *m-q^{hʕ}-. And in fact, the form 圉 is clearly older than 圄. The word appears frequently in Shāng oracular inscriptions: the fullest form represents a man with manacles inside an enclosure; sometimes the figure of the man is abbreviated to 口 kǒu 'mouth'; and sometimes we have only the manacles, which corresponds to the standard graph 圉 (*GG* 8.867):

(506) 

But the character 圄, which reflects the late merger of original *m.q^{h}- and *ŋ-, is not attested in pre-Qín documents as far as we know (*GG* 6.153). The Chinese loan to Proto-Hmong-Mien confirms the nasal preinitial and stop root initial:

(507) Proto-Hmong-Mien *ŋgluə A 'cattle pen, prison'

TABLE 4.37 Attested correspondences for voiceless aspirated stops with preinitial *m

OC	MC	pMĭn	VN	pHM
*m.p^{h}(^{ʕ})-	*b-*	—	—	—
*m.t^{hʕ}-	*d-*	—	—	—
*m.t^{h}(^{ʕ})r-	*dr-*	—	—	—
*m.t^{h}-	*dzy-*	—	—	—
*m.ts^{h}(^{ʕ})-	*dz-*	—	—	—
*m.k^{hʕ}-	[*h-*]	—	—	—
*m.k^{h}-	[*g-*]	—	—	—
*m.q^{h}r-	*ng-*	—	—	*ŋgl-
*m.q^{h}-	*ng-*	—	—	—

Here, as elsewhere, Proto-Hmong-Mien medial *-l- may correspond to Old Chinese medial *r. The tone correspondence is irregular, however.

Reflexes of *m plus voiceless aspirated initials are summarized in Table 4.37.

4.4.2.3 Preinitial *m plus voiced obstruents: type *m.b(ˤ)-

In Middle Chinese, voiced obstruents preceded by preinitial *m follow the same path of evolution as the same obstruents preceded by *N (section 4.4.1.3). In Proto-Mĭn, they give voiced aspirates (including *ɣ-); in Hmong-Mien, voiced prenasalized initials. Examples:

(508) 浮 *m.b(r)u > *bjuw* > fú ‘float (v.)’; pMĭn *bh-; pMien *mbi̱əu A ‘to float’

(509) 平 *m-breŋ > *bjaeng* > píng ‘make even’; pMĭn *bh-: Xiàmén /pʰĩ 2/ ‘to make level, as a piece of ground’; cf.
平 *breŋ > *bjaeng* > píng ‘even (adj.)’; PMĭn *b-: Xiàmén /pĩ 2/ ‘level, even, smooth’; pMien *beŋ A ‘level’

(510) 下 *m-gˤraʔ-s > *haeH* > xià ‘descend’; pMĭn *ɣ-: Xiàmén /he 6/ ‘to lower’; pHmong *ɴɢa B ‘to descend’; cf.
下 *gˤraʔ > *haeX* > xià ‘down’, pMĭn *ɦ-: Xiàmén /e 6/ ‘below’, Jiànyáng /a 5/ ~ /ha 5/

Because the Mĭn dialects treat voiced obstruents with and without *m differently, the modern Mĭn dialects retain minimal pairs that have merged in Middle Chinese pronunciation, as in (509) and (510). The Proto-Mienic form *beŋ A ‘level’ for the adjective in (509) (which would reflect pHM *b-; Ratliff 2010:37) gives us confidence that the root initial was a plain voiced stop in Old Chinese.

The voiced uvular preceded by *m- evolved to MC *ng-*, like *N.ɢ- (section 4.4.1.3). This is shown by xiéshēng contacts between MC *ng-* < *m.ɢ- and MC *y-* of uvular origin: for example, the character 牙 yá < MC *ngae* ‘tooth’ is phonetic in the early graph for 與 yǔ < *yoX* ‘give; for; and’, which we reconstruct as *m-q(r)aʔ, with a uvular initial, because of its graphic (and probably etymological) connection to 舉 *C.q(r)aʔ > *kjoX* > jǔ ‘lift, raise’. Examples of early character forms are given in (511) (from *GG* 2.573, 3.230, 9.672, 6.349).

(511)  = 牙 *m-ɢˤ<r>a > *ŋˤra > *ngae* > yá ‘tooth’

 = 與 *m-q(r)aʔ > *yoX* > yǔ ‘give; for; and’, pMĭn *ɣ-

 = 舉 *C.q(r)aʔ > *k(r)aʔ > *kjoX* > jǔ ‘lift, raise’

 = 邪 *sə.ɢA > *s.ɢA > *zA > *zjae* > xié ‘awry’; also used in a place name:
琅邪 *[r]ˤaŋ-ɢ(r)A > *lang-yae* > Lángyá (name of a mountain in Shāndōng)

TABLE 4.38 Attested correspondences for Old Chinese voiced stops with preinitial *m

OC	MC	pMĭn	VN	pHM
*m.b(ˤ)-	*b-*	*bh	—	*mb-
*m.dˤ-	*d-*	*dh	—	—
*m.d-	*dzy-*	*džh	—	—
*m.dz(ˤ)-	*(dz-)*	—	—	—
*m.g(ʷ)ˤ-	*h-*	*ɣ	—	*NG-
*m.g(ʷ)	*g-*	*gh	—	—
*m.ɢ(ʷ)ˤ-	*ng-*	*ŋ	*ng*-[ŋ]	—

If the Old Chinese initial of 牙 yá < MC *ngae* 'tooth' had been a velar nasal *ŋˤ-, 牙 yá would not have been an acceptable phonetic for 與 *m-q(r)aʔ > *yoX* > yǔ; thus we reconstruct 牙 *m-gˤ<r>a with the body-part *m- prefix. Better than a velar nasal, a uvular stop in 牙 *m-ɢˤ<r>a also explains why 邪 *sə.ɢA > *zjae* > xié 'awry' has initial *z-* in Middle Chinese: as we will show (section 4.4.3.4), *s-ŋ- evolves to MC *s-*; only before voiced obstruents does Old Chinese preinitial *s evolve to MC *z-* (section 4.4.3.3).

Forms related to 牙 *m-gˤ<r>a > *ngae* > yá 'tooth' occur with initial [ŋ] in southeast Asian languages: for example, Proto-Tai *ŋa (Li 1977:204), VN *ngà* [ŋɑ B2], and Bahnar *ngəla*, all meaning 'tusk, ivory' (Norman 1988:19). This could be taken to support a velar nasal initial in the Chinese word, but we suspect these are ivory trade words borrowed from Chinese after the change of *m-gˤ- to *ŋˤ-, with semantic narrowing, rather than the other way around.

Additional examples of preinitial *m before voiced obstruents:

(512) 鼻 *m-bi[t]-s > *bjijH* > bí 'nose', pMĭn *bh-; pHM *mbruiH 'nose';[54] cf.
鼻 *Cə-bi[t]-s > *bjijH* > bí 'smell (v.t.)', pMĭn *-b- (see section 4.5.5.2)

(513) 上 *m-daŋʔ > *dzyangX* > shàng 'to put up', pMĭn *džh-: Xiàmén /tsʰiũ 6/ '(to cause to ascend, to bring up), to set up, as doors; to store up, as goods; to sew on, as soles of shoes; to raise, as water; to produce, as damp, mist, white ants' (Douglas 1899:88); cf.
上 *Cə.daŋʔ > *dzyangX* > shàng 'ascend', pMĭn *-dž-: Xiàmén /tsiũ 6/ 'above, upon, upper, superior, former…' (Douglas 1899:58)

(514) 毒 *m-[d]ˤuk-s (?)[55] 'to poison (v.)' (volitional), pMĭn *dhəu C: Xiàmén /tʰau 6/, Fúzhōu /tʰau 5/ 'to poison'; cf.
毒 *[d]ˤuk > *dowk* > dú 'poison (n.)', pMĭn *d-

Reflexes of *m before voiced obstruents are summarized in Table 4.38.

4.4.2.4 Preinitial *m plus voiced resonants: type *m.n(ˤ)-

There is evidence from variant character readings, etymological connections, and alternations in xiéshēng series that presyllabic *m could occur before the nasals *n(ˤ)- and *ŋ(ˤ)-: *m- is the animal prefix in

(515) 麑, 麂 *m-ŋˤe > *mej* > mí ‘fawn’: the root is evidently
倪 *ŋˤe > *ngej* > ní ‘young and weak’; cf. also
兒 *ŋe > *nye* > ér ‘child’

Because of the phonetic, we reconstruct *m-n- in:

(516) 彌 *m-nə[r]ʔ > *mjieX* > mí ‘stop’ (volitional); cf.
爾 *n[ə][r]ʔ > *nyeX* > ěr ‘you(r)’

We have *m before *l- in:

(517) 塍 *m.ləŋ > *zying* > chéng ‘raised path between fields’; cf.
勝 *l̥əŋ-s > *syingH* > shèng ‘overcome; surpass’

(518) 秫 *m.lut > *zywit* > shú ‘glutinous millet’, pMǐn *džh-, pHM *mblut ‘glutinous/sticky’

The initial *m in (518) is supported by the intrusive *-b- in Hmong-Mien; the aspirated initial *džh- in Proto-Mǐn suggests that the cluster became a prenasalized obstruent in Proto-Mǐn: *m.l- > *mᵈl- > *md-.[56] A similar example is

(519) 墜 *m.lru[t]-s > *drwijH* > zhuì ‘fall down’; pHmong *mblu̱ei C ‘shed leaves/drop’

Here, too, the Proto-Hmongic intrusive *-b- points to a preinitial *m. The semantics are inconsistent with the volitional *m- prefix that appears on verbs, so we write “*m.” instead of “*m-”; in this case the *m may have been part of the root.

The evolution of onset *m.r- into Middle Chinese appears to be dialectally conditioned. In one dialect, *m.r- and *m.rˤ- evolved to *y* and *d,* respectively:

(520) 蠅 *m-rəŋ > *m-ləŋ > *ying* > yíng ‘fly (n.)’

This word is reconstructed with *m-r- (with the animal prefix) because the phonetic is

(521) 黽 *mˤrəŋʔ > *meangX* > měng ‘toad’

Proto-Mǐn has *z- in (520) ‘fly’ (Xiàmén /sin 2/), the same as the Proto-Mǐn reflex of *N.r- and *ɢr- (*z- in ‘swim’ and ‘salt’, (467) and (324), respectively). Proto-Tai *m.leːŋ A ‘insect’ (Pittayaporn 2009) and Rục *məlaŋ* ‘big fly’ (Nguyễn Phú Phong et al. 1988:20) were presumably borrowed after the change of *m-r- to *m-l-. An example of *m.rˤ going to MC *d-* is:

(522) 眾 *m-rˤəp > *m-lˤəp > *dop* > tà ‘reach to’

We reconstruct this word with the onset *m-rˤ- because in oracle bones and early bronze inscriptions the graph is composed of an eye with water falling from it:

(523) 

TABLE 4.39 Attested correspondences for Old Chinese voiced resonants with preinitial *m

OC	MC	pMĭn	VN	pHM
*m.n(ˤ)-	*m-*	—	—	—
*m.ŋ(ˤ)-	*m-*	—	—	—
*m.lˤ	*y-*	—	—	—
*m.l(ˤ)r-	*dr-*	—	—	—
*m.l-	*zy-*	*džh	—	*mbl-
*m.rˤ-	*d- ~ m-*	—	—	—
*m.r-	*y- ~ m-*	*z	—	—

This suggests that 眾 originally represented 'tears' in early Old Chinese, the word later written as 淚 (Jì Xùshēng 2010:268):

(524) 眾 *m-rˤəp > *dop* > tà 'reach to' (early graph for 'tears')
淚 *[r][ə]p-s > (dialect:) *rup-s > *lwijH* > lèi 'tears (n.)'
泣 *k-ɢ̊əp > *khip* > qì 'weep'; note the phonetic
立 *k.rəp > *lip* > lì 'stand (v.)'

The early graph for 'tears' would then have been a phonetically appropriate choice to write a volitional verb *m-rˤəp > *dop* > tà 'reach to':

(525) 眾, 遝 *m-rˤəp > *dop* > tà 'reach to'
隶, 逮 *m.rˤəp-s > *dojH* > dài 'reach to'
及 *[m-k-]rəp > *gip* > jí 'reach to'
暨 *[m-k-]rəp-s > *gijH* > jì 'reach to'

In another dialect, OC *m.r- and *m.rˤ- merged with *mr- and *mˤr- respectively, giving MC *m-*, as in these examples:

(526) 命 *m-riŋ-s > *mriŋ-s > *mreŋ-s > *mjaengH* > mìng 'command (n.)'; cf.
令 *riŋ > *ljeng* > líng 'send (a person)'

(527) 麥 *m-rˤək > *mrˤək > *meak* > mài 'wheat'; the phonetic is
來 *mə.rˤək > *mə.rˤə > *loj* > lái 'come'[57]

The reflexes of preinitial *m plus voiced resonants are summarized in Table 4.39.

4.4.2.5 Preinitial *m plus voiceless resonants: type *m.ɢ̊(ˤ)-

We know of no certain cases of voiceless resonants preceded by *m. A possible instance is the word 獺 tǎ 'otter', with its two Middle Chinese readings, *trhaet* and *that*:

(528) 獺 *ɢ̊ˤat > *that* > tǎ 'otter'
獺 *[m-ɢ̊]ˤat > *trhaet* > tǎ 'otter'; cf. pHmong *ntshjɯa A 'otter'. The phonetic is
刺 *mə.rˤat > *lat* > là 'wicked; spicy'; cf. pHM *mbrat 'spicy', Proto-Tai *m.r- (Ostapirat 2011)

TABLE 4.40 Attested correspondences for OC voiceless resonants with preinitial *m

OC	MC	pMĭn	VN	pHM
*m.m̥-	—	—	—	—
*m.n̥-	—	—	—	—
*m.ŋ̊-	—	—	—	—
*m.l̥-	—	—	—	—
*m.r̥-	? *trh-*	—	—	? *ntshj-

The MC reading *that* for 'otter' can be reconstructed as OC *r̥ˤat (section 4.3.5). Ratliff (2010) reconstructs Proto-Hmongic *ntshjo̱a A 'otter', which could be related to the Chinese word. Although we would normally expect Proto-Hmongic tone *D corresponding to OC *-t, the correspondence of the OC *-t to pHM tone A has parallels:

(529) — *ʔi[t] > *ʔjit* > yī 'one'; pHM *ʔi̱ A 'one'.

We hypothesize that the Hmongic prenasalized form *ntshjo̱a A corresponds to the unaccounted for MC *thraet* reading. Presence or absence of prefixed *m- is a source of alternations in animal names, as in examples (486) and (487) above. Thus we tentatively reconstruct 獺 'otter' as *[m-r̥]ˤat > *trhaet* and *r̥ˤat > *that* > tǎ. See Table 4.40.

4.4.3 ONSETS WITH PREINITIAL *s

Sagart and Baxter (2012) discuss the development of onsets with preinitial *s- into Middle Chinese, as well as the competing proposals in Mei (1989, 2012).

4.4.3.1 Preinitial *s plus voiceless unaspirated obstruents: type *s.p(ˤ)-

Preinitial *s- had a range of effects on unaspirated stops and affricates. We do not know of any examples of preinitial *s followed by *p- or *pˤ-. Old Chinese *s.t-, but not *s.tˤ-, evolves to MC *sy-* (plausibly [ɕ]), presumably through an intermediate stage [stɕ] that simplified to the Middle Chinese palatal fricative *sy-* under the influence of preinitial *s: *s.t- > *stɕ- >*ɕ- = *sy-*. Old Chinese *s.t- thus merges in Middle Chinese with MC *sy-* from other sources, such as *n̥- and *l̥-. But this merger does not occur in Proto-Mĭn: instead, OC *s.t- becomes Proto-Mĭn *tš-, merging with original OC *t-, while OC *n̥- and *l̥- become Proto-Mĭn *tšh-. It appears that the same distinction is preserved in the Wǎxiāng dialect, where *s.t- > [ts], while *l̥-, *n̥- > [s] (see Table 4.17 in section 4.2.1.3).

One example suggests that Mienic borrowed from Chinese dialects of the Mĭn or Wǎxiāng type, where the reflex of *s.t- is an affricate:

(530) 識 *s-təkˤ > *syik* > shí 'know', Proto-Mienic *tsi̱ɛk D 'know/recognize'

Pharyngealized *s.tˢ- became MC *ts-*, apparently through metathesis; and similarly, *s.tˢr- > MC *tsr-*. The following examples appear to show the valency-increasing prefix *s- (section 3.3.2.3):

(531) 登 *tˢəŋ > *tong* > dēng ‘ascend’
增 *s-tˢəŋ > *tsˢəŋ > *tsong* > zēng ‘increase (v.)’

(532) 謫 *C.tˢrek > *treak* > zhé ‘blame (v.)’; VN *dức* [zɯk D1] ‘reprove’ (The preinitial *C. is indicated by the high-register spirantized initial in Vietnamese.)
責 *s-tˢrek > *tsˢrek > *tsreak* > zé ‘demand payment’
責, 債 *s-tˢrek-s > *tsˢrek-s > *tsreaH* > zhài ‘debt’

Although nonpharyngealized *s.t- generally becomes MC *sy-*, there are also a few cases of MC *ts-* from forms with a root-initial *t-, as if by metathesis, as with pharyngealized *s.tˢ-. We have not found a phonological conditioning for this split development of OC *s.t- to MC *sy-* and *ts-*; for the present, we distinguish them by writing *sy-* < *s.t- and *ts-* < *S.t-:

(533) 甑 *S-təŋ-s > *tsəŋ-s > *tsingH* > zèng ‘boiler for steaming rice’ (instrumental noun; see section 3.3.2.3); cf.
烝 *təŋ > *tsying* > zhēng ‘to steam (v.t.)’

In our notation, capital *S simply represents a preinitial *s that unexpectedly gives a metathesized Middle Chinese reflex, as here: *S-t- > *ts-*; this *S is not intended to represent a second Old Chinese sibilant contrasting with *s-.[58] In (533), the preinitial *S- seems to be the prefix *s- deriving instrumental nouns.

Preceding *ts- and *tsˢ-, *s- had a fricativizing effect (Mei 1989:35), resulting in MC *s-*. In examples (534) and (535), we reconstruct *s-ts(ˢ)- based on etymological connections with *ts- or *tsˢ-:

(534) 膝 *s-tsik > *sit* > xī ‘knee’; cf.
節 *tsˢik > *tset* > jié ‘joint of bamboo’

(535) 搔 *s-[ts]ˢu > *saw* > sāo ‘scratch (v.)’; cf.
叉, 爪 *[ts]ˢ<r>uʔ > *tsraewX* > zhǎo ‘claw’

The regular development of *s-kˢ might be to MC *k-*. In some Northern Mǐn dialects (and occasionally in Central Mǐn), initial [x] or [h] corresponds to MC *k-* in a small number of colloquial words (Norman 1973:229). The fact that two of the verbs involved, 教 MC *kaewH* > jiào ‘teach’ and 嫁 MC *kaeH* > jià ‘marry’, admit three participants leads us to suspect that the valency-increasing *s- prefix might be involved (section 3.3.2.3); accordingly, we reconstruct *s.k- for this correspondence. (The development *s.k- to [x] or [h] is consistent with the general tendency of preinitial *s to fricativize a following stop or affricate.) Some of the words involved have a /tə/ in the conservative Vietic language Rục, with spirantized initials in Vietnamese (as expected). At first sight these might be taken to argue for OC *t.k-. However,

we know of no clear cases where Vietic represents OC *t. or *tə., as we reconstruct them, as preinitial /t/ or /tə/; moreover, there is no /s/ preinitial in Rục; so we reconstruct *s.k-. The sets of words involved in Northern Mĭn and in Vietic is not the same, but they do overlap.

(536) 嫁 *s-kˤra-s > *kaeH* > jià 'marry', Jiàn'ōu /xa 5/, Hépíng /ha 5/; cf. VN *gả* [ɣɑ C1] 'to give (one's daughter) in marriage'

(537) 教 *s.[k]ˤraw > *kaew* > jiāo 'teach', Jiànyáng, Liándūncūn, Jiàn'ōu /xau 1/
教 *s.kˤraw-s > *kaewH* > jiào 'teach; instruction'

(538) 肝 *s.kˤa[r] > *kan* > gān 'liver', Jiànyáng, Liándūncūn, Jiàn'ōu /xueŋ 1/, Hépíng /hon 1/, Yŏng'ān /hum 1/ (Central Mĭn); cf. Rục /təkaːn/, VN *gan* [ɣɑn A1]

(539) 劍 *s.kr[a]m-s > *kjaemH* > jiàn 'sword'; cf. Rục /təkɨəm/ 'sword', VN *gươm* [ɣɯʌm A1] (with tone A for Chinese qùshēng)

Reconstructing *s.k- in 'sword' fits well with the fact that the xiéshēng series of 'sword' includes words that require preinitial *s, including the main phonetic element:

(540) 譣 *s.qʰ[a]m > *tshjem*, *sjem* > qiān 'insincere, ingratiating',
僉 *s.qʰ[a]m > *tshjem* > qiān 'all; many'

When nonpharyngealized *s.k- was immediately followed by a front vowel, the velar palatalized, as singleton *k- does in that context (section 4.1.2): this resulted in *s-tɕ-, merging with *s-tɕ- from *s.t-, with further evolution to MC *sy-*:

(541) 薈 *s-kij > *s-tɕij > *ɕij > *syij* > shī 'Achillea (?)'; the phonetic is
耆 *[g]rij > *gij* > qí 'old'

(542) 收 *s-kiw > *s-tɕiw > *ɕiw > *syuw* > shōu 'collect; harvest'; the phonetic is
丩 *k-riw (dial. > *kriw) > *kjiw* > jiū 'to twist'

OC *s.q evolves to MC *s-*, while *s.qr evolves to *tsr-*:

(543) 宣 *s-qʷar > *swar > *sjwen* > xuān 'spread (v.)'; with the same phonetic element, cf.
垣 *[ɢ]ʷar > *hjwon* > yuán 'wall'

(544) 筍 *s-qʷi[n]ʔ > *swinX* > sŭn 'bamboo sprouts'; with the same phonetic element, cf.
絢 *qʷʰˤi[n]-s > *xwenH* > xuàn 'ornate, decorated'

(545) 楔 *s.qˤet > *set > *set* > xiē 'wedge put in teeth of corpse'; cf.
契 *[kʰ]ˤet-s > *khejH* > qì 'script notches'

(546) 濈 *s.q<r>[i]p > *tsrip* > jí 'crowded together'; cf.
揖 *qip > *ʔjip* > yī 'bow (v.), salute'[59]

TABLE 4.41 Attested correspondences for Old Chinese voiceless unaspirated stops with preinitial *s

OC	MC	pMǐn	VN	pHM
*s.p-	—	—	—	—
*s.tᶜ-	*ts-*	*ts	*d-* [z]	*ts-
*s.t(ᶜ)r-	*tsr-*	*ts	—	—
*s.t-	*sy-*	*tš	—	—
*s.ts-	*s-*	—	—	—
*s.kᶜ-	*k-*	*k; in NMǐn: [x] or [h]	*g-* [ɣ]	*q-; *sj-[F]
*s.k-	*k-; sy-*[F]	—	—	—
*s.qr-	*tsr-*	—	—	—
*s.q-	*s-*	*s	—	—

(547) 札 *s-qᶜrət > *tsᶜrət > *tsreat* > zhá ‘strip (n.), tablet’; the phonetic is
乙 *qrət > *ʔrət > *'it* > yǐ ‘second heavenly stem’

The attested reflexes of voiceless unaspirated stops and affricates with preinitial *s- are summarized in Table 4.41.

4.4.3.2 Preinitial *s plus voiceless aspirated obstruents: type *s.tʰ(ᶜ)-

The developments of onsets like *s.tʰ(ᶜ)-. are, mutatis mutandis, similar to those for voiceless unaspirated obstruents with preinitial *s, like *s.t-. Middle Chinese has *sy-* for nonpharyngealized *s.tʰ-, the same as for *s.t-. But in some words, Mǐn distinguishes between *s.t- > pMǐn *tš- and *s.tʰ- > pMǐn *tšh-:

(548) 奢 *s.tʰA > *syae* > shē ‘extravagant’, pMǐn *tšh- (Xiàmén /tsʰia 1/ ‘lavish’); the phonetic element is
者 *tAʔ > *tsyaeX* > zhě ‘(nominalizing particle)’

The phonetic 者 *tAʔ in (548) indicates that the main initial is an alveolar stop rather than a resonant like *l̥- or *n̥-. In the following example we also get a clue from a sound gloss in the *Shuōwén jiězì*:

(549) 黍 *s-tʰaʔ > *syoX* > shǔ ‘Panicum miliaceum (glutinous)’; the *Shuōwén*’s gloss is
禾屬而黏者也。以大暑而穜，故謂之黍。
‘A kind of grain that is sticky. It is called 黍 [*s-tʰaʔ] because it is sown in the “great heat” (dà shǔ 大暑 [*s-tʰaʔ]: the twelfth of twenty-four jiéqì 節氣 “solar periods,” beginning July 22–24).’ (*SWGL* 3142b)

We reconstruct 暑 shǔ ‘heat’ as 暑 *s-tʰaʔ > *syoX* > shǔ ‘heat’; the expected pMǐn *tšh- is preserved in the Zhāngpíng 漳平 dialect in the expression /tsʰi 3 tsʰi 3/ for 處暑 chǔshǔ ‘end of heat’, the fourteenth solar period (Zhāng Zhènxīng 1992:38).

For 黍 *s-tʰaʔ > shǔ ‘Panicum’, the Mǐn dialects mostly have sibilant initials rather than the expected pMǐn *tšh-, perhaps due to stratification in Proto-Mǐn (Xiàmén /sue 3/, Fúzhōu /sœ 3/). But some Mandarin dialects have aspirated initials for both 黍 *s-tʰaʔ > *syoX* > shǔ ‘Panicum’ and 暑 *s-tʰaʔ > *syoX* > shǔ ‘heat’: Héféi /tʂʰu 3/, Yángzhōu /tsʰu 3/ in both cases (Běijīng dàxué 2003:122). These aberrant forms point to pre-Middle Chinese substrata.

Hakka also occasionally retains an aspirated affricate for *s.tʰ-: we reconstruct

(550) 獸 *s.tʰu(ʔ)-s > *syuwH* > shòu ‘(wild) animal’, /tsʰiu 5/ ‘wild animal’ in several Hakka dialects (Wēngyuán 翁源, Lùchuān 陸川, Gànxiàn 贛縣, Chángtīng 長汀, etc.; from Lǐ Rúlóng and Zhāng Shuāngqìng 1992:249)

The alveolar initial in (550) is supported by graphic variation in early documents. In the Guōdiàn version of “Zī yī” 《緇衣》, 獸 shòu appears on strip 38 where the Shànghǎi Museum version (strip 19) and the received version have 守 shǒu (*GD* 1998:20, 130–131; *SB* 1:210), which we reconstruct with *s.t-:

(551) 守 *s-tuʔ > *syuwX* > shǒu ‘keep, guard’, pMǐn *tš-: Xiàmén /tsiu 3/ ‘to guard; to keep carefully’ (Douglas 1899:56)

Where palatalization of *tʰ- is blocked, either by pharyngealization or by medial *r, the evolution of *s-tʰ- is to an affricate in Middle Chinese:

(552) 催 *s-tʰˁuj > *tsʰˁuj > *tshwoj* > cuī ‘urge, repress’; derivative with increased valency of
推 *tʰˁuj > *thwoj* > tuī ‘push away’

(553) 揣 *s-tʰ<r>orʔ > *tsʰrorʔ > *tsrhjweX* > chuǎi ‘to measure; to estimate’; also read *tʰorʔ > *tsyhwenX* (same meaning).

Preceding *tsʰ-, *s- evolves to MC *s-*, like *s-ts-; Proto-Mǐn, as often, loses preinitial *s- in the word 星 ‘star’:

(554) 星 *s-tsʰˁeŋ > *sˁeŋ > *seng* > xīng ‘star’, pMǐn *tsh-, reflected in eighteen Mǐn dialects, e.g., Xiàmén /tsʰĩ 1/; see Chén Zhāngtài and Lǐ Rúlóng (1991:8).

We reconstruct 星 *s-tsʰˁeŋ to account for the Mǐn initial and also for the use of 星 as a loangraph for

(555) 晴 *N-tsʰeŋ > *dzjeng* > qíng ‘clear (weather)’

Under this analysis, the word ‘star’ is a deverbal noun formed by adding the prefix *s- to a verb root *tsʰˁeŋ ‘bright’; a related root with nonpharyngealized initial occurs in:

(556) 清 *tsʰeŋ > *tshjeng* > qīng ‘clear (adj.)’

A possible example of *s-kʰ- > MC *sy-* is (557), but the *s- seems to be absent in many modern dialects:

(557) 翅 *s-kʰe-s > *s-tɕʰe-s > *ɕe-s > *syeH* > chì ‘wing’; but perhaps there was also a reading
*kʰe-s > * tɕʰe-s (which would give MC “*tsyheH*”) > chì, Mandarin /tʂʰʅ 5/, Guǎngzhōu /tʃʰi 5/; the phonetic is
支 *ke > *tsye* > zhī ‘branch (of tree), limb’, pMǐn *ki A

Old Chinese *s.qʰ- normally evolves to MC *s-* when no *r medial follows. The semantic evolution of 寫 MC *sjaeX* ‘to depict; to write’ was discussed in Sagart (1999c:210). The character first occurs in the meaning ‘disburden; relieve’, and is cognate with 卸 ‘to unload’, whose phonetic is 午, discussed in 4.4.2.2, example (498) above:

(558) 寫 *s-qʰAʔ > *sAʔ > *sjaeX* > xiě ‘depict’; pMien *xja B ‘to write’
卸 *s-qʰA(ʔ)-s > *sA-s > *sjaeH* > ‘to unload’
午 *[m].qʰˤaʔ > *ŋˤaʔ > *nguX* > wǔ ‘seventh earthly branch’

The Chinese loan to Proto-Mienic *xja B ‘to write’ would be difficult to understand if the root initial was *ŋ. It apparently reflects a pronunciation intermediate between OC *s-qʰAʔ and MC *sjaeX*, perhaps [sɣjaʔ]. The character 卸 xiè is said in the *Shuōwén jiězì* to be pronounced “like the people in Rǔnán 汝南 pronounce 寫 in 寫書.”[60] We take this to mean that a qùshēng reading of 寫 existed in Rǔnán.

Another type of evolution of *s.qʰ-, to MC *tsh-*, is seen in a few examples, as a doublet of MC *s-*: thus the *Guǎngyùn* gives two Middle Chinese readings for 舄 xì ‘slipper, shoe’, which is the phonetic in 寫 above:

(559) 寫 *s-qʰAʔ > *sAʔ > *sjaeX* > xiě ‘depict’; pMien *xja B ‘to write’
舄 *s.qʰAk > *sjek* > xì ‘slipper, shoe’, also read *tshjak*, as if from *s.qʰak.

The difference in both initial and vowel between the two Middle Chinese readings of 舄 xiè suggests that we are dealing with a dialectal distinction.

With medial *r, developments were, again, affected by dialect divergence. In the dialect where *qʰr- > *x-*, *s.qʰr- evolved to MC *sr-:*

(560) 所 *s-qʰ<r>aʔ > *srjoX* > suǒ ‘place; that which’ (see discussion in section 4.4.2.2)

In the dialect where *qʰr- > *trh-*, *s-qʰr- went to MC *tsrh-*. An example is

(561) 扱 *s-qʰr[ə]p > *tsrhip* (*JDSW*) or *tsrhjep* > *tsrheap* > chā ‘gather, collect’. *Jīngdiǎn shìwén* also gives the readings *khip* < *C.qʰr[ə]p, *xip* < *qʰ(r)[ə]p, and *ngip* < *[m-]qʰr[ə]p (*JDSW* 118, 145). The phonetic is
及 *[m-k-]rəp > *gip* > jí ‘reach to’.

The correspondences for preinitial *s. followed by voiceless aspirates are summarized in Table 4.42.

TABLE 4.42 Attested correspondences for voiceless aspirated stops with preinitial *s

OC	MC	pMĭn	VN	pHM
*s.pʰ-	—	—	—	—
*s.tʰˤ-	*tsh-*	—	—	—
*s.tʰ(ˤ)r-	*tsrh-*	—	—	—
*s.tʰ-	*sy-*	*tšh	—	*sj-
*s.tsʰ(ˤ)-	*s-*	*tsh	—	—
*s.kʰ-	*sy-*^{F}	—	—	—
*s.qʰ(ˤ)r-	*sr- ~ tsrh-*	—	—	—
*s.qʰ(ˤ)-	*s- ~ tsh-*	—	—	pMien *x-

4.4.3.3 Preinitial *s plus voiced obstruents: type *s.b(ˤ)-

We have no clear examples of preinitial *s before pharyngealized voiced stops. But before a nonpharyngealized voiced stop or affricate, preinitial *s assimilated to [z]: for example, *s.d- > [zd], *s.dz- > [zdz], *s.g- > *z.g-, *s.ɢ- > [zɢ], etc.; these clusters then simplified to MC *z-* (the traditional 邪 *xié* initial), which had not existed as a separate phoneme in Old Chinese. Examples with *s.ɢ- include:

(562) 祥 *s-ɢaŋ > (*zɢaŋ >) *zjang* > xiáng ‘auspicious’; the phonetic is 羊 *ɢaŋ > *yang* > yáng ‘sheep’

(563) 旋 *s-ɢʷen-s > (*zɢʷen-s >) *zjwenH* > xuàn ‘whorl of hair on the head’; the root is
圜, 圓 *ɢʷ<r>en > *hjwen* > yuán ‘round’

With prevocalic *-r-, we have *s.ɢr- > *zr-*:[61]

(564) 俟 *s-[ɢ]rəʔ > *zriX* > sì ‘wait’; the phonetic is
矣 *qəʔ > *hiX* > yǐ ‘(final particle)’;[62] 俟 *s-[ɢ]rəʔ ‘wait’ is probably related to
已 *ɢ(r)əʔ > *yiX* > yǐ ‘cease; already’

Clear examples of *s.d- and *s.dz- are difficult to find: a possible example of *s.d- is

(565) 象 *s.[d]aŋʔ > *zjangX* > xiàng ‘elephant’, pMĭn *dzh-, Xiàmén /tsʰiũ 6/; Proto-Tai *ɟaːŋ C (Pittayaporn 2009:327), Proto-Lakkia *dzaːŋ C (L-Thongkum 1992:60); pMien *ɣjɻɔŋ B (the initial is unexplained), Proto-Vietic *ʔa-ɟaːŋ

The Proto-Mĭn reflex *dzh- is explained if we assume that Proto-Mĭn still had *s-d- at the time of the first devoicing in dialects like Xiàmén (see Table 4.9 in section 4.2.1.1), so the *d- was protected from that devoicing (which gave voiceless unaspirated reflexes); then we have *s-d- > *zd- > *dz- > *dzɦ- > [tsʰ]- by the second devoicing.

A parallel development in Mĭn is found in (566): we expect that the complex onset *s-m-t- (see section 4.6) would have developed like *s-d-:

(566) 席 *s-m-tAk > *zjek* > xí ‘mat’; circumstantial noun, ‘place for putting things’, pMĭn *dzh-;[63] derived from the same root as
著 *t<r>ak > *trjak* > zhuó ‘to place’

The fact that the evolution was not *s.d- > *zdz- > *zy* (as the parallel of *s.t- > *stɕ- > *sy-* discussed in section 4.4.3.1 above could lead one to expect) shows that the simplification of *zd- to *z- occurred before, and bled, the palatalization of alveolars. However, the change must have occurred *after* the first palatalization of velars, since we have:

(567) 示 *s-gijʔ-s > *zgijʔ-s > *zdzijʔ-s > *zijʔ-s > *zyijH* > shì ‘show (v.)’; causative from
視 *gijʔ > *dzijʔ > *dzyijX* > shì ‘look, see’

However, in forms with nonfront vowels, where the first velar palatalization did not occur, *s- simply dropped before velars in Middle Chinese, as in (568), repeated from (455) above:

(568) 近 *s-N-kərʔ-s > *s-Ngərʔ-s > *s-gərʔ-s > *gərʔ-s > *gj+nH* > jìn ‘be near to (v.t.)’; cf. VN *gần* [ɣʌn A2], Rục /tŋkɛŋ/.

We also have examples of OC *s.b- > *dz-*, presumably by the route *s.b- > *zb- > *bz- > *dz-*. In the Shāng oracular inscriptions, the graph 自, depicting a nose, is used to write {鼻} bí ‘nose’ as well as {自} zì ‘to follow; from’ and {自} ‘self (adv.)’ (Xú Zhōngshū 1988:378):

(569) 

鼻 *m-bi[t]-s > *bjijH* > bí ‘nose’, pMĭn *bh-; cf. pHM *mbruiH ‘nose’ (the pHM *-r- is unexplained)[64]
自 *s.[b]i[t]-s > *zbit-s > *bzit-s > *dzit-s > *dzijH* > zì ‘self (adv.)’, pMĭn *dz- (we would expect pMĭn *dzh-)
自 *s.[b]i[t]-s > *dzijH* > zì ‘to follow; from’

As the character 自 was commonly used for the second and third words above, a phonetic element was added to represent the meaning ‘nose’:[65]

(570) 鼻 *m-bi[t]-s > *bjijH* > bí ‘nose’; the phonetic is
畀 *pi[t]-s > *pjijH* > bì ‘give’

Another possible example of *s.b- is seen in

(571) 匠 *s.baŋ-s > *zbaŋ-s > *bzaŋ-s > *dzaŋ-s > *dzjangH* > jiàng ‘craftsman’, pMĭn *dzh-; we suspect that the phonetic element is
匚 *paŋ > *pjang* > fāng ‘container, box (*Shuōwén*)’; probably connected to
方 *C-paŋ > *pjang* > fāng ‘square’

In Shāng inscriptions, 匚 *paŋ > *pjang* > fāng has a shape like this (*GG* 9:1019):

(572) 

This graph is used to represent the word

(573) 祊 *pˢraŋ > *paeng* > bēng 'side of the temple gate; sacrifice there'.

The *Shuōwén jiězì* treats 匠 jiàng as a semantic compound of 斤 jīn 'axe' and 匚 fāng 'box', indicating that the initial was probably already *dz- by that time (100 CE), and the phonetic role of 匚 fāng as phonetic was no longer recognized (*SWGL* 5729b).

The correspondences for preinitial *s with voiced stops and affricates are summarized in Table 4.43.

4.4.3.4 Preinitial *s plus voiced resonants: type *s.m(ˢ)-

Unlike voiced obstruents, voiced resonants like *m(ˢ)- do not voice a preceding *s- in Middle Chinese. Generally, such onsets develop into the MC sibilants *s-* or (if *-r- is present) *sr-*: the pattern is *s.m(ˢ)- > MC *s-*, *s.m(ˢ)r- > *sr-*, *s.r(ˢ)- > *sr-*, etc. However, *s.lr- developed differently, because just as *l(ˢ)r- developed into the obstruent *dr-*, we have *s.l(ˢ)r- > *s.l^{d}r- > *sdr- > *zdr- > *dzr-* (parallel to the developments of *s.tr- > *tsr-* and *s.t^{h}r- > *tsrh-*; see sections 4.4.3.1 and 4.4.3.2 above).

Examples of *s.m(ˢ)- include:

(574) 喪 *s-mˢaŋ > *sang* > sāng 'mourning, burial';
喪 *s-mˢaŋ-s > *sangH* > sàng 'lose; destroy'; the *Shuōwén* (*SWGL* 665a) says that the phonetic is
亡 *maŋ > *mjang* > wáng 'flee; disappear; die'

The *s- prefix in 喪 *s-mˢaŋ creates a deverbal noun referring to the circumstances of an event (section 3.3.2.3): 'mourning, burial' < 'circumstances associated with dying'.[66] Another example is:

(575) 戌 *s.mi[t] > *swit* > xū 'eleventh earthly branch'; this is the phonetic in
威 *mᵽet > *xjwiet* > xuè 'extinguish, destroy' and
滅 *[m]et > *mjiet* > miè 'destroy'

TABLE 4.43 Attested and predicted correspondences for Old Chinese voiced stops and affricates with preinitial *s

OC	MC	pMĭn	VN	pHM
*s.b-	*dz-*	*dzh	—	—
*s.d-	*z-*	*dzh	—	—
*s.dz-	—	—	—	—
*s.g-	*g-; zy-*^{F}	—	—	—
*s.g(^{w})-	*z-*	—	—	—
*s.gr-	*zr-*	—	—	—

Additional evidence for an *m in 戌 xū is found in the names of the twelve earthly branches as they appear in Ahom (a Kra-Dai language spoken in Assam): Ahom has /mit/ for 'year of the dog' (corresponding to 戌 xū < *s.mi[t]; see Coedès 1935, Li 1945).

In Proto-Mǐn, nonpharyngealized *s.l- and *s.n- become pMǐn *tsh-: probably the development was *s.l- > *sl̥- > *st^{h}- > *ts^{h}- and *s.n- > *sn̥- > *st^{h}- > *ts^{h}-:

(576) 羞 *s-nu > *su > *sjuw* > xiū 'shame'; pMǐn *tsh-: Xiàmén /ts^{h}iu 1/, Fúzhōu /ts^{h}ieu 1/; the phonetic element is the same as in 紐 *n<r>uʔ > *nrjuwX* > niǔ 'fastener'

(577) 泄 *s-lat > *sat > *sjet* > xiè 'leak, ooze'; pMǐn *tsh-: Xiàmén /ts^{h}uaʔ 7/ (in 泄屎 /ts^{h}uaʔ 7 sai 3/ 'to have diarrhea'); the phonetic is 世 *l̥ap-s > *l̥at-s > *syejH* > shì 'generation', also phonetic in and related to 枼, 葉 *l[a]p > *yep* > yè 'leaf'

When the onset contains an *r, either as a main initial or as a medial, the result is MC *sr*- instead of *s*-:

(578) 數 *s-roʔ > *srjuX* > shǔ 'count (v.)'
數 *s-roʔ-s > *srjuH* > shù 'number (n.)'; these are somehow related to
數 *s-rok > *sraewk* > shuò 'frequently'; with the same phonetic, cf.
縷 *[r]oʔ > *ljuX* > lǚ 'thread'

(579) 率 *s-rut > *srwit* > shuài 'follow, go along', also with these readings:
率 *s-rut-s > *srwijH* > shuài 'lead (v.); commander'
率 *[r]ut > *lwit* > lǜ 'norm, standard'; the *Jīngdiǎn shìwén* also gives the reading *lwijH* < *[r]ut-s (*JDSW* 35)

(580) 使 *s-rəʔ > *sriX* > shǐ 'send; cause', pMǐn *səi B 'use'
使 *s-rəʔ-s > *sriH* > shǐ 'envoy'; from a root *rəʔ 'serve', also found in
吏 *[r]əʔ-s > *liH* > lì 'officer'

In the following example, sound changes of the Middle Chinese period have added complications:

(581) 叟, 傻, 傻 *s-ruʔ > *srjuwX* > *suwX* > sǒu 'old man'; cf.
老 *C.r^{ʕ}uʔ > *lawX* > lǎo 'old', pMǐn *lh-: cf. Jiàn'ōu /se 6/, Jiànyáng /seu 5/, Shàowǔ /sa 7/

(Note that the Mǐn forms for 老 lǎo < OC *C.r^{ʕ}uʔ 'old' indicate a preinitial consonant, even though they reflect a pharyngealized *r^{ʕ}- rather than plain *r- in the main initial.) For 叟 sǒu, the *Guǎngyùn* gives only the pronunciation *suwX*. Normally, MC *-uw* would reflect OC *-o, not *-u, but *Shījīng* rhymes clearly indicate that words with this phonetic rhyme as *-u, not *-o.[67] Moreover, in the *Jīngdiǎn shìwén,* words with 叟 as phonetic

are frequently spelled as MC *srjuw* (the regular reflex of OC *sru). The pronunciation *suwX* results from two sound changes that affected some dialects in the Middle Chinese period: (1) a general loss of MC *-j-* (or whatever feature that notation represents) after initials of the type *Tsr-* (see section 4.1.1 and Baxter 1992:267–269); and (2) a merger of the *Tsr-* initials with those of type *Ts-*: thus we have 叟 *s-ruʔ > *srjuwX* [ʂj-] > "*sruwX*" [ʂ-] > *suwX* [s-].[68]

A complex but interesting case is (582):

(582) 鋤, 鉏 *s-[l]<r>a > *dzrjo* > chú 'hoe (n.)'; also 'hoe (v.)'[69]
鋤, 鉏 *s-[l]<r>a > *dzrjo* > chú 'hoe (v.)'
除 *[l]<r>a > *drjo* > chú 'remove; get rid of';[70] possibly connected to
餘 *la > *yo* > yú 'remains; surplus'

Normally, the phonetic element in 鋤 and 鉏 (a form that occurs for 'hoe' in some texts) would lead us to reconstruct chú < *dzrjo* 'hoe' with a dental affricate:

(583) 且 *[tsʰ]Aʔ > *tshjaeX* > qiě 'moreover', also read 且 *tsa > *tsjo* > jū '[final particle]'

However, the characters 鋤 and 鉏 for chú 'hoe' both appear to be of late origin, probably originating after *s-lr- would have become an affricate: 鋤 chú is not in the *Shuōwén*, which has 鉏 chú instead, defined as 'what is used in weeding while standing' (立薅所用也); and neither character appears in pre-Qín documents as far as we know.[71]

Now 除 *[l]<r>a > *drjo* > chú 'remove' is a general verb for removing things, mostly undesirable ones—disasters, sickness, and so forth—but when used concretely, it can quite naturally refer to the removing of unwanted plants, as in (584), a well-known passage from *Zuǒ zhuàn* 《左傳》, year 1 of Duke Yǐn 隱. The advisor Zhài Zhòng 祭仲 warns the duke not to keep giving in to the demands of the duke's mother to extend favors to the duke's ambitious brother: the image of a creeping grass or vine is used to describe his ambition.

(584) *Zuǒ zhuàn* 《左傳》, year 1 of Duke Yǐn 隱:
不如早為之所，無使滋蔓，蔓難圖也，蔓草猶不可除，況君之寵弟乎。

'It is better to make a place for him [the brother] soon, and not allow this to grow and spread [滋蔓 zīmàn, like a creeping vine]; if it spreads it will be difficult to manage. Even spreading grass cannot be removed [除 chú]; how much less your favored brother!'

The various forms for 'hoe' (noun and verb) in Mǐn dialects are relevant, but complex; it will require further research to work out the details. It is possible to reconstruct a Proto-Mǐn form for the verb, with Norman's pMǐn *dh-:

(585) pMǐn *dhy A 'hoe (v.)': Fúzhōu /tʰy 2/, Xiàmén /tʰi 2/, Jiànyáng /hy 2/

Norman comments (1996:35):

> These forms although frequently written with the character [鋤] in the dictionaries, cannot be related because of the discrepancy of initial: 鋤 is a *chorng* 崇 [MC *dzr-*] initial word whereas the Miin forms must be related to a *dinq* 定 [MC *d-*] or *cherng* 澄 [MC *dr-*] initial.

However, in terms of our reconstruction it is possible that pMǐn *dhy A corresponds regularly to {鋤} *s-[l]<r>a > > *dzrjo* after all. This example fits into a pattern where preinitial *s- often appears to be lost in Mǐn, as in these examples:

(586)	水 *s.turʔ > *sywijX* > shuǐ ‘water; river’	pMǐn *tšyi B (as if from OC *turʔ)
	書 *s-ta > *syo* > shū ‘write’	pMǐn *tšy A (as if from OC *ta)
	星 *s-ts^{hʕ}eŋ > *seng* > xīng ‘star’	pMǐn *tshaŋ A (as if from OC *ts^{hʕ}eŋ)
	奢 *s.t^{h}A > *syae* > shē ‘extravagant’	pMǐn *tšhia A (as if from OC *t^{h}A)
	窗 *s-l̥^{ʕ}<r>oŋ > *tsrhaewng* > chuāng ‘window’[72]	pMǐn *t^{h}əŋ A (as if from OC *l̥^{ʕ}<r>oŋ)

Given this pattern, the fact that we have Proto-Mǐn *dh- in ‘hoe (v.)’ rather than an affricate is less surprising. The Proto-Mǐn reflex *dhy A would be regular if {鋤} chú was actually *s-m-l<r>a, where the *m- prefix is semantically appropriate for a volitional action. The *s- prefix could either be the prefix that derives oblique deverbal nouns (in the case of the noun ‘hoe’) or the prefix that adds an oblique argument (in the case of the verb): then perhaps 除 *drjo* < *m-l<r>a is what one does to weeds, but 鋤 *dzrjo* < *s-m-l<r>a is what one does to a field or a crop:[73]

(587) 鋤 *s-m-l<r>a (?) > *dzrjo* > chú ‘hoe (n. or v.?)’

But pMǐn *dhy A ‘hoe (v.)’ could simply represent the verb {除} chú < *drjo* ‘remove’ without the *s- prefix, if we reconstructed {除} chú as *m-l<r>a rather than as *l<r>a.

We reconstruct *s-n^{ʕ}- in 西 xī ‘west’:

(588) 西 *s-n^{ʕ}ər > *s^{ʕ}ər > *sej* > xī ‘west’; phonetic in
迺 ~ 廼 *n^{ʕ}ərʔ (?) > *nojX* > nǎi ‘then’; also written
乃 *n^{ʕ}əʔ > *nojX* > *nǎi* ‘then’

There are unanswered questions about the reconstructed rhymes here: {西} xī < *sej* ‘west’ is reconstructed with the rhyme *-ər (section 5.5.5.4), while {乃} nǎi ‘then’ is reconstructed with the rhyme *-ə (section 5.4.2.1), so it is unclear why 西 should be chosen as a phonetic to write {乃} nǎi; and the regular reflex of *n^{ʕ}ərʔ would be MC “*nejX*,” not *nojX*. Perhaps the apparent confusion of rhymes results from the occurrence

of the adverb 'then' in an unstressed position (as with 來 lái 'come'; see section 5.4.2.2). However that may be, characters ancestral to 迺 and 乃 are both used already in Shāng oracular inscriptions to write the adverb read nǎi < *nojX* (Zhào Chéng 1988:293), and the use of 西 xī < *sej* as phonetic to write {乃} nǎi < *nojX* is evidence for the onset *s-nˤ-.

Reconstructing *s-nˤ- in 西 xī 'west' also accounts for how 西 xī can be phonetic in 哂 shěn < *syinX* 'smile'; MC *sy-* cannot represent simply *s-, but can regularly reflect *n̥-:

(589) 西 *s-nˤər > *sˤər > *sej* > xī 'west'
哂 *n̥ərʔ > *syinX* > shěn 'smile'

In terms of morphology, 西 xī < *s-nˤər can be connected to words meaning 'stop' or 'rest'; *s- is the prefix forming oblique nominals from verb roots:[74]

(590) 尼 *nˤərʔ > *nejX* > ní 'to stop' (intransitive?)
尼 *nˤərʔ-s > *nejH* > ní 'to stop, obstruct' (transitive?); cf.
柅 *n<r>[ə]rʔ > *nrijX* > nǐ 'a stopper for carriages'
西 *s-nˤər > *sˤər > *sej* > xī '(place for stopping:) west'; the same word as
棲 *s-nˤər > *sej* > qī 'bird's nest' (Mandarin qī is irregular.)

According to the *Shuōwén*, 棲 MC *sej* is an alternate graph for 西 xī 'west'. The *Shuōwén* explains the connection between 'west' and 'nest':

(591) "[The character] 鳿 (= 西) [*s-nˤər] is a bird in its nest; it is a pictorial representation. When the sun is in the west, birds go to their nests [*s-nˤər]; this is why [西] is used for 'west'.... 棲: 'West' is sometimes written with 木 mù 'tree' and 妻 qī 'wife'...." (*SWGL* 5288a)[75]

Although there is disagreement about how to analyze the early graphs for 西 xī, the idea that it depicts a nest is accepted by many scholars of Shāng inscriptions (Yú Xǐngwú and Yáo Xiàosuì 1996:1029–1033). Just as the west is etymologically a place for stopping, symmetrically, 東 dōng 'east' is etymologically related to the notion of 動 dòng 'move' (see Sagart 2004):

(592) 東 *tˤoŋ > *tuwng* > dōng 'east'
動 *[Cə-m-]tˤoŋʔ > *duwngX* > dòng 'move', pMǐn *-d-

We reconstruct *s-n- in

(593) 信 *s-ni[ŋ]-s > *sinH* > xìn 'truthful'; phonetic elements used for this word in early documents include
人 *ni[ŋ] > *nyin* > rén '(other) person'
身 *n̥i[ŋ] > *syin* > shēn 'body; self'
千 *s.n̥ˤi[ŋ] > *tshen* > qiān 'thousand';

The root in 信 *s-ni[ŋ]-s ‘truthful’ may be 仁 rén ‘kind’:

(594) 仁 *niŋ > *nyin* > rén ‘kind’: the phonetic is
人 *ni[ŋ] > *nyin* > rén ‘(other) person’; in excavated documents, also written with the phonetics
身 *n̥i[ŋ] > *syin* > shēn ‘body; self’ and
千 *s.n̥ˤi[ŋ] > *tshen* > qiān ‘thousand’

We reconstruct *s-ŋr- in

(595) 山 *s-ŋrar > *srean* > shān ‘mountain, hill’, pMǐn *š-; related to
巘 *ŋ(r)ar(ʔ) > *ngjenX* > yǎn ‘hill’ (a rhyme in Ode 250.2 indicates píngshēng, not shǎngshēng)

In Ode 250.2, 巘 *ŋ(r)ar(ʔ) is part of a sequence of six rhyme words in *-ar (see example (1035) below); all the other rhyme words are clearly píngshēng. We suspect that {巘} *ŋ(r)ar(ʔ) is just another form from the same root as 山 *s-ŋrar > *srean* > shān. The Máo commentary glosses it as ‘small hill’ (小山).

The entry for 山 shān < *s-ŋrar in the *Shì míng* 《釋名》(200), which explains words by means of sound glosses, is also interesting and supports both the reconstruction of 山 shān with initial *s-ŋ- and the reconstruction of the coda as *-r:

(596) *Shì míng*:
山 *s-ŋrar ‘mountain’ is 崖 [*ŋˤrar] ‘river bank’; it produces [產 [*s-ŋrarʔ] 生 chǎnshēng] things.[76]

Our reconstructions of the relevant words are:

(597) 崖, 涯, 厓 *ŋˤrar > *ngea* > yá ‘river bank; limit’
產 *s-ŋrarʔ > *sreanX* > chǎn ‘bear (v.), produce’; the phonetic is
彥 *ŋrar-s > *ngjenH* > yàn ‘adornment’, which is also phonetic in
顏 *C.ŋˤrar > *ngaen* > yán ‘face, forehead’; pHmong *hŋen A ‘forehead’

The first item 崖 yá < *ngea* evidently reflects a dialect where *-r merged with *-j (see section 5.5.1.4). We suspect that the basic meaning of the related roots *ŋrar (in 山 *s-ŋrar and 巘 *ŋ(r)ar(ʔ)) and *ŋˤrar (in 崖 *ŋˤrar and 顏 *C.ŋˤrar) is ‘slope, nearly vertical side’, applicable to the side of a mountain, the bank of a river, and the forehead.

We reconstruct *s-ŋr- in (598):

(598) 朔 *s-ŋrak > *srak > (*srjak* >) *sraewk* > shuò ‘first day of the lunar month’;[77] the root (and phonetic element) is
屰 (= 逆) *ŋrak > *ngjaek* > nì ‘go against’

The term 朔 *s-ŋrak ‘first day of (lunar) month’ can perhaps be interpreted as an oblique deverbal noun from the root 屰 (= 逆) *ŋrak ‘go against’: ‘the time when the moon goes the other way’ (i.e., starts getting larger instead of smaller). The *Shuōwén*’s entry includes 蘇 *s-ŋˤa > *su* > sū ‘revive’ as a sound gloss:

TABLE 4.44 Attested correspondences for preinitial *s with voiced resonants (without *r)

OC	MC	pMǐn	VN	pHM
*s.m(ˤ)-	*s-*	—	—	—
*s.nˤ-	*s-*	—	—	—
*s.n-	*s-*	*tsh	—	—
*s.lˤ-	*s-*	—	—	—
*s.l-	*s-*	*tsh	—	—
*s.ŋ(ˤ)-	*s-*	—	—	—

TABLE 4.45 Attested correspondences for preinitial *s before voiced resonants (with *r)

OC	MC	pMǐn	VN	pHM
*s.m(ˤ)r-	*sr-*	—	—	—
*s.n(ˤ)r-	*sr-*	—	—	—
*s.l(ˤ)r-	*dzr-*	*dh?	—	—
*s.ŋ(ˤ)r-	*sr-*	*š	—	—
*s.r(ˤ)-	*sr-*	*š ~ *s	—	—

(599) 朔 [*s-ŋrak]: On the first day [of the lunar month], the moon begins to revive 蘇 [sū < *su* < *s-ŋˤa]. From 月 yuè 'moon', with 屰 [nì < *ngjaek* < ŋrak] as phonetic.[78]

Additional examples of *s plus voiced resonants:

(600) 蘇 *s-ŋˤa > *su* > sū 'revive'; the phonetic is ultimately
魚 *[r.ŋ]a > *ngjo* > yú 'fish (n.)'; 蘇 *s-ŋˤa 'revive' is probably a causative from the same root as these:
寤 *ŋˤa-s > *nguH* > wù 'awake'
悟 *ŋˤa-s > *nguH* > wù 'awake, realize'

(601) 襄 *s-naŋ > *sjang* > xiāng 'remove'; the root is
攘 *naŋ > *nyang* > ráng 'steal; expel'

(602) 錫 *s.lˤek > *sek* > xī 'tin'; the phonetic is
易 *lek > *yek* > yì 'change; exchange', also read
易 *lek-s > *yeH* > yì 'easy'

The attested reflexes of preinitial *s followed by voiced resonants are summarized in Table 4.44; onsets involving *r are listed separately in Table 4.45.

4.4.3.5 Preinitial *s plus voiceless resonants: type *s.n̥-

Onsets consisting of preinitial *s followed by a voiceless resonant need to be set up in order to account for cases where the root initial is a resonant and the Middle Chinese initial is *tsh-* or *tsrh-*. We reconstruct *s.n̥ in:

(603) 千 *s.n̥ˤi[ŋ] > *tshen* > qiān ‘thousand’; in early forms of the character the phonetic is
人 *ni[ŋ] > *nyin* > rén ‘(other) person’

As shown above (593), in excavated documents, 千 *s.n̥ˤi[ŋ] alternates with 身 *n̥i[ŋ] as phonetic element in 信 xìn < *s-ni[ŋ]-s ‘truthful’.

We reconstruct *s-l̥ˤ- in 窗 chuāng ‘window’ because we take the root to be 通 tōng < *thuwng* < *l̥ˤoŋ:

(604) 窗, 窻 *s-l̥ˤ<r>oŋ > *s-tʰˤ<r>oŋ > *tsʰˤroŋ > *tsrhaewng* > chuāng ‘window’; cf.
通 *l̥ˤoŋ > *tʰˤoŋ > *thuwng* > tōng ‘penetrate’; possibly from the same root is:
聰 *s-l̥ˤoŋ > *tshuwng* > cōng ‘(penetrating) hear well; intelligent’

The reconstruction of *s-l̥ˤ- in 窗 ~ 窻 chuāng is supported by the *Shuōwén*’s gloss and by our hypotheses about the prefix *s- and the infix *<r>: the *Shuōwén* glosses 窻 *s-l̥ˤ<r>oŋ as “通孔也 tōng kǒng yě” (‘openings for penetration’, *SWGL* 3282b), where the root 通 *l̥ˤoŋ > *thuwng* > tōng ‘penetrate’ appears to be used both as part of the definition and as a sound gloss. Again, *s- derives a locative or instrumental noun out the verb: ‘place/means of penetration’. The *<r> infix indicates a multiplicity of openings in a house. Note the treatment by a stop in Proto-Mǐn (Xiàmén /tʰaŋ 1/), similar to the other examples in (586) above.

Another example of *s.l̥- is

(605) 帨 *s.l̥ot-s > *s.tʰot-s > *tsʰot-s > *tshjwejH* ‘kerchief’, also read
帨 *l̥ot-s > *sywejH* > shuì (same meaning)

We reconstruct *s.r̥- in

(606) 楚 *s.r̥aʔ > *tsrhjoX* > chǔ ‘thorns’; the phonetic is
疋 *sra > *srjo* > shū ‘foot’

Two examples involving pharyngealized initials are

(607) 採 *s.r̥ˤəʔ > *tshojX* > cǎi ‘pluck, reap’; cf.
嗇 *s.rək > *srik* > sè ‘reap’; exactly parallel are
彩 *s.r̥ˤəʔ > *tshojX* > cǎi ‘colorful’ and
色 *s.rək > *srik* > sè ‘color; countenance’

These pairs, first cited in Bái Yīpíng [Baxter] (1983) and Baxter (1992:205), show simultaneous alternations along several phonological dimensions and probably need to be interpreted in dialectal terms.

The attested correspondences for preinitial *s- followed by voiceless resonants are summarized in Table 4.46.

TABLE 4.46 Attested correspondences for Old Chinese voiceless resonants with preinitial *s

OC	MC	pMĭn	VN	pHM
*s.m̥(ˤ)-	—	—	—	—
*s.n̥(ˤ)-	*tsh-*	*tsh	—	—
*s.ŋ̊-	—	—	—	—
*s.l̥(ˤ)-	*tsh-*	—	—	—
*s.l̥(ˤ)r-	*tsrh-*	*th	—	—
*s.r̥ˤ-	*tsh-*	—	—	—
*s.r̥-	*tsrh-*	—	—	—

4.4.4 ONSETS WITH PREINITIAL *p, *t, *k

We reconstruct stop preinitials *p, *t, and *k when it is necessary to account for xiéshēng and/or etymological connections that cannot be explained otherwise. In the case of *t and *k, we can sometimes identify the preinitial as a prefix (see section 3.3.2); in other cases, it may have been part of the root. In some cases, comparative evidence from early loans and Mĭn dialects can help identify the preinitial, or at least confirm its existence.

When preinitial *p, *t, or *k precede an obstruent initial without an intervening schwa between them, a consonant cluster is formed that is simplified on the way to Middle Chinese. Examples:

(608) 鬼 *k-ʔujʔ > *kujʔ > *kjw+jX* > guĭ ‘ghost’; cognate with
威 *ʔuj > *'jw+j* > wēi ‘awe-inspiring’
畏 *ʔuj-s > *'jw+jH* > wèi ‘fear (v.); threaten’[79]

In pre-Qín documents, both {威} wēi and {畏} wèi were written with the character ancestral to 畏, which in its early forms contained 鬼 guĭ ‘ghost’ as phonetic element (Jì Xùshēng 2010:746).[80]

(609) 冠 *[k.ʔ]ˤor > *kˤor > *kwan* > guān ‘cap (n.)’, pMĭn *koi C ‘crest, comb’, e.g., Xiàmén /ke 5/ ‘cock’s comb; headdress’ (with unexpected qùshēng; Norman 2006:137); cf. pHM *ʔwi̯ən ‘crest/comb’
冠 *k.ʔˤor-s > *kˤor-s > *kwanH* > guàn ‘cap (v.)’

(610) 匡 *k-pʰaŋ > *kʷʰaŋ > *khjwang* > kuāng ‘square basket’ (the aspiration in *pʰ- is unexplained); the phonetic, and a related word, is:
匚 *paŋ > *pjang* > fāng ‘container, box (*Shuōwén*)’; cf.
方 *C-paŋ > *pjang* > fāng ‘square’, VN *vuông* [vuʌŋ A1]

(611) 法, 灋 *[p.k]ap > *pap > *pjop* > fă ‘model, law’; the phonetic appears to be
去 *[k]ʰ(r)ap-s (dial. >) *[k]ʰ(r)ak-s > *khjoH* > qù ‘depart’; also phonetic in
盍 *m-[k]ˤap > *hap* > hé ‘thatch, cover (v.)’
蓋 *[k]ˤap-s > *kajH* > gài ‘cover (v.); cover (n.)’

One notes that in these examples the first consonant is retained in Middle Chinese, although in (610) 匡 kuāng < *khjwang* < *k-pʰaŋ 'square basket', the second consonant is also retained, in the form of labialization. More examples of Middle Chinese labiovelars from OC *k plus labial consonant are found in the examples below, with *k.m- and *k.m̥-. With the cluster *k.m-, dialects appear to have fluctuated between the developments *k.m- > *km- > *kʷ- > *kw*- and *k.m- > *m*-.

(612) 袂 *k.mˤet (dial. >) *kmˤet > *kʷˤet > *kwet* > mèi 'sleeve' (keeping preinitial *k; Mandarin mèi is based on the other reading)
袂 *k.met-s > *met-s > *mjiejH* > mèi 'sleeve' (with loss of preinitial *k)

(613) 囧 *k-mraŋʔ (dial. >) *kmraŋʔ > *kʷraŋʔ > *kjwaengX* > jiǒng 'bright window'; related to
明 *mraŋ > *mjaeng* > míng 'bright'

(614) 曠 *[k-m̥]ˤaŋ-s > *kʷʰˤaŋ-s > *khwangH* > kuàng 'desolate, waste'; possibly related to
荒 *m̥ˤaŋ > *xwang* > huāng 'wasteland; uncultivated land'

Another possible example is

(615) 闃 *[k-m̥]ˤik > *[k-m̥]ˤek> *kʷʰˤek > *khwek* > qù 'quiet'
侐 *m̥(r)ik > *xwik* > xù 'still, quiet'; the phonetic is
血 *m̥ˤik > m̥ˤit > *xwet* > xuè 'blood' (for the labial nasal, see Sagart 1999a)

In most cases where an onset involves two obstruents, one of the two—either the first or the second—is an alveolar stop or affricate.[81] In these cases the Middle Chinese reflex is usually the same as that of the corresponding singleton alveolar consonant, regardless of its position in the cluster, with the voicing and aspiration specifications of the second consonant of the cluster. Thus OC *t.kʰ- has the same Middle Chinese reflex as OC *tʰ-; OC *t.g- evolves to Middle Chinese like OC *d-, and OC *k.dz- evolves like OC *dz-. The evidence of Vietic languages like Rục is crucial: these languages preserve onsets with preinitial *k, such as *k.t- and *k.dz-, almost unchanged. Vietnamese predictably shows the cluster's second consonant in spirantized form. Although Lakkia is a Kra-Dai language, its testimony nicely agrees with Rục in indicating a velar preinitial in 'paper' and 'bandit'. The Lakkia reflex is voiceless aspirated with high tone if the second consonant in the Chinese source form was voiceless, and plain voiceless with low tone if the same consonant was voiced. Proto-Mĭn treats voiceless clusters as plain voiceless stops, and clusters including a voiced obstruent as voiced aspirates (Table 4.47):

We now discuss the specific evolutions for each onset type.

4.4.4.1 Preinitial *p, *t, *k plus voiceless unaspirated obstruents: type *p.k(ˤ)-

As noted above, we may have *p.k- in:

(616) 法, 灋 *[p.k]ap > *pap > *pjop* > fǎ 'model, law'

(617) 廢 *[p-k]ap-s > *pap-s > *pat-s > *pjojH* > fèi 'cast aside'[82]

TABLE 4.47 Middle Chinese, Vietic, Lakkia and Proto-Mĭn evidence for Old Chinese clusters of two obstruents

examples	MC	Rục, Sách	Vietnamese	Lakkia	pMĭn	OC
紙 zhǐ ‘paper’	*tsyeX*	R. /kəcay 3/	*giấy* [zʌi B1]	khjei 3 < *kt-	*tš	*k.teʔ
種 zhǒng ‘seed’	*tsyowngX*	R. /kco:ŋ 3/	*giống* [zʌwŋ B1]	—	*tš	*k.toŋʔ
鐙 dēng ‘lamp’	*tong*	S. /kə ten/	—	—	*t	*k-tˤəŋ
賊 zéi ‘bandit’	*dzok*	R. /kəcʌk/	*giặc* [zak D2]	kjak 8 < *gdz-	*dzh	*k.dzˤək
牀 chuáng ‘bed’	*dzrjang*	R. /kəcə:ŋ 2/	*giường* [zɯʌŋ A2]	—	*dzh	*k.dzraŋ
箴 zhēn ‘needle’	*tsyim*	—	*găm* [ɣam A1]	the:m 1 < *tk-	*tš	*t.[k]əm

Both (616) and (617) above were written in bronze inscriptions with forms ancestral to 灋, such as these from the vessel Yú dǐng 盂鼎 (*GG* 8:509):

(618)   灋 *[p.k](r)ap > *pjop* > fǎ ‘model, law’

In both cases, the component in the upper left-hand corner is the form ancestral to 去 qù:

(619) 

The *Shuōwén* does not say that 去 qù is phonetic in 灋 fǎ and 法 fǎ (*SWGL* 4352b), but all attempts to explain it as anything else seem rather forced, and 去 qù clearly is used as phonetic in a number of other common words with final *-p:

(620) 胠 *[kʰ]<r>ap > *khjaep* > qū ‘armpit; right wing of an army’
劫 *k(r)ap > *kjaep* > jié ‘rob’
盍 *m-[k]ˤap > *hap* > hé ‘thatch, cover (v.)’
蓋 *[k]ˤap-s > *kajH* > gài ‘cover (v.); cover (n.)’

However, the primary readings of 去 qù itself are difficult to derive by regular processes from a syllable with final *-p:

(621) 去 qù < *khjoH* ‘depart’; also
去 qǔ < *khjoX* ‘get rid of’[83]

The difficulty is that MC *-joH* would normally reflect OC *-ak-s, *-a-s, or *-aʔ-s, and MC *-joX* would normally reflect *-aʔ. One possibility is that MC *khjoH* reflects a western dialect in which labial codas changed unconditionally to velars: *-ap-s > *-ak-s > *-joH*; this will account for *khjoH* but not for *khjoX*. Another possibility is that since 去 qù ‘depart’ is likely have appeared frequently without stress, the coda *-p either dropped or weakened to *-ʔ in unstressed position, and then the unstressed variant was restressed, as with 來 lái ‘come’:

(622) 來 *mə.rˤək > *rˤək > *rˤə > *loj* > lái ‘come’
去 *[k]ʰ(r)ap-s > *[k]ʰ(r)a-s > *khjoH* > qù ‘depart’; or perhaps
去 *[k]ʰ(r)ap-(s) > *[k]ʰ(r)aʔ > *khjoX*

Note also that 廢 fèi ‘cast aside’ could be interpreted as ‘make depart’, with prefixed *p and root *kap related to 去:

(623) 廢 *[p-k]ap-s > *pap-s > *pat-s > *pjojH* > fèi ‘(make depart:) cast aside’

Also mentioned above are these forms reconstructed with *k.ʔ-:

(624) 冠 *[k.ʔ]ˢor-s > *kwanH* > guàn ‘cap (v.)’

(625) 鬼 *k-ʔujʔ > *kjw+jX* > guǐ ‘ghost’

The testimony of VN *găm* [ɣam A1] ‘bamboo or metal needle’ and pHmong *kjɔŋ A ‘needle’ points to a *k in the Old Chinese onset of 箴 MC *tsyim* > zhēn ‘needle’; preinitial *t- is indicated by Proto-Lakkia (L-Thongkum 1992) *the:m 1 ‘needle’ (Table 4.23):

(626) 針, 箴, 鍼 *t.[k]əm > *tsyim* > zhēn ‘needle’, pMĭn *tš-; cf. pHmong *kjɔŋ A, VN *găm* [ɣam A1], Proto-Lakkia *the:m A, Proto-Tai *qem A (Pittayaporn 2009:340)

Here, we write *t.[k]- with square brackets because *t.q- would also be a possible reconstruction: the characters 箴 and 鍼 belong to the xiéshēng series of 咸 *[g]ˢr[ə]m > *heam* > xián ‘all; everywhere’, which includes both velar and uvular material.

The Shāng graph for ‘ten’ is a simple vertical line; in Zhōu bronze inscriptions, the graph generally has a thick spot in the middle, which eventually developed into the horizontal stroke in the standard character 十 (*GG* 2:689–690):

(627)



{十} in Shāng oracular inscriptions

{十} in bronze inscriptions

Qiú Xīguī (2004) argues that these forms were originally pictograms representing {針} zhēn ‘needle’; evidently the two words {針} zhēn ‘needle’ and {十} shí ‘ten’ were similar enough in pronunciation to be written with the same graph. We therefore reconstruct

(628) 十 *t.[g]əp > *dzyip* > shí ‘ten’, pMĭn *dž-;[84] cf. pHM *ɡjɯ̱ɛp, Proto-Lakkia *dzep D (L-Thongkum 1992:64)

Thus the character originally representing {針} zhēn < *t.[k]əm came to be used frequently to write a different word {十} shí < *t.[g]əp, so in order to remove ambiguity, an additional element was added to the original graph to represent ‘needle’.

We find a similar case with the Shāng and early Zhōu graphs for 肘 MC *trjuwX* > zhǒu 'elbow' and 九 MC *kjuwX* > jiǔ 'nine'. The graph used for 'nine' is believed to be the original graph for 'elbow'; it looks like the element 又 representing a hand or arm (629), but with a conspicuous bend to indicate the elbow joint (630). This character was used as a loan graph to write the numeral 'nine', because the two words were similar in pronunciation; then additional elements were added when necessary to specify the meaning 'elbow' unambiguously, as in (631), where a line marks the position of the elbow (Jì Xùshēng 2010:197, 348, 991; *GG* 3.374, 4.433, 10.892):

(629)  
{右} *[ɢ]^{w}əʔ > *hjuwX* > yòu 'right hand'
{有} *[ɢ]^{w}əʔ > *hjuwX* > yǒu 'have, exist'

(630)  
{肘} *t-[k]<r>uʔ > *trjuwX* > zhǒu 'elbow'
{九} *[k]uʔ > kjuwX > jiǔ 'nine'

(631) 
{肘} *t-[k]<r>uʔ > *trjuwX* > zhǒu 'elbow'

However, the 'elbow' graph with an added line was easily confused with the graph for 寸 cùn 'thumb'; the characters for 'thumb' in (632) are from the Warring States period (Jì Xùshēng 2010:235, *GG* 3.578):

(632)  
寸 *[ts^{h}]^{ʕ}u[n]-s > *tshwonH* > cùn 'thumb; inch'

The graphs (631) for 'elbow' and (632) 'thumb' became confused, and the result is that the standard graph for zhǒu 'elbow' has the shape 肘, with what looks like 'thumb' on the right, and with 肉 ròu 'flesh' added on the left to reduce ambiguity.

Thus the paleographical evidence makes it clear that {肘} zhǒu < *trjuwX* 'elbow' and {九} jiǔ < *kjuwX* 'nine' were similar in pronunciation. But in order to account for the Middle Chinese readings, we must have *t and *r in {肘} zhǒu < *trjuwX* 'elbow', and we must have *k in {九} jiǔ < *kjuwX* 'nine'; we reconstruct them as in (633).

(633) 肘 *t-[k]<r>uʔ > *trjuwX* > zhǒu 'elbow', Shàowǔ /tou 3/ (implying pMǐn *t-)
九 *[k]uʔ > *kjuwX* > jiǔ 'nine', pMǐn *k-

The *t- in 'elbow' may be the inalienable noun prefix (section 3.3.2.4). The square brackets indicate the possibility of a labiovelar *k^{w}- in place of *k-, and of a complex onset in the case of 'nine', perhaps something like *tə.kuʔ (compare Written Tibetan *dgu* 'nine').[85] The words for 'elbow' and 'nine' also have similar pronunciation in several Tibeto-Burman languages, for instance in Garo where both are *sku*.[86]

The word for ‘gruel’: 粥 or 鬻, MC *tsyuwk* > zhōu is pronounced as /kiok 7/ in Cháozhōu, pointing to a complex onset where in most varieties preinitial *t- has prevailed over a guttural root initial. A second reading of 鬻 as MC *yuwk* > yù in the related meaning ‘to nourish’ excludes a velar, and supports a uvular. This leads us to suppose a root *quk ‘nourish’, voiced by a nasal prefix in ‘nourish’. We reconstruct:

(634) 粥 or 鬻 *t-quk > *tsyuwk* > zhōu ‘rice gruel’; pMien *tjɯ̨ok D ‘porridge’
鬻 *m-quk > *yuwk* > yù ‘nourish’; a related root is
畜 *q^{h}uk > *xjuwk* > xù ‘nourish’

The function of the *t- prefix in ‘gruel’ is unknown.

The character for ‘broom’, 帚, zhǒu < *tsyuwX,* occurs, apparently as phonetic, in 婦 MC *bjuwX* > fù ‘woman, wife’. We assume a preinital *t has prevailed over a labial main syllable initial, and tentatively reconstruct as follows:

(635) 帚 *[t.p]əʔ > *[t.p]uʔ > *tuʔ > *tsyuwX* > zhǒu ‘broom’; cf. Thai /p^{h}ɛ:w C1/ (Pittayaporn) ‘to sweep’, pMien *ʔɟæu C < pHM *nc- ‘to sweep’[87]
婦 *mə.bəʔ > *buʔ > *bjuwX* > fù ‘woman, wife’, pMĭn *-b-; cf. pMien *mbɯ̨ɛŋ B, VN *vợ* [vʌ B2] < Proto-Vietic *-bəːʔ

Examples of *k.t-:

(636) 種 *k.toŋʔ > *tsyowngX* > zhǒng ‘seed’, pMĭn *tš-; cf. VN *giống* [zʌwŋ B1], Chút /kəcoːŋ^{3}/

(637) 紙 *k.teʔ > *tsyeX* > zhǐ ‘paper’, pMĭn *tš-; cf. VN *giấy* [zʌi B1], Rục /kəcaj^{3}/

The attested reflexes of preinitial stops before voiceless unaspirated stops are summarized in Tables 4.48, 4.49, and 4.50.

TABLE 4.48 Attested correspondences for Old Chinese voiceless stops with preinitial *p

OC	MC	pMĭn	VN	pHM
*p.t(ˢ)-	—	—	—	—
*p.ts(ˢ)-	—	—	—	—
*p.k(ˢ)-	*p-*	—	—	—
*p.q(ˢ)-	—	—	—	—
*p-ʔ(ˢ)	—	—	—	—

TABLE 4.49 Attested correspondences for Old Chinese voiceless stops with preinitial *t

OC	MC	pMĭn	VN	pHM
*t.pˢ-	—	—	—	—
*t.p-	*tsy-*	—	—	—
*t.ts(ˢ)-	—	—	—	—
*t.kˢ-	—	—	—	—
*t.k-	*tsy-*	*tš	*g-* [ɣ] H	*k-
*t.k(ˢ)r-	*tr-*	*t	—	—
*t.qˢ-	*t-*	—	—	—
*t.q-	*tsy-*	—	—	*tj-
*t-ʔ(ˢ)-	—	—	—	—

TABLE 4.50 Correspondences for Old Chinese voiceless stops with preinitial *k

OC	MC	pMĭn	VN	pHM
*k.p(ˢ)-	—	—	—	—
*k.tˢ-	—	—	—	—
*k.t-	*tsy-*	*tš	*gi-* [z] H	—
*k.ts-	—	—	—	—
*k.q(ˢ)-	—	—	—	—
*k.ʔ(ˢ)-	*k-*	*k	—	*ʔ-

4.4.4.2 Preinitial *p, *t, *k plus voiceless aspirated obstruents: type *p.tʰ(ˢ)-

These onsets can be reconstructed on the basis of paleographic evidence, dialect evidence, and etymological or xiéshēng contacts between words with voiceless aspirated initials of different places of articulation.

We reconstruct *[p.qʰ]- in (638) based on xiéshēng evidence; there may be some etymological relationship also.

(638) 烹 *[p.qʰ]ˢraŋ > *phaeng* > pēng ‘boil (v.)’; the phonetic is
亨 *qʰˢraŋ > *xaeng* > hēng ‘penetrate’: also read
享 *qʰaŋʔ > *xjangX* > xiǎng ‘sacrificial offering’

In (639), we reconstruct *t-kʰ- (or perhaps *t-ŋ̊-) because while Middle Chinese has *tsyh-*, Mĭn shows /kʰ-/: since the vowel is nonfront, ordinary velar palatalization cannot account for the Middle Chinese initial. As with ‘elbow’, *t- may be the inalienable noun prefix here (section 3.3.2.4).

(639) 齒 *t-[kʰ]ə(ŋ)ʔ or *t-ŋ̊əʔ > *tʰəʔ > *tsyhiX* > chǐ ‘front teeth’; some Mĭn dialects reflect pMĭn *tšh-, others *kh-, e.g., Xiàmén, Fúzhōu /kʰi 3/. In the standard script, the phonetic element is
止 *təʔ > *tsyiX* > zhǐ ‘foot; stop’ (*GG* 2.555)

In (639), a possible coda *-ŋ is implied by the alternative Hédōng 河東 dialect (lower Huánghé valley) dialectal reading *tsyhingX* ‘teeth’ listed in the Sòng-time rhyme book

Jíyùn《集韻》(Dīng Dù [1039] 1985). We have brackets in *t-[kʰ]- because *t-qʰ- is also a possible reconstruction. Alternatively the dialectal -ŋ coda could be due to nasal spillover from the onset, assuming the onset included a nasal, as in *t-ŋ̊-. (Similarly, the *Jíyùn* gives a Hédōng reading *nyingX* for 耳 *C.nəʔ > *nyiX* > ěr 'ear', whose complex *C.n- onset is also a facilitating context for rightward nasal spread; cf. the discussion in section 4.2.1.2). We would then reconstruct 'teeth' as *t-ŋ̊əʔ. The /kʰi 3/ readings for 'teeth' in Xiàmén and Fúzhōu would point to the evolution OC *ŋ̊- > pMǐn *kh- preceding nonfront vowels.

The phonetic element 止 zhǐ < *təʔ is not part of the character for {齒} chǐ 'tooth' in oracle-bone inscriptions or early bronzes, which use a pictogram:

(640) 

Among the examples in *GG* (2.555–2.256), the earliest forms with 止 zhǐ seem to be from the Warring States period (475–221 BCE).

Alternation of velars and palatals in words with the phonetic 出 chū < *tsyhwit* 'go or come out' cannot be due to velar palatalization either, the vowel being nonfront. The onset, then, must include an alveolar stop. We propose that the root has a velar initial with rhyme *-ut and relates to the notion of extracting. Prefixed *t- is seen in certain intransitive verbs. Compare:

(641) 出 *t-kʰut > *tsyhwit* > chū 'go or come out', pMǐn *tšh-
掘 *[g]ut > *gjut* > jué 'dig out (earth)'
撟 *[g]ʿut > *hwot* > hú 'dig out'

The word 車 chē < *tsyhae* 'chariot' has a variant reading jū < *kjo* as 'chariot' (still used as the name of the piece in Chinese chess). In the late meaning 'spinning wheel', 車 was borrowed by Written Burmese as *khya* 3. These elements indicate the presence of a guttural—velar or uvular—in the onset. The word is also presumably cognate with 輿 *yo* > yú 'vehicle, carriage; carry on shoulders', which excludes a velar. We reconstruct:

(642) 車 *[t.qʰ](r)A > *tsyhae* > chē 'chariot'; cf. pHmong *tshjɯa A 'spinning wheel', VN *xa* [sɑ A1]; cf.
車 *C.q(r)a > *kjo* > jū 'chariot'
輿 *m-q(r)a > *yo* > yú 'vehicle, carriage; carry on shoulders'

The word 匡, 筐 kuāng < *khjwang*, mentioned above, designates various kinds of square-shaped containers. Ode 15.2 includes an example of its use:

(643) Máo Shī 15.2:

于以盛之, 維筐及筥 yú yǐ chéng zhī, wéi kuāng jí jǔ

'She goes to put them in containers; there are square ones [筐 kuāng] and round ones [筥 jǔ].' The Máo commentary says:
方曰筐，圓曰筥。fāng yuē kuāng, yuán yuē jǔ
'If square they are called 筐 kuāng; if round they are called 筥 jǔ.'

We suspect that 匡 ~ 筐 kuāng itself is related to other words meaning 'square' mentioned above (example (571)), and reconstruct:

(644) 匡 *k-pʰaŋ >*kʷʰaŋ > *khjwang* > kuāng 'square basket' (aspiration unexplained): from a related root,
匚 *paŋ > *pjang* > fāng 'container, box (*Shuōwén*)'; with the same root:
方 *C-paŋ > *pjang* > fāng 'square', VN *vuông* [vuʌŋ A1]

The modern character 匡 is made up of 匚 *paŋ > *pjang* > fāng 'box, container', ostensibly as a signific, and 王 *ɢʷaŋ > *hjwang* > wáng 'king' as phonetic (Zhōu bronzes actually show the character ancestral to 往 *ɢʷaŋʔ instead of 王). But since 匡 kuāng and 匚 fāng evidently both represent square containers and are phonetically similar, we suspect that they are related words, both originally written as "匚" (as suggested in *Hànyǔ dà cídiǎn* 2001, s.v.). The word 匚 *paŋ > *pjang* > fāng 'box, container' is nearly homophonous with, and presumably contains the same root as, 方 *C-paŋ > *pjang* > fāng 'square'. We take it that the word {筐} kuāng < *khjwang* contains a related root *pʰaŋ also meaning 'square', prefixed with *k-, perhaps as a deriver of deverbal nouns. The consonant cluster in *k-pʰ- simplified to *kʷʰ- in early Zhōu times, obscuring the relationship of 匡 to 匚 and triggering the addition of 往 as a phonetic—as early as mid-Western Zhōu, judging from the forms in Jì Xùshēng (2010:913).

The color term 赪 chēng < *trhjeng* 'red' is written with 巠 jīng < *keng*, a velar-initial phonetic, but preinitial *t- is required to account for the Middle Chinese initial. We reconstruct:

(645) 赪 *t-kʰreŋ > *trhjeng* > chēng 'red'; possibly connected to Proto-Tai *ʔdl/rieŋ A (Li 1977:129, 274)[88]
巠 *k.lˤeŋ > *keng* > jīng 'a vein of water (*Shuōwén*)'; in many early forms, the character contains the lateral-initial phonetic
壬 *l̥ˤeŋʔ > *thengX* > tǐng, an early form of
挺 *l̥ˤeŋʔ > *thengX* > tǐng 'stand up straight'

The attested correspondences for *p, *t, and *k before voiceless aspirated onsets are summarized in Tables 4.51, 4.52, and 4.53.

TABLE 4.51 Attested correspondences for voiceless aspirated stops and affricates with preinitial *p

OC	MC	pMǐn	VN	pHM
*p.tʰ(ˤ)-	—	—	—	—
*p.tsʰ(ˤ)-	—	—	—	—
*p.kʰ(ˤ)-	—	—	—	—
*p.qʰ(ˤ)-	*ph*-	—	—	—

TABLE 4.52 Attested correspondences for voiceless aspirated stops and affricates with preinitial *t

OC	MC	pMǐn	VN	pHM
*t.p$^{h(ʕ)}$-	—	—	—	—
*t.ts$^{h(ʕ)}$-	—	—	—	—
*t.k^{hʕ}-	—	—	—	—
*t.k$^{h(ʕ)}$r-	*trh-*	—	—	—
*t.k^{h}-	*tsyh-*	*tšh ~ *kh	—	—
*t.q^{hʕ}-	—	—	—	—
*t.q^{h}-	*tsyh-*	—	*x-* [s]	pHmong *tshj-

TABLE 4.53 Attested correspondences for voiceless aspirated stops and affricates with preinitial *k

OC	MC	pMǐn	VN	pHM
*k.p$^{h(ʕ)}$-	*kh(j)w-*	—	—	—
*k.t$^{h(ʕ)}$-	—	—	—	—
*k.ts$^{h(ʕ)}$-	—	—	—	—
*k.q$^{h(ʕ)}$-	—	—	—	—

4.4.4.3 Preinitial *p, *t, *k plus voiced obstruents: type *k.dz(^{ʕ})-

Three examples of these onsets have already been discussed: 牀 *k.dzraŋ ‘bed’ (163), 賊 *k.dz^{ʕ}ək ‘bandit’ (Table 4.23), and 十 *t.[g]əp ‘ten’ (628). Here we discuss additional examples.

The word 椎 chuí < *drwij* ‘hammer’ has initial *dh- in Proto-Mǐn, implying a tightly attached cluster; this is confirmed by an initial cluster in the Vietic language Pong. We reconstruct:

(646) 椎 *k.druj > *drwij* > chuí ‘hammer’, pMǐn *dh-; cf. Pong /ktu:j/ ‘mallet’

Occasionally one finds exceptions to the general pattern described above—that an onset with an alveolar in any position develops like an alveolar. Thus while 氏 *k.de? > *dzyeX* > shì ‘clan’ does show the alveolar prevailing over a velar preinitial indicated both by loanwords (cf. 紙 zhǐ ‘paper’ in Table 4.47) and by xiéshēng contacts, we find this same 氏 used to write 兮 *g^{ʕ}e > *hej* > xī ‘(final particle)’ in a quotation from the *Shījīng* in the Mǎwángduī text “Wǔ xíng” 《五行》 (column 184; see Guójiā wénwù jú 1980:17):

(647) Ode 152.1, Máo version:
鳲鳩在桑，其子七兮 shījiū zài sāng, qí zǐ qī xī
‘The cuckoo is in the mulberry tree; its young ones are seven’
Quotation in the Mǎwángduī silk version of “Wǔ xíng”:
尸𠂤在桑，其子七氏

TABLE 4.54 Attested correspondences for Old Chinese voiced obstruents with preinitial *t

OC	MC	pMǐn	VN	pHM
*t.b(ˤ)-	—	—	—	—
*t.d(ˤ)-	—	—	—	—
*t.dz(ˤ)-	—	—	—	—
*t.gˤ-	—	—	—	—
*t.g-	*dzy-*	*dž	—	—
*t.ɢ-	—	—	—	—

TABLE 4.55 Attested correspondences for Old Chinese voiced obstruents with preinitial *k

OC	MC	pMǐn	VN	pHM
*k.b(ˤ)-	—	—	—	—
*k.dˤ-	—	—	—	—
*k.d(ˤ)r-	*dr-*	*dh	—	—
*k.d-	*dzy- (~ g-)*	—	—	—
*k.dzˤ-	*dz-*	*dzh	—	—
*k.dzr-	*dzr-*	*dzh	—	—
*k.g-	—	—	—	—
*k.ɢ-	—	—	—	—

We take this to be a dialectal development whereby *k.dˤeʔ went to *g.dˤeʔ and ultimately to *gˤe, the velar prevailing over the alveolar:

(648) 兮 *gˤe > *hej* > xī ‘(final particle)’
氏 *k.deʔ > *g.deʔ (dial. >) *geʔ, used to write {兮} *gˤe ‘final particle’; cf. the usual development:
氏 *k.deʔ > *g.deʔ > *deʔ > *dzyeX* > shì ‘clan’; cf.
紙 *k.teʔ > *teʔ > *tsyeX* > zhǐ ‘paper’

The same dialect development may account for the Middle Chinese in (649):

(649) 祇 *[k.d]e > *g.de (dial. >) *ge > *gjie* > qí ‘earth spirit’

Normally, we would expect *ge > *dzye* by the usual palatalization of (nonpharyngealized) velars before front vowels: the failure of the velar to palatalize in (649) argues for the presence of an intervening segment between the velar and the vowel at the time of the first palatalization of velars, which occurred during Western Hàn, according to Schuessler (2010).

The attested correspondences for preinitial voiceless stops before voiced obstruents are summarized in Tables 4.54 and 4.55.

4.4.4.4 Preinitial *p, *t, *k plus voiced resonants: type *p.m(ˤ)-

The evolution into Middle Chinese of Old Chinese clusters of a stop preinitial and a voiced resonant is less predictable than with stop preinitials before obstruents.

Developments varied across dialects in mid- and late Hàn times, as the entries for 聿 yù < *ywit* 筆 bǐ < *pit* 'writing brush' in the *Shuōwén jiězì* (cited above in chapter 3) show:

(650)

聿：所以書也。	聿 [*[m-]rut]: that with which one writes.
楚謂之聿，	In Chǔ 楚 it is called 聿 [*lut < *[m-]rut?],
吳謂之不律，	in Wú 吳 it is called 不律 [*pə[r]ut],
燕謂之弗。	in Yān 燕 it is called 弗 [*put].
…	…
筆：秦謂之筆。	筆 [*p.[r]ut]: in Qín it is called 筆 [*p.[r]ut]. (*SWGL* 1271b, 1273a)

Another example is the entry for 貔 pí < *bjij* ~ péi < *bij* 'kind of wild cat' in *Fāng yán* 8.2 (Hǎo Yìxíng et al. 1989:892):

(651)

貔，陳楚江淮之間謂之狸，	貔 [pí, MC *bjij* < *[b]ij]: in Chén 陳 and Chǔ 楚, and between the Jiāng 江 and the Huái 淮 [rivers], it is called 狸 [lái < MC *loj* < *[r]ˤə];
北燕朝鮮之間謂之貙，	between northern Yān 燕 and Cháoxiǎn 朝鮮 [Korea], it is called 貙 [péi < *bij* < *[b]rə];[89]
關西謂之狸。	west of the [Hángǔ 函谷] Pass, it is called 狸 [lí; MC *li* < *p.[r]ə].

After the word 貔 pí in the *Fāng yán* text in (651), the commentary by Guō Pú 郭璞 (276–324 CE) adds that in his time, the people in Jiāngnán 江南 (south of the Yángzǐ) pronounced it as a disyllable:

(652)

今江南呼為貙狸	Nowadays, in Jiāngnán it is called 貙狸 [MC *bij-li*].[90]

Such dialectal pronunciations have found their way into Middle Chinese lexica: thus the old and the modern words for 'writing brush': 聿 *[m-]rut > *ywit* > yù and 筆 *p.[r]ut > *prut > *pit* > bǐ both have standard Middle Chinese pronunciations although they have different dialect bases. Note that both the *Shuōwén* and Guō Pú's commentary on the *Fāng yán* indicate loose clusters 不律 [*pə.[r]ut] and 貙狸 [*bij-li* < *bə.rə] in the Wú 吳 area (southern Jiāngsū and northern Zhèjiāng). The regions of Chén 陳 (east Hénán) and Chǔ 楚 (Húběi) and the regions west of the passes (Shǎnxī) either had tight clusters or lost the preinitial. The Yān 燕 region (Héběi) appears to have gone furthest in the direction of monosyllabization. It is not surprising, then, to find in Middle Chinese doublets like these:

(653) 稟 *p.rimʔ (dial.) > *primʔ > *pimX*
also *p.rimʔ > *p.rimʔ > *limX* > lǐn 'rations'

(654) 慴 *t-nip > *tip > *tsyip* > zhé 'afraid'
also *t-nˤep > *nˤep > *nep*

(655) 袂 *k.mˤet > *kʷˤet > *kwet*
also *k.met-s > *met-s > *mjiejH* > mèi 'sleeve'

Loss of the preinitial appears to be the more common treatment in Middle Chinese. Proto-Mĭn, however, must have retained a voiceless element in the reflexes of OC *k.n-, *p.r-, and *k.r- at least, since the Proto-Mĭn reflexes of these onsets are Norman's voiceless sonorants *nh- and *lh-, which we reconstruct as OC *C.n(ˢ)- and *C.l(ˢ)-.

(656) 露 *p.rˢak-s > *luH* > lù 'dew; disclose', pMĭn *lh-; Proto-Tai *p.ra:k 'to be exposed' (Pittayaporn 2009)

(657) 兩 *p.raŋʔ > *ljangX* > liǎng 'a pair'; pMĭn *lh-; the early graph is just 丙 *praŋʔ > *pjaengX* > bĭng 'third heavenly stem' written double (Baxter 1992:272).

(658) 肉 *k.nuk > *nyuwk* > ròu 'meat, flesh'; pMĭn *nh-; Pong /kɲuk 7/ 'meat, flesh'

OC *k.r- is usually reflected by MC *l*-, pMĭn *lh-, VN *s*- [ʂ], and pHM *kl-:

(659) 倢 *k.r[a]n-s > *ljenH* > liàn 'chick', pMĭn *lh-; pHM *kla:n C 'young hen'

(660) 蓮 *k.[r]ˢe[n] > *len* > lián 'lotus fruit', pMĭn *lh-; VN *sen* [ʂɛn A1] 'lotus'

(661) 籠 *k.rˢoŋ > *luwng* > lóng 'cage, coop', pMĭn *lh-; VN *chuồng* [tɕuʌŋ A2] 'cage, shed, shelter, coop, stable, sty', Proto-Tai *kroŋ A 'cage' (Li 1977:225)

(662) 朗 *k.rˢaŋʔ > *langX* > lăng 'bright'; VN *sáng* [ʂɑŋ B1] < *kr- 'bright, clear', Rục /pləj kàraŋ/ 'sunny weather'

(663) 籃 *k.rˢam > *lam* > lán 'basket'; pMĭn *lh-; the phonetic is 監 *[k]ˢram > *kaem* > jiān 'inspect'

(664) 六 *k.ruk > *ljuwk* > liù 'six'; pMĭn *lh-; pHM *kruk

(665) 螺 *k.rˢoj > *lwa* > luó 'spiral, snail', pMĭn *lh-; pMien *klɥei A/B 'snail'

(666) 笠 *k.rəp > *lip* > lì 'bamboo-splint hat', pMĭn *lh-; Proto-Tai *klɤp D 'bamboo hat' (Pittayaporn 2009)

(667) 卵 *k.rˢorʔ > *lwanX* > luǎn 'egg'; pMĭn *lh-; pMien *kləu C 'egg'

(668) 力 *k.rək > *lik* > lì 'strength', pMĭn *lh-; VN sức [ʂɯk D1] < *kr- 'strength'; pHM *-rək 'strength'[91]

Lakkia, as usual, retains the first of two consonants: if the lost second consonant was a nasal, nasality is retained on the vowel:

(669) 亢 *k-ŋˢaŋ > *kang* > gāng 'lift high'; Lakkia /khã:ŋ 3/ 'to lift'; related to 卬 *ŋˢaŋ > *ngang* > áng 'high; lift high'

(670) 巠 jīng < *keng* < *k.lˢeŋ 'vein of water (*Shuōwén*)'; in the early script, the top part depicts a loom, and underneath, the phonetic is

壬 *l̥ˢeŋʔ > *thengX* > tǐng ‘good’ (Jì Xùshēng 2010:836); cf.
經 *k-lˢeŋ > *keng* > jīng ‘loom; regulate; norm’

In the meanings ‘regulate’ and ‘norm’, 經 *k-lˢeŋ appears to include a prefix *k- (in an unidentified function) before a root related to

(671) 程 *l<r>eŋ > *drjeng* > chéng ‘rule, norm’

We appear to have *t-l- in:

(672) 多 *[t.l]ˢaj > *ta* > duō ‘many’, pMǐn *t-; cf. Proto-Tai *hlai A (so Li 1977) or *ʰla:j A (Pittayaporn 2009); Proto-Hlai *hlə:y (Norquest 2007:464); used as phonetic in
移 *laj > *ye* > yí ‘move (v.)’

(673) 質 *t-lit > *tsyit* > zhì ‘substance, solid part’; cf.
實 *mə.li[t] > *zyit* > shí ‘fruit; full’, pMǐn *-dž-; Proto-Tai *m.lec D ‘grain’ (Pittayaporn 2009)

We can reconstruct *k.m- in:

(674) 舞 *k.m(r)aʔ > *mjuX* > wǔ ‘dance (v.)’, pMǐn *mh- (Norman 1991:211); VN *múa* [muʌ B1] ‘to dance [ritually, with fan or sword or veil]; to brandish, twirl, whirl’ (note high-register tone), Rục /kumúa/ ‘dance’

The atttested correspondences for preinitial stops before voiced resonants are summarized in Tables 4.56, 4.57, and 4.58.

TABLE 4.56 Attested correspondences for Old Chinese voiced resonants with preinitial *p

OC	MC	pMǐn	VN	pHM
*p.m(ˢ)-	—	—	—	—
*p.n(ˢ)-	—	—	—	—
*p.ŋ(ˢ)-	—	—	—	—
*p.l(ˢ)-	—	—	—	—
*p.r(ˢ)-	*l-, p-*	*lh	—	—

TABLE 4.57 Attested correspondences for Old Chinese voiced resonants with preinitial *t

OC	MC	pMǐn	VN	pHM
*t.m(ˢ)-	—	—	—	—
*t.nˢ-	*t-, n-*	—	—	—
*t.n(ˢ)r-	*tr-*	—	—	—
*t.n-	*tsy-*	—	—	—
*t.ŋ(ˢ)-	—	—	—	—
*t.lˢ-	*t-*	*t	—	—
*t.l(ˢ)r-	—	—	—	—
*t.l-	*tsy-*	—	—	—

TABLE 4.58 Attested correspondences for Old Chinese voiced resonants with preinitial *k

OC	MC	pMĭn	VN	pHM
*k.m(ˁ)-	*m-, k-*	—	*m-* [m] H	—
*k.nˁ-	—	—	—	—
*k.n-	*ny-*	*nh	—	—
*k.ŋ(ˁ)-	*ng-, k-*	—	—	—
*k.l(ˁ)-	*k-*	*k	—	—
*k.r(ˁ)-	*l-*	*lh	*s-* [ʂ]	*kl-

4.4.4.5 Preinitial *p, *t, *k plus voiceless resonants: type *p.m̥(ˁ)-

With voiceless resonants, preservation of the preinitial and its reflection in Middle Chinese as an aspirated stop or affricate is the expected treatment. We have already seen two cases of *k-m̥(ˁ)- in examples (614) and (615). Below we discuss cases with *l̥- and *r̥-.

The word 喙 huì ‘snout; to pant’ has two readings in Middle Chinese, with no difference in meaning, both attested in the *Guǎngyùn* and the *Jīngdiǎn shìwén* (*JDSW* 91):

(675) 喙 (*l̥o[rʔ]-s? >) *l̥ot-s > *xjwojH* > huì ‘snout; to pant’
喙 *(t-l̥o[rʔ]-s?) > *t-l̥ot-s > *tsyhwejH* > huì ‘snout; to pant’ (this word perhaps corresponds to pMĭn *tšhyi C ‘mouth’; see discussion below); the phonetic is
彖 *l̥ˁo[r]-s > *thwanH* > tuàn ‘running pig’

Both the onset and the rhyme of (675) deserve comment. The Middle Chinese reading *xjwojH* reflects the development *l̥(ˁ)- > *x-* that we ascribe to western dialects (see the discussion in section 4.3.5). We reconstruct a pronunciation of 喙 with *t-l̥- to account for MC *tsyhwejH*, but pMĭn *tšh- would also be the regular reflex of OC *l̥-, so the Middle Chinese form could reflect a MĭN-like development of a singleton initial *l̥- rather than a form with preinitial *t-.[92]

As for the final, MC *-jwojH* and *-jwejH*[93] would regularly reflect only OC *-ot-s or *C^{w}at-s; from *-or we would normally expect MC *-jwon*, *-jwen* or *-jwe*. Norman (1996:22) noticed that the Proto-MĭN rhyme of 喙 *tšhyi C does not regularly correspond to MC *-jwojH* or *-jwejH*, and therefore questioned the usual association of pMĭn *tšhyi C ‘mouth’ with {喙} *tsyhwejH*. However, the Proto-MĭN rhyme *-yi is consistent with MC *-jwe*, so the MĭN form could be the regular reflex of OC *l̥orʔ-s or *t-l̥or-s (with *-r > *-j as a development in coastal dialects; see section 5.5.1.4). We suspect that the readings with *-jojH* and *-jwejH* may reflect a pre-Qín dialect in which *-rʔ and/or *-nʔ became *-t, and that it is Middle Chinese rather than Proto-MĭN that is irregular.[94]

The characters for 訓 xùn < *xjunH* ‘instruct’ and 順 shùn < *zywinH* ‘follow; obey’ are frequently used for one another in excavated documents (Bái Yúlán 2008:343–344).

In the present system, only lateral initials can account for contact between MC *x-* and *zy-*. We reconstruct:

(676) 訓 *l̥u[n]-s > *xjunH* > xùn ‘instruct’
順 *Cə.lu[n]-s > *zywinH* > shùn ‘follow; obey’ (for the onset, see section 4.5.5.3); the phonetic element has *tsyh-* < *t.l̥-:
川 *t.l̥u[n] > *tsyhwen* > chuān ‘stream, river’ (the Middle Chinese final is irregular; we would expect “*tsyhwin*”)

We reconstruct *k-r̥ˢ- in 康 kāng < *khang* ‘tranquil; at ease’:

(677) 康 *k-r̥ˢaŋ > *khang* > kāng ‘tranquil; at ease’; the phonetic is
庚 *kˢraŋ > *kaeng* > gēng ‘seventh heavenly stem’, which is also phonetic in
唐 *[N-]rˢaŋ > *dang* > táng ‘exaggerate; great’ (for the onset, see section 4.4.1.4)

The name of the first Shāng ruler, usually written in received texts as 湯 *thang* > tāng, is written in pre-Qín documents as 唐 or 康. While the phonetic 庚 *kˢraŋ indicates OC *r(ˢ)-, the phonetic 昜 *laŋ normally indicates a lateral:

(678) 昜, 陽 *laŋ > *yang* > yáng ‘bright’
傷 *l̥aŋ > *syang* > shāng ‘wound’
腸 *lraŋ > *drjang* > cháng ‘intestines’
湯 *l̥ˢaŋ > *thang* > tāng ‘hot liquid’

We suggest that the relatively late use of 湯 tāng to write the first Shāng ruler’s name reflects the late merger of *r̥ˢ- with *l̥ˢ- (both later becoming *tʰ- in the east, *x- in the west; see section 4.3.5):

(679) 康, 唐 *r̥ˢaŋ > *thang* > tāng ‘founder of the Shāng dynasty’; later written 湯, as if from *l̥ˢaŋ

The character 泣 qì < *khip* ‘weep’ includes 立 lì < *lip* < *k.rəp ‘stand (v.)’ as phonetic, indicating the presence of a rhotic element in the onset. Moreover the verb appears to be cognate with the noun 淚 *[r][ə]p-s > *lwijH* > lèi ‘tear (n.)’. We reconstruct

(680) 泣 *k-r̥əp > *kʰrəp > *khip* > qì ‘weep’; the phonetic is
立 *k.rəp > *rəp > *lip* > lì ‘stand (v.)’; cf.
淚 *[r][ə]p-s (dial. >) *rup-s > *rut-s > *lwijH* > lèi ‘tears (n.)’

The word 考 kǎo < *khawX* ‘old; deceased father’ includes 老 lǎo < *lawX* ‘old’, an indication of a rhotic in the onset of 考. If it had been medial *-r-, we would expect a division-II final like MC *-aew*; but since in this case we have MC *-aw* instead, the rhotic must be main syllable’s initial; and since preinitials are never aspirated in the present framework, we must be dealing with initial *r̥ˢ- preceded by k. We reconstruct:

(681) 考 *k-r̥ˤuʔ > *khawX* > kǎo ‘old; deceased father’; from related roots *rˤuʔ and *ruʔ, we have
老 *C.rˤuʔ > *lawX* > lǎo ‘old’; pMǐn *lh- (e.g., Jiànyáng /seu 5/)
叟 *s-ruʔ > *srjuwX* > *suwX* > sǒu ‘old man’ (see section 4.4.3.3)

A probable example of *p.r̥- is the verb 娉 pìn < *phjiengH* ‘inquire about (marriage)’ whose phonetic also occurs in 騁 chěng < *trhjengX* ‘gallop’. We reconstruct:

(682) 娉 *p.[r̥]eŋ-s > *phjiengH* > pìn ‘inquire about (marriage)’
騁 *[r̥]eŋʔ > *trhjengX* > chěng ‘gallop’

The attested correspondences for preinitial stops plus voiceless resonants are summarized in Tables 4.59, 4.60, and 4.61.

TABLE 4.59 Attested correspondences for Old Chinese voiceless resonants with preinitial *p

OC	MC	pMǐn	VN	pHM
*p.m̥(ˤ)-	—	—	—	—
*p.n̥(ˤ)-	—	—	—	—
*p.ŋ̊(ˤ)-	—	—	—	—
*p.l̥(ˤ)-	—	—	—	—
*p.r̥(ˤ)-	*ph-*	—	—	—

TABLE 4.60 Attested correspondences for Old Chinese voiceless resonants with preinitial *t

OC	MC	pMǐn	VN	pHM
*t.m̥(ˤ)-	—	—	—	—
*t.n̥(ˤ)-	—	—	—	—
*t.ŋ̊(ˤ)-	—	—	—	—
*t.l̥ˤ-	—	—	—	—
*t.l̥-	*tsyh-*	*tšh?	—	—
*t.r̥-	—	—	—	—

TABLE 4.61 Attested correspondences for Old Chinese voiceless resonants with preinitial *k

OC	MC	pMǐn	VN	pHM
*k.m̥(ˤ)-	*kh-*	—	—	—
*k.n̥(ˤ)-	—	—	—	—
*k.ŋ̊(ˤ)-	—	—	—	—
*k.l̥(ˤ)-	—	—	—	—
*k.r̥(ˤ)-	*kh-*	—	—	—

4.4.5 ONSETS WITH TIGHTLY ATTACHED UNIDENTIFIED PREINITIAL *C

In some onsets, a preinitial consonant must be supposed but cannot be identified because it has been lost in all the pronunciations under consideration.

4.4.5.1 Preinitial *C plus voiceless unaspirated obstruents: type *C.p(ˤ)-

Onsets like *C.p(ˤ)- are reconstructed primarily to account for cases where Middle Chinese voiceless obstruents correspond to Vietnamese spirantized initials (*v*- [v], *d*- [z], *gi*- [z], *g*- [ɣ]; *r*- [z] in the case of *C.s-) with high-register tone, while Proto-Mĭn shows plain (unsoftened) voiceless obstruents. In such cases, Vietnamese excludes a singleton consonant onset, Mĭn excludes a loosely attached onset, and absence of voicing in Middle Chinese excludes a tightly attached nasal preinitial. The preinitial *C is to be thought of as either a stop or *s. Examples are given in Table 4.62.

The situation is similar with *C.q-, but the reflexes are everywhere merged with those of *C.k-. We attribute the fronting of *q- to *k- to the tightly attached preinitial *C. We reconstruct MC *k*- < *C.q- etc. (with uvular main initial) on the basis of clear etymological and/or xiéshēng connections with uvulars, even without evidence from Vietnamese:

(683) 景 *C.qraŋʔ > *kjaengX* > jĭng ‘bright; image’ (also ‘shadow’),
鏡 *C.qraŋʔ-s > *kjaengH* > jìng ‘mirror’, pMĭn *k-; VN *gương* [ɣɯʌŋ A1]; cf.
影 *qraŋʔ > *ʲjaengX* > yĭng ‘shadow (n.)’

(684) 舉 *C.q(r)aʔ > *kjoX* > jŭ ‘lift, raise’; related to
與 *m-q(r)aʔ > *yoX* > yŭ ‘give; for; and’, pMĭn *ɣ- (see section 4.4.5.3); note that MC *y*- cannot reflect an Old Chinese velar initial.

Vietnamese orthographic *r*- [z] with high-register tone is the spirantized counterpart of Vietnamese *s*- [ʂ] in inherited words: compare for instance ‘snake’: Sách /psiŋ/, VN *rắn* [zan B1]; ‘tooth’: Thavưng /ksaŋ/, VN *răng* [zaŋ A1] (Ferlus

TABLE 4.62 Vietnamese spirantization of voiceless obstruents in tightly attached clusters

Chinese	Vietnamese	pMĭn
本 *C.pˤə[n]ʔ > *pwonX* > bĕn ‘tree trunk’	*vốn* [von B1] ‘capital, principal; origin’	*p
壁 *C.pˤek > *pek* > bì ‘house wall’	*vách* [vaik D1] ‘partition, wall’	*p
板 *C.pˤranʔ > *paenX* > băn ‘plank, board’	*ván* [vɑn B1] ‘plank’	*p
刀 *C.tˤaw > *taw* > dāo ‘knife’	*dao* [zɑu A1] ‘knife’	*t
正 *C.teŋ > *tsyeng* > zhēng ‘first (month)’	*giêng* [ziʌŋ A1] ‘the first month’	*tš
謫 *C.tˤrek > *treak* > zhé ‘blame (v.)’	*dức* [zɯk D1] ‘reprove’	*t
井 *C.tseŋʔ > *tsjengX* > jĭng ‘well (n.)’	*giếng* [ziʌŋ B1] ‘well’	*ts
筋 *C.[k]ə[n] > *kj+n* > jīn ‘sinew’	*gân* [ɣʌn A1] ‘nerve; tendon; sinew; vein’	*k

TABLE 4.63 Attested correspondences for Old Chinese voiceless obstruents with unidentified preinitials

OC	MC	pMĭn	VN	pHM
*C.p(ˢ)-	*p-*	*p	*v-* [v] H	—
*C.tˢ-	*t-*	*t	*d-* [z] H	—
*C.t(ˢ)r-	*tr-*	*t	*d-* [z] H	*tr-
*C.t-	*tsy-*	*tš	*gi-* [z] H	—
*C.ts(ˢ)-	*ts-*	*ts	*gi-* [z] H	—
*C.s(ˢ)-	*s-, ts-*	*s, *tsh	*r-* [z] H	—
*C.k(ˢ)-	*k-*	*k	*g-* [ɣ] H	*k-
*C.q(ˢ)-	*k-*	*k	*g-* [ɣ] H	—

1982:99). Vietnamese orthographic *r-* [z] also corresponds to MC *s-* in some early loanwords. We reconstruct *C.s- when MC *s-* corresponds to Vietnamese orthographic *r-* with high-register tone, and the identity of the preinitial consonant is unknown:

(685) 譟 *C.sˢaw-s > *sawH* > zào 'shout'; VN *rao* [zɑu A1] 'shout'

(686) 燥 *C.sˢawʔ > *sawX* > zào 'dry'; VN *ráo* [zɑu B1] 'dry'

(687) 箱 *C.[s]aŋ > *sjang* > xiāng 'box (of a carriage)'; VN *rương* [zɯʌŋ A1] 'box, trunk'

In these examples, the occurrence of initial affricates in modern Chinese dialects (for instance in the Mandarin forms in (685) and (686)) instead of the [s] that would be expected on the basis of Middle Chinese also supports the reconstruction of a tightly attached preinitial *C.

Attested correspondences for preinitial *C before plain voiceless obstruents are summarized in Table 4.63.

4.4.5.2 Preinitial *C plus voiceless aspirated obstruents: type *C.pʰ(ˢ)-

Apart from cases like *p.qʰ- > *ph-*, *t.kʰ- > *tsyh-*, and *s.tʰ- > *sy-*, a tightly attached preinitial before an Old Chinese voiceless aspirate is sometimes detectable on the basis of the secondary effects the preinitial may have had on the initial. For example, this is the case with fronting of OC *qʰ- to MC *kh-*, which we take to be due to a tightly attached preinitial *C-, as in (688):

(688) 愆 *C.qʰra[n] > *khjen* > qiān 'exceed, err'; probably related to
衍 *N-q(r)anʔ > *yenX* > yǎn 'overflow'

(689) 乞 *C.qʰət > *khj+t* > qǐ 'beg, ask': from the same root as
氣 *qʰət-s > *xj+jH* > xì 'to present food'; 乞 *C.qʰət is also phonetic in

TABLE 4.64 Attested correspondences for Old Chinese voiceless aspirated initials with unidentified preinitials

OC	MC	pMĭn	VN	pHM
*C.p$^{h(ʕ)}$-	—	—	—	—
*C.t$^{h(ʕ)}$-	—	—	—	—
*C.ts$^{h(ʕ)}$-	—	—	—	—
*C.k$^{h(ʕ)}$-	—	—	—	—
*C.q$^{h(ʕ)}$-	*kh-*	*kh	—	—

气 *C.q^{h}əp-s > *C.q^{h}ət-s > *k^{h}ət-s > *khj+jH* > qì ‘(inhaled thing:) breath, air, vapors’, pMĭn *kh-; the root is
吸 *q^{h}(r)əp > *xip* > xī ‘inhale’, pMĭn *kh-

Note that the use of 乞 *C.q^{h}ət as phonetic in 气 *C.q^{h}əp-s ‘(inhaled thing:) breath, air, vapors’ already reflects the early change of *-p-s to *-t-s. The word for ‘breath’ 气 *C.q^{h}əp-s is best understood as a deverbal noun with *-s suffix from a *C-prefixed verb cognate with 吸 xī ‘inhale’.

(690) 勸 *C.q^{wh}ar-s > *khjwonH* > quàn ‘encourage’; the ultimate phonetic element is said to be
卼 (= 諠, 喧) *q^{wh}ar > *xjwon* > xuān ‘clamor, shout’

(For the *-r coda in these words, see section 5.5.1.2.)

Attested correspondences for preinitial *C with aspirated initials are summarized in Table 4.64.

4.4.5.3 Preinitial *C plus voiced obstruents: type *C.b(ʕ)-

Preinitial *C plus a voiced obstruent evolves to a voiced obstruent in Middle Chinese (e.g., *C.b- > *b-*) and to voiced aspirates in Norman’s Proto-Mĭn (e.g., *C.b- > *bh-*).[95] This means that OC *C.b-, *C.d-, *C.dz-, and *C.g-, have the same reflexes as *m.p-, *m.t-, *m.ts-, and *m.k-; distinguishing them requires evidence excluding secondary voicing of the initial by *m, such as a Proto-Hmong-Mien plain voiced initial, as in:

(691) 騎 *C.g(r)aj > *gje* > qí ‘straddle; ride’; pMĭn *gh-; pHM *ɟej A ‘to ride’

Here we reconstruct *C.g(r)aj instead of *m.k(r)aj or *m.g(r)aj because a form with preinitial *m would have produced prenasalization in Hmong-Mien. The same reasoning applies to (692).

(692) 園 *C.ɢ^{w}a[n] > *hjwon* > yuán ‘garden’; pMĭn *ɣ-; pHmong *waŋ A ‘garden’

It appears that *C.ɢ- has the same reflexes as *C.g-: MC *g-* and pMĭn *gh-, as in (693):

(693) 芹 *C.[ɢ]ər > *gj+n* > qín ‘cress’, pMĭn *gh-, Xiàmén /kʰun 2/; the phonetic element usually represents a uvular initial, as in
欣 *qʰər > *xj+n* > xīn ‘rejoice’

But the reflexes of *m-q- are different: MC *y-* and pMĭn *ɣ-, as in (694) (= (479) in section 4.4.2.1 above; see also (511) for paleographical evidence for a uvular):

(694) 與 *m-q(r)aʔ > *yoX* > yǔ ‘give; for; and’ (volitional *m-), Xiàmén /hɔ 6/ ‘give’ < pMĭn *ɣ-; related to
舉 *C.q(r)aʔ > *kjoX* > jǔ ‘lift, raise’

A word-family connection pointing to an Old Chinese voiced-obstruent root initial also excludes secondary voicing by preinitial *m, as in (695), where we have a root in *gˢ-:

(695) 畫 *C-gʷˤrek-s > *hweaH* > huà ‘drawing (n.)’, pMĭn *ɣua C; cf.
畫, 劃 *gʷˤrek > *hweak* > huà ‘draw (v.)’, pMĭn *ɦuak D

In (696), we reconstruct *C.g- because Proto-Mĭn *ɣ- requires a tightly attached preinitial other than *N, and the semantics do not support *m-:

(696) 橫 *C.gʷˤraŋ > *hwaeng* > héng ‘crosswise; horizontal’; pMĭn *ɣ-.

When we lack specific evidence that the root began in a voiced obstruent, we use square brackets to indicate uncertainty on the voicing specification of the initial and on the nature, nasal or not, of the preinitial. Thus the notation *C.[b]- is intended to serve for both *m.p- and *C.b-. Examples:

(697) 縫 *C.[b](r)oŋ-s > *bjowngH* > fèng ‘seam’, pMĭn *bh-

(698) 團 *C.[d]ˤon > *dwan* > tuán ‘round, plenty’, pMĭn *dh-

(699) 市 *C.[d]əʔ > *dzyiX* > shì ‘market (n.)’, pMĭn *džh-

(700) 蠶 *C.[dz]ˤ[ə]m > *dzom* > cán ‘silkworm’, pMĭn *dzh-

(701) 巷 *C.[g]ˤroŋ-s > *haewngH* > xiàng ‘lane, street’, pMĭn *ɣ-

The attested correspondences for preinitial *C plus voiced obstruents are summarized in Table 4.65.

4.4.5.4 Preinitial *C plus voiced resonants: type *C.m(ˤ)-

Cases of preinitial *C before voiced resonants are common and relatively unproblematic: they are reflected by voiceless resonant initials in Proto-Mĭn and Hmong-Mien, and by high-register resonants in Vietnamese and Hakka. The onset *C.lˤ-, however, gives MC *d-*, pMĭn *dh-. Norman (1991) provided extensive documentation for the nasals; we rely on his work. Examples:

TABLE 4.65 Attested correspondences for Old Chinese voiced stops/affricates with unidentified preinitials

OC	MC	pMĭn	VN	pHM
*C.b(ˢ)-	*b-*	*bh	—	—
*C.dˢ-	*d-*	*dh	—	—
*C.d-	*dzy-*	*džh	—	—
*C.dz(ˢ)-	*dz-*	*dzh	—	—
*C.g(ʷ)ˢ	*h-*	*ɣ	—	—
*C.g(ʷ)-	*g-*	*gh	—	*ɟ-
*C.ɢ(ʷ)ˢ-	*h-*	*ɣ	—	—
*C.ɢ-	*g-*	*gh	—	—
*C.ɢʷ-	*h(j)-*	*ɣ	—	*w-

(702) 面 *C.me[n]-s > *mjienH* > miàn ‘face’; pMĭn *mh-, Lùfēng Hakka /mian 5/ (high register); pMien *hmien A ‘face’

(703) 米 *(C).mˢ[e]jʔ > *mejX* > mǐ ‘millet or rice grains, dehusked and polished’; Méixiàn Hakka /mi 3/ (high register); pMien *hmei B ‘rice, dehusked’

(704) 蚊, 蚋 *C.mə[r] > *mjun* > wén ‘mosquito’, pMĭn *mh-; cf. Proto-Vietic *t.mu:l ‘midge’

(705) 染 *C.n[a]mʔ > *nyemX* > rǎn ‘to dye’, Méixiàn Hakka /niam 3/; VN *nhuốm* [ɲuʌm B1] ‘tint’

(706) 年 *C.nˢi[ŋ] > *nen* > nián ‘harvest; year’, pMĭn *nh-, Méixiàn Hakka /nian 1/; pHM *hŋɯ̯əŋH ‘year’

(707) 五 *C.ŋˢaʔ > *nguX* > wǔ ‘five’, pMĭn *ŋh-, Méixiàn Hakka /ŋ 3/; Proto-Tai (Pittayaporn 2009) *ha: C, Proto-Lakkia *ʔŋɔ: C ‘five’ (L-Thongkum 1992)

(708) 瓦 *C.ŋʷˢra[j]ʔ > *ngwaeX* > wǎ ‘roof tile’; pMĭn *ŋh-, Méixiàn Hakka /ŋa 3/; VN *ngói* [ŋɔi B1] ‘tile’; pHM *ŋʷæX ‘tile’[96]

(709) 蟲 *C.lruŋ > *drjuwng* > chóng ‘insect’; pMĭn *dh-

(710) 桃 *C.lˢaw > *daw* > táo ‘peach’; pMĭn *dh- pHM *ɢlæw A ‘peach’

(711) 老 *C.rˢuʔ > *lawX* > lǎo ‘old’; pMĭn *lh-, Méixiàn Hakka /lau 3/ ‘old’

(712) 李 *C.rəʔ > *liX* > lǐ ‘plum’; pMĭn *lh-; pHM *hlj̯əŋX ‘plum’

(713) 冽 *C.r[a]t > *ljet* > liè ‘cold, raw’; cf. VN *rét* [zɛt D1] ‘cold’ (Bodman 1980:85)

(714) 藕 *C.ŋˢ(r)oʔ > *nguwX* > ǒu ‘lotus root’; pMĭn *ŋhəu B, Méixiàn Hakka /ɲeu 3/, VN *ngó* [ŋɔ B1], Thai /ŋau B2/ ~ /hŋau C1/ (Norman 1991:210)[97]

(715) 顏 *C.ŋˢrar > *ngaen* > yán ‘face, forehead’; pHmong *hŋen A ‘forehead’

TABLE 4.66 Attested correspondences for Old Chinese voiced resonants with unidentified preinitials

OC	MC	pMĭn	VN	pHM
*C.m(ˤ)-	*m-*	*mh	*m-* [m] H	*hm-
*C.nˤ-	*n-*	*nh	—	*hn-, *hɲ-F
*C.n-	*ny-*	*nh	*nh-* [ɲ] H	—
*C.ŋ(ˤ)-	*ng-*	*ŋh	*ng-* [ŋ] H	*hŋ-F
*C.lˤ-	*d-*	*dh	—	*ɢl-
*C.l(ˤ)r-	*dr-*	*dh	—	pMien *ɢlj-
*C.l-	—	—	—	—
*C.r(ˤ)-	*l-*	*lh	*r-* [z] H	*hl-, *r-

We suppose that MC *d-* and *dr-* from Old Chinese lateral sources like *C.lˤ- and *lr- evolved through [lᵈ] and [lᵈr]; see Table 4.66. We take the curious-looking cluster *ɢl- of the Proto-Hmong-Mien word for 'peach' in (710) to be an attempt at rendering [lᵈ] in the donor language: similarly, for 腸 *lraŋ (> lᵈraŋ) > *drjang* > cháng 'intestines', Proto-Mienic has *ɢljaŋ A 'intestines'.

Reflexes of preinitial *C plus voiced resonants are summarized in Table 4.66.

4.4.5.5 Preinitial *C plus voiceless resonants: type *C.m̥(ˤ)-

We know of no examples of voiceless resonants with unidentified preinitials.

4.5 Onsets with loosely attached preinitials

In words with Old Chinese stops as main syllable initials, softening in Proto-Mĭn normally indicates a loosely attached presyllable. However, as shown in section 4.2.1.1, not all Northern Mĭn words with softened initials belong to the inherited layer: some (among those that have voiced initials in Middle Chinese) appear to be loans from voicing-preserving dialects; care should be taken to exclude them, or we risk reconstructing nonexistent preinitials for Old Chinese. When comparisons are available, we expect Vietnamese to show spirantization corresponding to Northern Mĭn softening, although examples are few. A specific indication of a loosely attached nasal preinitial is when Hmong-Mien shows prenasalization without the initial being voiced in Middle Chinese.

In words with nasals as main syllable initials, a loosely attached preinitial is reconstructed when words with Middle Chinese nasals show a preinitial consonant in a contact language, and Southern Mĭn denasalizes the nasal. (In a tight cluster, we would expect the nasal to remain and to propagate nasality rightward; see section 4.2.1.2.)

4.5.1 ONSETS WITH PREINITIAL *Nə

In our earlier work (Shā Jiā'ěr [Sagart] and Bái Yīpíng [Baxter] 2010), we did not reconstruct a loosely attached counterpart of our *N- preinitial; we assumed the stative intransitive prefix *N- always occurred tightly attached to the following consonant. But we now reconstruct preinitial *Nə- besides *N- to account for words having a prenasalized initial in Hmong-Mien and a softened initial, voiced or voiceless, in Proto-Mǐn:

(716) 沸 *Nə.p[u][t]-s > *pj+jH* > fèi 'boil (v.i.)', pMǐn *-p-, pHM *mpu̯æiH 'boil (v.i.)'

(717) 早 *Nə.tsˁuʔ > *tsawX* > zǎo 'early'; pMǐn *-ts-, pHM *ntsi̯ouX 'early'

(718) 滑 *Nə-gˁrut > *hweat* > huá 'slippery'; pMǐn *-g-, pHM *ɴgu̯at 'smooth/slippery'

This evidence points to a nasal prefix occurring with stative and intransitive verbs, which does not voice a voiceless initial in Middle Chinese, but does produce softening in Mǐn: this matches the description of a loosely attached form of *N. We write this as *Nə in order to underline the parallel with other preinitials.[98]

4.5.1.1 Preinitial *Nə plus voiceless unaspirated obstruents: type *Nə.p(ˁ)-

Two examples of these onsets—(716) and (717)—were cited in the preceding section; see Table 4.67.

4.5.1.2 Preinitial *Nə plus voiceless aspirated obstruents: type *Nə.pʰ(ˁ)-

Our *Nə- helps account for cases where Middle Chinese has a voiceless aspirated initial and Hmong-Mien has intransitive prenasalization:

(719) 開 *Nə-[k]ʰˁəj > *khoj* > kāi 'to open (v.i)'; Mien /goi 1/ < pHM *ŋkh- 'to open, as a flower, the heart'

TABLE 4.67 Correspondences for Old Chinese voiceless stops with preinitial *Nə

OC	MC	pMǐn	VN	pHM
*Nə.p(ˁ)-	*p-*	*-p	—	*mp-
*Nə.t(ˁ)-	—	—	—	—
*Nə.ts(ˁ)-	*ts-*	*-ts	—	*nts-
*Nə.s(ˁ)-	—	—	—	—
*Nə.k(ˁ)-	—	—	—	—
*Nə.q(ˁ)-	—	—	—	—
*Nə.ʔ(ˁ)-	—	—	—	—

TABLE 4.68 Attested correspondences for Old Chinese aspirated stops with preinitial *Nə

OC	MC	pMĭn	VN	pHM
*Nə.pʰ(ˤ)-	—	—	—	—
*Nə.tʰ(ˤ)-	—	—	—	—
*Nə.tsʰ(ˤ)-	—	—	—	—
*Nə.kʰ(ˤ)-	*kh-*	—	—	*ŋk(h)-
*Nə.qʰ(ˤ)-	—	—	—	—
*Nə.qʰ(ˤ)r-	*trh-*	—	—	*ntsh-

(Our earlier reconstruction for this word was 開 *N-kʰˤəj; see the discussion in section 4.4.1.2.) Compare the transitive verb

(720) 開 *[k]ʰˤəj > *khoj* > kāi 'to open (v.t.)'; Mien /khoi 1/ < pHM *kh- 'to open (v.t.)'

In such examples we do not expect Mĭn to be of help, since aspirated stops are not affected by softening in Mĭn. Under our new interpretation it is no longer necessary to assume that *N does not voice an aspirated stop (as assumed in Sagart 2003 and (Shā Jiā'ĕr [Sagart] and Bái Yīpíng [Baxter] 2010). We can now use *N- to explain transitivity alternations between voiced and aspirated obstruent initials, or between a nasal and a voiceless fricative: for instance, a single root *kʰok can account for both 曲 qū < *khjowk* < *kʰ(r)ok 'to bend, bent' and 局 jú < *gjowk* < *N-kʰ(r)ok 'bent, curved', and a single root *qʰˤak can explain both 嚇 hè < *xaek* < *qʰˤ<r>ak 'to frighten' and 愕 è < *ngak* < *N-qʰˤak 'scared'. Such word-family alternations were unexplained under the hypothesis that *N- does not voice a following aspirate. Additional examples:

(721) 缺 *Nə-[k]ʷʰˤet > *khwet* > quē 'break; defective'; pHM *NKʷet 'have a gap'

(722) 渴 *Nə-[k]ʰˤat > *khat* > kě 'thirsty'; pHM *NKhat 'thirsty'

(723) 坼 *Nə-qʰˤ<r>ak > *trhaek* > chè 'split (v.i.)'; Mien /dzɛʔ 7/ < *ntsh- 'cracked, as earth' (Downer 1973); cf. the unprefixed form
拆 *qʰˤ<r>ak > *trhaek* > chāi 'take apart, dismantle', Mien /tshɛʔ 7/ < *tsh-

Attested correspondences of preinitial *Nə preceding aspirated onsets are summarized in Table 4.68.

4.5.1.3 Preinitial *Nə plus voiced obstruents: type *Nə.b(ˤ)-

There are few examples of words with onsets of the type *Nə.b(ˤ)-. A likely example is

(724) 滑 *Nə-gˤrut > *hweat* > huá 'slippery', pMĭn *-g-; pHM *ɴɢu̱at 'smooth/slippery'

See Table 4.69.

TABLE 4.69 Attested correspondences for Old Chinese voiced stops with preinitial *Nə

OC	MC	pMĭn	VN	pHM
*Nə.b(ˤ)-	—	—	—	—
*Nə.d(ˤ)-	—	—	—	—
*Nə.dz(ˤ)-	—	—	—	—
*Nə.gˤ-	*h*-	*-g	—	*NG-
*Nə.g-	—	—	—	—
*Nə.ɢ(ˤ)-	—	—	—	—

TABLE 4.70 Attested correspondences for Old Chinese voiced resonants with preinitial *Nə

OC	MC	pMĭn	VN	pHM
*Nə.m(ˤ)-	—	—	—	—
*Nə.n(ˤ)-	—	—	—	—
*Nə.ŋ(ˤ)-	—	—	—	—
*Nə.l(ˤ)-	—	—	—	—
*Nə.r(ˤ)-	*l*-	—	—	*ŋgr- (?)

4.5.1.4 Preinitial *Nə plus voiced resonants: type *Nə.r(ˤ)-

We may have an example of *Nə.rˤ- in (725):

(725) 漏 *[Nə-r]ˤok-s > *luwH* > lòu ‘leak (v.)’, pHmong *ŋgro C ‘leak’

where Proto-Hmongic *ŋgro C ‘leak’ provides evidence for a nasal preinitial while suggesting a velar articulation of *N in *Nə; the pHmong *-g- can be considered a parasitic segment arising between *ŋ and *r. The fact that the preinitial is lost in Middle Chinese and that the evolution is not to MC *y*- implies that the preinitial was loosely attached (from *N.rˤ- we would expect MC *y*-). The fact that the verb is intransitive and nonvolitional also argues for *Nə against *mə. See Table 4.70.

4.5.1.5 Preinitial *Nə plus voiceless resonants: type *Nə.r̥(ˤ)-

We know of no examples of Old Chinese voiceless resonants with preinitial *Nə.

4.5.2 ONSETS WITH PREINITIAL *mə

4.5.2.1 Preinitial *mə plus voiceless unaspirated obstruents: type *mə.p(ˤ)-

These onsets are plain voiceless stops in Middle Chinese, prenasalized in Hmong-Mien, and voiceless softened in Proto-Mĭn. Examples:

(726) 擔 *mə-tˤam > *tam* > dān ‘carry on the shoulder’, pMĭn *-t-; pHM *ntam ‘carry on the shoulder’

TABLE 4.71 Attested correspondences for Old Chinese voiceless stops with preinitial *mə

OC	MC	pMĭn	VN	pHM
*mə.p(ˤ)-	*p-*	—	—	*mp-
*mə.tˤ-	*t-*	*-t	—	*nt
*mə.t-	—	—	—	—
*mə.ts(ˤ)-	*ts-*	—	—	*nts-
*mə.s(ˤ)-	—	—	—	—
*mə.k(ˤ)-	*k-*	*-k	—	*ŋkj-
*mə.qr-	-	—	—	*ŋkl-
*mə.ʔ-	—	—	—	—

(727) 菇 *mə.kˤa > *ku* > gū 'mushroom', pMĭn *-k-; pHM *ŋkjæu 'mushroom'

(728) 繰 *mə-tsˤawʔ > *tsawX* > zǎo 'bleach; wash'; pHM *ntsæwX 'wash'

(729) 粉 *mə.pənʔ > *pjunX* > fěn 'flour'; pHM *mpwəːn B 'flour' (Wáng and Máo 1995:89, 664)

(730) 蔭 *mə-q<r>[u]m-s > *'imH* > yìn 'shade'; pMien (L-Thongkum 1993) *ʔglom C < *ŋkl- 'shade'

(731) 散 *mə-sˤa[n]ʔ-s > *sanH* > sàn 'scatter (v.t.)'; cf. pMien *dzhan C < pHM *ntsh- 'to disperse', VN *ran* [zɑn A1] 'to disperse, propagate'

In (731), we assume that the affricate in the Proto-Hmong-Mien form reflects an epenthetic [t]: *mə-sˤ- > *ms- > *ns- > *ntsh-.[99] Note also the high-register tone in Vietnamese. (The correspondence of Vietnamese tone A to Middle Chinese qùshēng is found in a number of items.) Vietnamese is known to soften not only stops, but also *s-, after a Proto-Vietic preinitial (Ferlus 1982); in indigenous words the softened counterpart to *s-* is orthographic *r-* [z-] (as discussed in section 4.4.5.1). Presumably, the nasal preinitial indicated by Mienic is the preinitial consonant indicated by Vietnamese.

Attested correspondences of preinitial *mə plus voiceless unaspirated obstruents are summarized in Table 4.71.

4.5.2.2 Preinitial *mə plus voiceless aspirated obstruents: type *mə.pʰ(ˤ)-

Preinitial *mə plus aspirated obstruents is reconstructed only for forms that are voiceless aspirated in Middle Chinese, prenasalized in Hmong-Mien, and not intransitive (which would lead us to reconstruct preinitial *Nə instead); Proto-Mĭn does not soften Old Chinese aspirates. Examples:

(732) 拍 *mə-pʰˤrak > *phaek* > pāi 'to strike'; pHM *mpjɛk 'clap' (Wáng and Máo 1995)

TABLE 4.72 Attested correspondences for Old Chinese aspirated stops with preinitial *mə

OC	MC	pMĭn	VN	pHM
*mə.pʰ(ˤ)-	*ph-*	—	—	*mp-
*mə.tʰˤ-	—	—	—	—
*mə.tʰ-	*tsyh-*	—	—	*nthj-
*mə.tsʰ(ˤ)-	—	—	—	—
*mə.kʰ(ˤ)-	—	—	—	—
*mə.qʰ(ˤ)-	—	—	—	—

(733) 唱 *mə-tʰaŋ-s > *tsyhangH* > chàng ‘to lead (in singing)’; pHM *ŋʧʃwjɒəːŋ A ‘to sing’ (Wáng and Máo 1995:252, 563, attested in Mienic only)

(734) 稱 *mə-tʰəŋ-s > *tsyhingH* > chèng ‘steelyard’; pHM *nthjɥəŋH ‘balance’

In the last example, the Kra-Dai language Máonán 毛難 confirms Hmong-Mien prenasalization: /ⁿdaŋ 5/ ‘to weigh’ (Liáng Mĭn 1980:102). Note the failure to aspirate the initial in two out of three Hmong-Mien examples (see also example 748 in 4.5.2.5): perhaps this reflects a phonotactic constraint on aspiration in early Hmong-Mien. The attested correspondences are summarized in Table 4.72.

4.5.2.3 Preinitial *mə plus voiced obstruents: type *mə.b(ˤ)-

Onsets with preinitial *mə- plus voiced obstruents have voiced obstruents in Middle Chinese, softened voiced initials in Norman’s Proto-Mĭn, voiced prenasalized initials in Hmong-Mien, and low-register spirantized initials in Vietnamese. Examples:

(735) 婦 *mə.bəʔ > *bjuwX* > fù ‘woman, wife’, pMĭn *-b-; VN *vợ* [vʌ B2] ‘wife’; pMien *mbu̱ɛŋ B

(736) 步 *mə-bˤa-s > *buH* > bù ‘step’, pMĭn *-b-; VN *vã* [vɑ C2] ‘go on foot, walk’; Yáo /bia 6/ < *mb- ‘step, stride’

(737) 紵 *mə-draʔ > *drjoX* > zhù ‘ramie; flax’, pMĭn *-d-; pHM *nduH ‘ramie, flax’

(738) 字 *mə.dzə(ʔ)-s > *dziH* > zì ‘breed, love (v.); character’, pMĭn *-dz-; *pMien *ndzaŋ C ‘word, character’

(739) 猴 *mə-gˤ(r)o > *huw* > hóu ‘monkey’, pMĭn *-g-

These correspondences are summarized in Table 4.73.

4.5.2.4 Preinitial *mə plus voiced resonants: type *mə.r(ˤ)-

Preceding nasal initials, the Old Chinese *mə preinitial is invisible in Middle Chinese, Proto-Mĭn, Hmong-Mien, and Vietnamese; yet a few examples can be

TABLE 4.73 Attested correspondences for Old Chinese voiced obstruents with preinitial *mə

OC	MC	pMĭn	VN	pHM
*mə.b(ˤ)-	*b-*	*-b	*v-* [v] L	*mb-
*mə.dˤ-	—	—	—	—
*mə.d(ˤ)r-	*dr-*	*-d	—	*nd-
*mə.dz(ˤ)-	*dz-*	*-dz	—	*ndz-
*mə.gˤ-	*h-*	*-g	—	—
*mə.g-	—	—	—	—
*mə.ɢ(ˤ)-	—	—	—	—

found in classical texts of a word 無 *ma > *mju* > wú being used not as a negation but as a verbal prefix. Thus in Ode 235.5 the phrase "無念爾祖 (wú niàn ěr zǔ)," which at first sight appears to mean 'do not remember your ancestors!', is explicitly said to mean 'remember your ancestors!' in the Máo commentary[100] and 'do not forget your ancestors!' in *Ěr yǎ* 《爾雅》3.81.[101] We take this 無 *ma as representing the loosely attached volitional prefix we reconstruct as *mə. This prefix attaches to the verb 念 *nˤim-s > *nemH* > niàn 'think of' giving it volitional semantics, thereby licensing its use in an imperative.

An example of *mə.rˤ- is

(740) 來 *mə.rˤək > *mə. rˤə > *loj* > lái 'come';[102] it is the phonetic element in 麥 *m-rˤək (dial.) > *mrˤək > *meak* > mài 'wheat'

When words with MC *l-* have initial *-d- in Proto-Mĭn, and there is evidence for a labial nasal in the preinitial, either from the character's xiéshēng series or from contact languages, we reconstruct *mə.r-. Likewise, when words with MC *zy-* have *-dž- in Proto-Mĭn, and there is evidence for a labial nasal in the preinitial, we reconstruct *mə.l-. Evidence for a labial preinitial comes from the phonetic series in the case of the following MC *l-* words, which show *-d- in Proto-Mĭn (Luó Jiéruì [Norman] 2005:4):

(741) 鯉 *mə-rəʔ > *liX* > lǐ 'carp (n.)', pMĭn *-d-

(742) 蠣 *mə-rat-s > *ljejH* > lì 'stinging insect', pMĭn *-d-

(743) 埋 *m.rˤə > *meaj* > mái 'bury': pMĭn *-d-, reflecting a variant 埋 *mə.rˤə

(744) 鹿 *mə-rˤok > *luwk* > lù 'deer', pMĭn *-d-; cf. Bùyāng 布央 /ma 0 lok 8/ (Lǐ Jĭnfāng 1999:199)

In (744), Bùyāng 布央 is a Kra-Dai language spoken in Yúnnán and Guǎngxī provinces.

In words with lateral initials, MC *zy-* corresponding to Proto-Mĭn *-dž- unambiguously indicates nonpharyngealized *l with a loosely attached preinitial. Comparative evidence specifically supports *mə in the following examples:

TABLE 4.74 Attested correspondences for Old Chinese voiced resonants with preinitial *mə

OC	MC	pMĭn	VN	pHM
*mə.nˤ-	*n-*	—	—	—
*mə.n-	—	—	—	—
*mə.ŋ(ˤ)-	—	—	—	—
*mə.r(ˤ)-	*l-*	*-d	—	—
*mə.l-	*zy-*	*-dž	—	—

TABLE 4.75 Attested correspondences for preinitial *mə plus Old Chinese voiceless resonants

OC	MC	pMĭn	VN	pHM
*mə.m̥(ˤ)-	—	—	—	—
*mə.n̥(ˤ)-	—	—	—	—
*mə.ŋ̊(ˤ)-	—	—	—	—
*mə.r̥(ˤ)-	—	—	—	—
*mə.l̥ˤ-	*th-*	—	—	*nt-
*mə.l̥-	—	—	—	—

(745) 舌 *mə.lat > *zyet* > shé ‘tongue’, pMĭn *-dž-; pHM *mblet ‘tongue’

(746) 食 *mə-ləkˀ > *zyik* > shí ‘eat’, pMĭn *-dž-; pHmong *mbljæ C ‘to have food with rice’

(747) 實 *mə.li[t] > *zyit* > shí ‘fruit; full’, pMĭn *-dž-; Proto-Tai *m.lec D ‘grain’ (Pittayaporn 2009)

We suppose that after palatalizing to [ʎ], Old Chinese nonpharyngealized *l- became a fricative in intervocalic position, giving MC *zy-* (plausibly [ʑ]). See Table 4.74.

4.5.2.5 Preinitial *mə plus voiceless resonants: type *mə.l̥(ˤ)-

A probable example of a voiceless resonant preceded by *mə is

(748) 脱 *mə-l̥ˤot > *thwat* > tuō ‘peel off”; cf. pMien *ʔdut (< *nt-) ‘to peel off/escape’

In (748), 脱 *mə-l̥ˤot was evidently borrowed after the change of *l̥ˤ- > *tʰˤ- in Chinese, but while the nasal preinitial was still present. Unaspirated treatment by Hmong-Mien of Chinese aspirated stops after preinitial *mə was noted in section 4.5.2.2. See Table 4.75.

4.5.3 ONSETS WITH PREINITIAL *sə

Onsets with preinitial *sə- are inferred when a Proto-Mĭn softened consonant matches a Middle Chinese initial that is indicative of the phonetic effect of *s.

4.5.3.1 Preinitial *sə plus voiceless obstruents: types *sə.p(ˤ)- and *sə.pʰ(ˤ)-

There are no certain examples of Old Chinese voiceless stops, aspirated or not, with preinitial *sə. This is fully expected in the case of aspirated stops, since, as already mentioned, Mǐn does not soften aspirates. The gap is more unexpected with plain unaspirated stops: in the case of alveolars, one would expect to find, for example, Proto-Mǐn *-t- or *-tš- corresponding to *sə.t(ˤ)-. It is possible, as suggested above (4.4.3.1), that evolution to MC *ts-* takes place with tightly attached *s regardless of syllable type (in which case the predominance of type-A words evolving to MC *ts-* would be accidental), while evolution to Middle Chinese fricatives *sy-* (with initial *t- and, before front vowels, *k-) and *s-* (with initial *ts-) takes place with loosely attached *sə, and that similar developments took place at the other places of articulation. This would require supposing that *sə fell in Mǐn earlier than the other loosely attached prefixes, at any rate before the Northern Mǐn dialects developed softened reflexes. This question requires more study. For the time being we take the developments *s.t > *sy-* and *s.tˤ > *ts-* to be regular, and the absence of evidence for *sə.t- to be accidental, and similarly at the other places of articulation.

4.5.3.2 Preinitial *sə plus voiced obstruents: type *sə.b(ˤ)-

We have an example of *sə.d- in

(749) 脣 *sə.dur > *zywin* > chún ‘lip’, pMǐn *-dž- (?): (Fúzhōu /suŋ 2/, Jiàn’ōu /œyŋ 3/);[103] the phonetic is
辰 *[d]ər > *dzyin* > chén ‘fifth earthly branch’

The character 脣 chún belongs to a xiéshēng series with alveolar stop initials. Old Chinese singleton *d- should evolve to MC *dzy-*, so the development here to *zy-* shows the influence of a preinitial. Similarly, Proto-Mǐn initial *-dž- is the softened counterpart of *dž-, which reflects Old Chinese nonpharyngealized *d-: by our assumptions it makes sense that the Old Chinese onset had initial *d- preceded by a loosely attached preinitial. The effect of the preinitial in Middle Chinese was to turn an affricate into a fricative. We saw in section 4.4.3 that this is precisely the effect of tightly attached *s before nonpharyngealized obstruents like *t-, *ts-, *dz-,*k- (with front vowels), and *g- (with front vowels): thus we saw (in section 4.4.3.3) that the sequence *s.g- > *zg- > *zdʑ- > *zy-* explains the Middle Chinese fricative in 示 *s-gijʔ-s > *zyijH* > shì ‘show (v.)’ (567). With OC *s.d-, however, we claimed that after voicing assimilation of the preinitial on the initial, the resulting cluster [zd] was simplified to *z* before the alveolar stop could be changed to a palatal affricate, thus preempting any fricativizing effects of *s on the following obstruent (section 4.4.3.3). We assume that after these changes affecting OC *s.d- took place, *sə.d- simplified to *s.d-, filling the gap left by original OC *s.d-; the new *s.d- underwent voicing to *zd, after which palatalization occurred, giving *zdʑ-, and finally fricativization to *zy-*.

An example of *sə.ɢ- is

(750) 松 *sə.ɢoŋ > *zjowng* > sōng ‘pine (n.)’, pMǐn *-dz-; the phonetic is
公 *C.qˤoŋ > *kuwng* > gōng ‘impartial, just; public’[104]

TABLE 4.76 Attested correspondences for Old Chinese voiced stops with preinitial *sə

OC	MC	pMĭn	VN	pHM
*sə.b(ˤ)-	—	—	—	—
*sə.dˤ-	—	—	—	—
*sə.d-	*zy-*	*-dž	—	—
*sə.dz(ˤ)-	—	—	—	—
*sə.g(ˤ)-	—	—	—	—
*sə.ɢˤ-	—	—	—	—
*sə.ɢ-	*z-*	*-dz	—	*ɢ-

Compare with the evolution of Old Chinese *s-ɢʷ- to Proto-Mĭn *dz- in 旋 (4.4.3.3).

Sagart and Baxter (2009) showed 公 to be a uvular phonetic, as indicated by, for example, 瓮 wèng < *'uwngH* < *qʷˤoŋ-s 'earthen jar' and 頌 róng < *yowng* < *[ɢ](r)oŋ 'appearance' (now written 容). Here again we assume that after original *s.ɢ- shifted to *zɢ-, its loosely attached counterpart *sə.ɢ- filled the gap, shifting to *s.ɢ-, undergoing regressive voicing assimilation to *zɢ-, and ultimately merging with original *s-ɢ- as MC *z-*. Another example is

(751) 邪 *sə.ɢA > *zjae* > xié 'awry', pMĭn *-dz- (Norman 1996:34); pHmong (Wáng Fŭshì 1979) *ɢei A 邪, 歪 'askew, slanted'

The relevant correspondences are summarized in Table 4.76.

4.5.3.3 Preinitial *sə plus voiced resonants: type *sə.l(ˤ)-

As discussed above (4.5.2.4), we expect nonpharyngealized *l- preceded by a loosely attached preinitial to become the voiced palatal fricative *zy-* in Middle Chinese; in the specific case of preinitial *sə, we assume that Old Chinese *sə.l- followed the expected evolution to [səʑ-], after which the preinitial lost its vowel, becoming tightly attached *sʑ-, evolving to *zʑ- and ultimately to *z-* in Middle Chinese. Example:

(752) 謝 *sə-lAk-s > *zjaeH* > xiè 'decline, renounce', pMĭn *-dz- (Jiànyáng /lia 6/); cf. VN *giã* [zɑ C2] 'take leave'

We assume that Proto-Mĭn branched off at a time when the preinitial was still loosely attached, so that the result was the softened initial *-dz-. The word was loaned to Vietnamese before the cluster simplified, the preinitial causing spirantization: *giã* [zɑ C2] 'take leave'. Even in the absence of comparative evidence we take MC *z-* in words with Old Chinese lateral initials as indicating *sə.l-. Examples:

(753) 隨 *sə.loj > *zjwe* > suí 'follow'; with the same phonetic, cf. 墮 *lˤojʔ > *dwaX* > duò 'to fall'

TABLE 4.77 Attested correspondences for preinitial *sə preceding voiced resonants

OC	MC	pMĭn	VN	pHM
*sə.m(ˁ)-	—	—	—	—
*sə.n(ˁ)-	—	—	—	—
*sə.ŋ(ˁ)-	—	—	—	—
*sə.lˁ -	—	—	—	—
*sə.l-	*z-*	*-dz	*gi-* [z]	—
*sə.r(ˁ)-	—	—	—	—

(754) 徐 *sə.la > *zjo* > xú ‘walk slowly’; the phonetic is
余 *la > *yo* > yú ‘1sg., prob. a polite form’

(755) 馴 *sə.lu[n] > *zwin* > xún ‘docile; gradually’; with the same phonetic, cf.
順 *Cə.lu[n]-s > *zywinH* > shùn ‘follow; obey’
訓 *l̥u[n]-s (dial. >) *xun-s > *xjunH* > xùn ‘instruct’

(756) 似 *sə.ləʔ > *ziX* > sì ‘resemble’; the phonetic is
以 *ləʔ > *yiX* > yǐ ‘take, use’

We know of no examples of preinitial *sə with other resonant initials: apparently this preinitial is only visible before *l. Likewise, we know of no examples of *sə preceding voiceless resonants. The correspondences are summarized in Table 4.77.

4.5.4 ONSETS WITH PREINITIAL *pə, *tə, *kə

Reconstructing the loosely attached onsets *pə, *tə, and *kə requires two independent elements: evidence for a specific stop in the preinitial, from a Vietic language, Lakkia, or a Chinese dialect; and evidence that the preinitial was loosely attached. In words with obstruent initials, Northern Mĭn softening provides the evidence for a loosely attached onset—except that Old Chinese aspirated stops are never softened in Mĭn. (In words with resonant initials, a Proto-Mĭn plain resonant *m-, *n-, *l-, etc. can reflect a loosely attached preinitial stop, but not a tightly attached one, which would produce pMĭn *mh-, *nh-, *lh-, etc.) Few words satisfy this double requirement.

4.5.4.1 Preinitial *pə, *tə, *kə plus obstruents: type *kə.d(ˁ)-

The word for ‘cockroach’, a clear example with *kə.dz- corresponding to pMĭn *-dz-, and with preinitial *kə supported by Southern Mĭn and Cantonese, was discussed in section 4.2.1.1; we repeat the example here:

(757) Proto-Mĭn *-dzɑt D ‘cockroach’, Northern Mĭn: Jiàn’ōu /tsuɛ 4/, Zhènghé /tsuai 5/, Chóng’ān /luai 8/; also Shàowǔ /tsʰai 6/ (Norman 1982:548), Hépíng /tʰai 4/ (Norman 1995:122), Zhènqián /tsua 5/,

TABLE 4.78 Attested correspondences for Old Chinese voiced obstruents with preinitial *kə

OC	MC	PM	VN	pHM
*kə.b(ˢ)-	—	—	—	—
*kə.dˢ-	*d-*	*-d	*d-* [z] L	—
*kə.d-	—	—	—	—
*kə.dz(ˢ)-	—	*-dz	—	—
*kə.g(ˢ)-	—	—	—	—
*kə.ɢ(ˢ)-	—	—	—	—

Jiànyáng /loi 8/, Wǔfū /luai 8/ (Norman 1996:37), Liándūncūn /lue 8/ (Norman 2002:357).

Cf. Fú'ān /sat 8/ ~ /ka 1 sat 8/, Fúzhōu /ka 6 sak 8/, Xiàmén /ka 1 tsuaʔ 8/; Cantonese /ka-tsat 8, kat-tsat 8/.

Vietic provides us with a second example: the word 脰 dòu < *duwH* 'neck', which has softened *-d- in Proto-Mǐn, has a velar preinitial in Rục: /kadɔk/ 'nape' (Nguyễn Phú Phong et al. 1988). The corresponding Vietnamese word is *dọc* [zɔk D2] 'fleshy leaf-stalk of certain plants; back of a knife; pipe; stem (of a steelyard)', with spirantized *d-* [z]:

(758) 脰 *kə.dˢok-s > *duwH* > dòu 'neck', pMǐn *-d-; Rục /kadɔk/ 'nape of the neck', VN *dọc* [zɔk D2] 'fleshy leaf-stalk of certain plants [etc.]', Proto-Vietic *k-dɔ:k 'nape of the neck'

These correspondences are summarized in Table 4.78.

4.5.4.2 Preinitial *pə, *tə, *kə plus voiced resonants: type *kə.l(ˢ)-

The word 道 dào < *dawX* 'way' belongs to the phonetic series of 首 *l̥uʔ > *syuwX* > shǒu 'head' and must therefore have had a lateral initial in Old Chinese. While recognizing that the semantics are not certain, Norman (1996:36) speculates that 道 evolved to the meaning 'far' in Mǐn (e.g., Shíbēi /dɔ 5/ 'far'): that word has a softened initial in Proto-Mǐn: *-d-. In the present framework, Norman's conjecture implies a loosely attached preinitial before *lˢ. Proto-Hmong-Mien *kləuX 'road/way' is consistent with this. We reconstruct:

(759) 道 *[kə.l]ˢuʔ > *dawX* > dào 'way', pMǐn *-dɑu B 'far'; pHM *kləuX 'road/way'

with square brackets in recognition of the uncertain nature of the Mǐn evidence. If this evidence should turn out to be spurious, the Hmong-Mien evidence by itself would still point to either *kə.lˢuʔ or *k.lˢuʔ.

The word 溺 niào < *newH* 'urine' has plain *n- in Proto-Mǐn. The Jīntián 金田 and Liùlā 六拉 dialects of Lakkia give /kĩu B1/ (L-Thongkum 1992), with nasality on the first vowel continuing the Old Chinese nasal initial, and showing a preinitial with *k. The Old Chinese onset cannot have been *k.n-, since that should result in Proto-Mǐn *nh-. We reconstruct:

TABLE 4.79 Attested correspondences for Old Chinese voiced resonants with preinitial *kə

OC	MC	PM	VN	pHM
*kə.m(ˤ)-	—	—	—	—
*kə.nˤ-	*n-*	*n	—	—
*kə.n-	—	—	—	—
*kə.ŋ(ˤ)-	—	—	—	—
*kə.r(ˤ)-	*l-*	*l	—	—
*kə.lˤ-	*d-*	*-d	—	*kl-
*kə.l-	—	—	—	—

(760) 溺 *kə.nˤewk-s > *newH* > niào ‘urine’, pMǐn *n-; Lakkia /kĭu B1/ (Jīntián and Liùlā dialects: L-Thongkum 1992:66)

The word 落 luò < *lak* ‘fall (v.)’ has *l- in Proto-Mǐn (Jiànyáng /lɔ 8/, Shàowǔ /lo 6/), but Southern Mǐn shows a form with a preceding syllable /ka/: for example, Xiàmén /ka-lauʔ 8/ ‘to fall, as things’ (Douglas 1899:297). This presyllable is matched in the northern Chinese periphery by preinitial /kʌʔ-/ in the dialect of Píngyáo 平遙 (Shānxī), currently assigned to the Jìn 晉 dialect group: /kʌʔ-lʌʔ/ ‘to fall in small quantities’ (Hóu Jīngyī 1989:200). This velar preinitial moreover makes good xiéshēng sense, since other words in the same phonetic series, beginning with the head-word, have a velar stop in their onset. We reconstruct:

(761) 落 *kə.rˤak > *lak* > luò ‘fall (v.)’, pMǐn *l-, Xiàmén /ka-lauʔ 8/ ‘to fall, as things’ (Douglas 1899:297); Píngyáo /kʌʔ-lʌʔ/ ‘to fall in small quantities, as earth, ashes’ (Hóu Jīngyī 1989:200); see Sagart (1999c:99). With the same phonetic:
格, 佫*kˤrak > *kaek* > gé ‘go to’ (The earliest use of the character “各” is to represent this word; see Chén Chūshēng 1987:123.) Also probably related:
路 *Cə.rˤak-s > *luH* > lù ‘road’, pMǐn *-d- (see (801) in section 4.5.5.3)

The attested correspondences for preinitial *kə followed by voiced resonants are summarized in Table 4.79; we have no clear examples with *pə or *tə in this position.

4.5.4.3 Preinitial *pə, *tə, *kə plus voiceless resonants: type *kə.l̥(ˤ)-

We may have an instance of a voiceless resonant preceded by *kə in the word 攝 shè < *syep* ‘catch, grasp’:

(762) 攝 *kə.n̥ep > *syep* > shè ‘catch, grasp’; cf. Proto-Tai *ʰni:p ‘to pinch’ (Pittayaporn 2009); the phonetic (also used to write {攝}) is
聶 *nrep > *nrjep* > niè ‘promise; whisper in one’s ear’

We reconstruct *n̥- in 攝 shè < *syep* < *kə.n̥ep because of the xiéshēng connections with initial nasal, as indicated by the phonetic series (cf. 躡 *nrep > *nrjep* > niè ‘trample’ etc.)

but Lakkia /khjɛ̃:p 7/ shows a velar stop preinitial before the nasal, regularly reduced to nasality on the vowel. Thus we reconstruct:

(763) 攝 *kə.n̥ep > *syep* > shè ‘catch, grasp’

4.5.5 ONSETS WITH LOOSELY ATTACHED UNIDENTIFIED PREINITIAL *Cə

In many cases, evidence for a loosely attached preinitial is not accompanied by specific evidence on the nature of the preinitial consonant. In such cases we reconstruct preinitial *Cə.

4.5.5.1 Preinitial *Cə plus voiceless unaspirated obstruents: type *Cə.p(ˢ)-

Onsets of the form *Cə.p(ˢ)- have plain voiceless stops or affricates in Middle Chinese and softened voiceless stops or affricates in Proto-Mĭn. If a Vietnamese form exists, we expect it to show a spirantized initial with a high tone. Hmong-Mien initials should be plain voiceless. Examples (Mĭn data are from Norman 1971, 1996; Akitani 2004):

(764) 搬 *Cə.pˢan > *pan* > bān ‘move’; pMĭn *-p- (Jiànyáng /voiŋ 9/)

(765) 反 *Cə.panʔ > *pjonX* > fǎn ‘reverse (v.)’; pMĭn *-p- (Jiànyáng /vaiŋ 3/)

(766) 發 *Cə.pat > *pjot* > fā ‘fly forth, send forth’; pMĭn *-p- (Shíbēi /buai 3/)

(767) 飛 *Cə.pə[r] > *pj+j* > fēi ‘fly (v.)’; pMĭn *-p- (Jiànyáng /ye 9/)

(768) 崩 *Cə.pˢəŋ > *pong* > bēng ‘collapse (v., of a mountain)’; pMĭn *-p- (Jiànyáng /vaiŋ 9/); pHmong *pɯŋ A ‘to fall’

(769) 戴 *Cə.tˢək-s > *tojH* > dài ‘carry on the head’; pMĭn *-t- (Jiànyáng /lue 9/)

(770) 單 *Cə.tˢar > *tan* > dān ‘single, simple’; pMĭn *-t- (Jiànyáng /lueŋ 9/)

(771) 斲 *Cə.tˢrok > *traewk* > zhuó ‘chop, cleave’; pMĭn *-t- (Jiànyáng /lo 3/)

(772) 簪 *Cə.tsˢ[ə]m > *tsom* > zān ‘hairpin’; pMĭn *-ts- (Jiànyáng /laŋ 9/)

(773) 薦 *Cə.tsˢə[r]-s > *tsenH* > jiàn ‘grass, fodder’; pMĭn *-ts- (Jiànyáng /luŋ 9/) ‘straw mattress’[105]

(774) 醉 *Cə.tsu[t]-s > *tswijH* > zuì ‘drunk (adj.)’; pMĭn *-ts- (Jiànyáng /ly 9/)

(775) 膏 *Cə.kˢaw > *kaw* > gāo ‘lard (n.)’; pMĭn *-k- (Jiànyáng /au 9/)

(776) 狗 *Cə.kˢroʔ > *kuwX* > gǒu ‘dog’; pMĭn *-k- (Jiàn’ōu /e 3/); pHM *qluwX ‘dog’

(777) 蕨 *Cə.kot > *kjwot* > jué ‘bracken (a kind of edible fern)’; pMĭn *-k- (Jiànyáng /ue 9/); pMien *kʷjət D ‘fern’

(778) 牯 *Cə.k^{w}^{ʕ}aʔ > *kuX* > gǔ ‘male (bovine)’; pMĭn *-k- (Jiànyáng /o 3/)

(779) 飢 *Cə.k<r>ə[j] > *kij* > jī ‘hungry’; pMĭn *-k- (Jiànyáng /ue 9/)

(780) 假 *Cə.k^{ʕ}raʔ > *kaeX* > jiǎ ‘borrow; false’; pMĭn *-k- (Jiànyáng /a 3/); VN *gá* [ɣɑ B1] (in *gá tiếng* ‘use someone else’s name’)

In 補 bǔ < *puX* ‘to patch’, we have conflicting evidence on the nature of the pre-initial consonant: Proto-Mĭn softened *-p- (Shíbēi /bio 3/) indicates a loosely attached preinitial; Proto-Hmong-Mien has *mpjaX ‘repair/mend’, implying *mə-p^{ʕ}aʔ; yet Rục /təpa: 3/ ‘to patch’ points to *tə-p^{ʕ}aʔ or *sə-p^{ʕ}aʔ: either we are dealing with two verbs based on the same root, or there was a single form with complex onset *tə-m-p^{ʕ}aʔ or *sə-m-p^{ʕ}aʔ. We are unable to solve the problem on present evidence and simply reconstruct

(781) 補 *[Cə]-p^{ʕ}aʔ > *puX* > bǔ ‘to patch’

We reconstruct *Cə.s- when Vietnamese shows high-register *r-* [z] for MC *s-*, and when modern Chinese dialects also give [s]:

(782) 灑 *Cə.s<r>ərʔ > *srjeX* > *sreaX* > sǎ ‘sprinkle (v.)’; also
灑 *Cə.s<r>ərʔ-s > *srjeH* > *sreaH* > sǎ ‘sprinkle (v.)’; VN *rảy* [zai C1] ‘sprinkle’

(783) 醹 *Cə.sre > *srje* > shāi ‘to strain off wine’; VN *rây* [zʌi A1] ‘sieve; to sieve’

The combination *Cə.q(ʕ) appears to give *g-* or *gh-* (both [ɣ]) in Vietnamese:

(784) 倚 *Cə.q(r)ajʔ > *'jeX* > yǐ ‘lean on’, the origin of later 椅 *Cə.q(r)ajʔ > *'jeX* > yǐ ‘chair’; VN *ghế* [ɣe B1]

The attested correspondences for preinitial *Cə plus voiceless unaspirated obstruents are summarized in Table 4.80.

TABLE 4.80 Attested correspondences for preinitial *Cə before voiceless unaspirated obstruents

OC	MC	pMĭn	VN	pHM
*Cə.p(ʕ)-	*p-*	*-p	—	*p-
*Cə.t^{ʕ}-	*t-*	*-t	—	—
*Cə.t(ʕ)r-	*tr-*	*-t	—	—
*Cə.t-	—	—	—	—
*Cə.ts(ʕ)-	*ts-*	*-ts	—	—
*Cə.s(ʕ)-	*s-*	—	*r-* [z] H	—
*Cə.s(ʕ)r-	*sr-*	—	*r-* [z] H	—
*Cə.k(ʕ)-	*k-*	*-k	*g(h)-* [ɣ] H	*q-, *k-
*Cə.q(ʕ)-	*'-*	—	*g(h)-* [ɣ] H	—
*Cə.ʔ(ʕ)-	—	—	—	—

4.5.5.2 Preinitial *Cə plus voiced obstruents: type *Cə.b(ˢ)-

In Middle Chinese, voiced obstruents preceded by presyllabic *Cə (like *Cə.b(ˢ)-) have the same reflexes as the voiced obstruent without the presyllable; in Proto-Mǐn, the loosely attached syllable leads to a softened voiced initial. The Hmong-Mien reflexes are voiced stops. We expect Vietnamese reflexes to be spirantized with low tones, but there are no clear examples to confirm this. When Middle Chinese has a voiced obstruent initial, care must be taken with the Mǐn data to ensure that one is dealing with words from the colloquial layer (see section 4.2.1.1).

The character 鼻 writes two different words, distinguished in Mǐn. One is the word for 'nose': *m-bi[t]-s > *bjijH* > bí, with body-part prefix *m-: this regularly has *bh- in Proto-Mǐn (Xiàmén /pʰĩ 6/, Fúzhōu /pʰei 5/, Jiànyáng /pʰoi 6/); the other is the transitive verb 'to smell', for which Proto-Mǐn has a softened initial: *-b- (Shíbēi /bi 6/). We reconstruct:

(785) 鼻 *m-bi[t]-s > *bjijH* > bí 'nose', pMǐn *bh-
鼻 *Cə-bi[t]-s > *bjijH* > bí 'smell (v.t.)', pMǐn *-b-.

The verbs 嘗 cháng < *dzyang* 'taste (v.)' and 上 shàng < *dzyangX* 'ascend' were segmental homophones in Middle Chinese. Both have softened initials in Mǐn (Jiàn'ōu /ioŋ 4/, Jiànyáng /ioŋ 5/ 'ascend'; Jiàn'ōu /ioŋ 3/, Jiànyáng /ioŋ 9/ 'taste'). We reconstruct

(786) 嘗 *Cə.daŋ > *dzyang* > cháng 'taste (v.)', pMǐn *-dž-

For 上 shàng we find three forms from the same root: two verbs and a noun. Mǐn dialects show different forms for 'to go up' (with pMǐn *-dž-, tone B) and 'to put up, cause to ascend' (pMǐn *džh-, tone B), and a third form for the noun 'top' (pMǐn *dž-, tone C):[106]

(787) 上 *Cə-daŋʔ > *dzyangX* > shàng 'ascend', pMǐn *-džioŋ B (Xiàmén /tsiũ 6/, Jiēyáng /tsiõ 4/, Fúzhōu /suoŋ 6/, Jiàn'ōu /ioŋ 4/)
上 *m-daŋʔ > *dzyangX* > shàng 'to put up', pMǐn *džhioŋ B (Xiàmén /tsʰiũ 6/, Fúzhōu /tsʰuoŋ 6/)
上 *daŋʔ-s > *dzyangH* > shàng 'top, above (n.)', pMǐn *džioŋ C (Xiàmén /tsiũ 6/, Jiēyáng /tsiõ 6/, Jiàn'ōu /tsioŋ 6/)

The forms meaning 'ascend' have a softened initial in Northern Mǐn, indicating a preinitial *Cə- (the first consonant cannot be identified); the causative sense has the prefix *m-; and the noun appears to have the root *daŋʔ with a nominalizing *-s suffix. The distinction between the two verbs has been lost in Middle Chinese, which preserves only the tonal distinction between the verbs (*dzyangX*) and the noun (*dzyangH*).

We reconstruct *Cə.ɢ- to account for Proto-Mǐn *-dž- in 檐 yán < *yem* 'eaves' and 癢 yǎng < *yangX* 'itch':

(788) 檐 *Cə.ɢam > *yem* > yán 'eaves', pMǐn *-dž- (Xiàmén /tsĩ 2/, Fúzhōu /sieŋ 2/)

(789) 癢 *Cə.ɢaŋʔ > *yangX* > yǎng ‘itch’, pMǐn *-dž- (Xiàmén /tsiũ 6/, Fúzhōu /suoŋ 6/, Jiànyáng /ioŋ 6/); the phonetic element is ultimately
羊 *ɢaŋ > *yang* > yáng ‘sheep’

We assume that Norman’s Proto-Mǐn *-dž- (which we suspect was actually *Cə.dž-) resulted from a change whereby *[j], the post-Old-Chinese outcome of nonpharyngealized *ɢ-, was strengthened to -dž- in intervocalic position: *Cə.ɢ- > *Cə.j- > *Cə.dž- (cf. Latin *major* > Italian *maggiore*). This strengthening change occurred before the Proto-Mǐn stage in an area of south China where the ancestor of Wǎxiāng was also located: Wǎxiāng has /dzoŋ 3/ ‘itch’.

Here are some other examples of Mǐn softened initials from voiced stops after preinitial *Cə:

(790) 吠 *Cə.bo[t]-s > *bjojH* > fèi ‘bark (v.)’; pMǐn *-b- (Shíbēi /by 6/)

(791) 彈 *Cə.dˤar > *dan* > tán ‘shoot pellets’; pMǐn *-d- (Shíbēi /duaiŋ 2/ ‘pluck a stringed instrument’)

(792) 腎 *Cə.[g]i[n]ʔ > *dzyinX* > shèn ‘kidney’, pMǐn *-gin B ‘gizzard’, e.g., Fúzhōu /keiŋ 6/, Jiànyáng /iŋ 5/ (Norman 2006:138)

(793) 厚 *Cə.[g]ˤ(r)oʔ > *huwX* > hòu ‘thick’; pMǐn *-g- (Jiànyáng /eu 5/), pMien *ɦɔu B ‘thick’

In the last example, square brackets emphasize the difficulty of distinguishing between pharyngealized velar and uvular initials in this context.

Attested reflexes of unidentified loose preinitials followed by voiced obstruents are given in Table 4.81.

TABLE 4.81 Attested correspondences for Old Chinese voiced stops with unidentified loose preinitials

OC	MC	pMǐn	VN	pHM
*Cə.b(ˤ)-	*b-*	*-b	—	—
*Cə.d(ˤ)-	*d-*	*-d	—	—
*Cə.d(ˤ)r-	*dr-*	*-d	—	—
*Cə.d-	*dzy-*	*-dž	—	—
*Cə.dzˤ-	*dz-*	*-dz	—	—
*Cə.dz(ˤ)r-	*dzr-*	*-dz	—	—
*Cə.gˤ-	*h-*	*-g	—	*ɦ-
*Cə.g-	*g-*	*-g	—	—
*Cə.ɢˤ-	—	—	—	—
*Cə.ɢ-	*y-*	*-dž	—	—

4.5.5.3 Preinitial *Cə plus voiced resonants: type *Cə.l(ˤ)-

These onsets are difficult to detect when the main initial is a nasal, since Proto-Mǐn does not treat nasals preceded by loosely attached initials differently from singleton nasals. A probable example is (794):

(794) 狃 *Cə.n<r>uʔ > *nrjuwX* > niǔ ‘animal tracks; claws’; western Hakka /ŋ̍iau 1/ ‘claw’ (Lǐ Rúlóng et al. 1999:124), pMien *ʔŋauB ‘claw, talon’

The argument for reconstructing *Cə.n- here is as follows. Hakka distinguishes between two sets of sonorants: in shǎngshēng words, most kinds of Hakka have tone 1 corresponding to Proto-Mǐn plain sonorants like *n- < OC *n-, and tone 3 corresponding to Proto-Mǐn aspirated sonorants like *nh- < *C.n- (Norman 1989). So if 狃 niǔ were from *C.n-, with a tightly attached voiceless preinitial, we would expect tone 3 in Hakka, not tone 1. But a voiceless preinitial is required to account for the *ʔŋ- onset in Proto-Mienic. We account for this by reconstructing a loosely attached preinitial *Cə.n-.

Old Chinese *Cə.l(ˤ)- and *Cə.r(ˤ)- have softened reflexes in Mǐn, so these are easier to identify; the correspondences are as shown in Table 4.82.

Examples of *Cə.l(ˤ)-:

(795) 袋 *Cə.lˤək-s > *dojH* > dài ‘bag’; pMǐn *-d- (Jiànyáng /lui 6/), pMien *di C ‘bag’

(796) 奪 *Cə.lˤot > *dwat* > duó ‘seize’; pMǐn *-d- (Jiànyáng /lue 8/)

(797) 池 *Cə.lraj > *drje* > chí ‘pool (n.)’; pMǐn *-d- (Shíbēi /di 2/)

(798) 蛇 *Cə.lAj > *zyae* > shé ‘snake’; pMǐn *-dž- (Xiàmén /tsua 2/, Fúzhōu /sie 2/; VN *xà* [sɑ A2]

(799) 船 *Cə.lo[n] > *zywen* > chuán ‘boat’; pMǐn *-dž- (Shíbēi /yiŋ 2/)

(800) 射 *Cə.lAk > *zyek* > shè ‘hit with bow and arrow’; pMǐn *-dž- (Jiànyáng /ia 8/)

As we saw in section 4.5.2.4, Proto-Mǐn has *-d- from OC *mə.r(ˤ)- (Norman 2005). When Proto-Mǐn has *-d- corresponding to MC l-, and the identity of the preinitial cannot be ascertained, we reconstruct *Cə-r(ˤ)-, as in this example:

(801) 路 *Cə.rˤak-s > *luH* > lù ‘road’; pMǐn *-d- (Jiànyáng /lio 6/, Shàowǔ /tʰio 6/); Lùfēng Hakka /lu 6/

TABLE 4.82 Correspondences for Old Chinese laterals after loosely attached preinitials

OC	MC	pMǐn	VN	pHM
*Cə.lˤ-	*d-*	*-d	—	*d-
*Cə.l(ˤ)r-	*dr-*	*-d	—	—
*Cə.l-	*zy-*	*-dž	*x-* [s-] L	—

TABLE 4.83 Attested correspondences for Old Chinese voiced resonants with unidentified loose preinitials

OC	MC	pMǐn	VN	pHM
*Cə.m(ˤ)-	—	—	—	—
*Cə.n(ˤ)-	—	—	—	—
*Cə.n(ˤ)r-	*nr-*	—	—	—
*Cə.ŋ(ˤ)-	—	—	—	—
*Cə.lˤ-	*d-*	*-d	—	*d-
*Cə.l(ˤ)r-	*dr-*	*-d	—	—
*Cə.l-	*zy-*	*-dž	*x-* [s-] L	—
*Cə.r(ˤ)-	*l-*	*-d	—	—

Here Lùfēng Hakka /lu 6/ 'road' confirms the absence of a voiceless consonant in the onset (one would expect tone 5 otherwise). The preinitial consonant was presumably a nasal, but we cannot tell from the semantics whether *mə or *Nə is more appropriate.

The attested correspondences of preinitial *Cə before sonorants are summarized in Table 4.83.

4.5.5.4 Preinitial *Cə plus voiceless resonants: type *Cə.m̥(ˤ)-

We know of no examples of Old Chinese voiceless resonants with unidentified loose preinitials.

4.6 Onsets with complex preinitials

The principles outlined in the preceding sections for singleton, tightly attached, and loosely attached onsets cannot explain all the combinations we find among the pronunciations under consideration: in some cases complex onsets have to be supposed. A complex onset is one that includes two preinitial consonants, sometimes with a schwa. The first consonant is always a prefix; the second can be a root preinitial consonant. When two prefixes are involved, they may belong to different time layers, with the outer prefix being more recent. For that reason the order in which they appear is not strictly predictable. We have already discussed some instances of complex preinitials (cf. the discussion of 席 xí 'mat' (566) in section 4.4.3.3 and of the verb 'to hoe' in 4.4.3.4). Below we discuss more examples.

The Middle Chinese reading of 羨 xiàn < *zjenH* 'covet, desire' appears at first sight to indicate an Old Chinese onset including preinitial *s followed by a voiced consonant, either alveolar or uvular (in the present framework, *s- is invisible before *g when a nonfront vowel follows). Vietnamese *ghen* [ɣɛn A1] 'jealous, envious' (with tone A for qùshēng, as frequently) shows that whatever caused the *s- to voice could not have been an alveolar. At the same time, the upper-register tone shows the initial was voiceless. We reconstruct

(802) 羨 *s-N-qa[r]-s > *zjenH* > xiàn ‘covet, desire’; VN *ghen* [ɣɛn A1] ‘jealous, envious’

to account for the Vietnamese upper-register tone. Here a stative verb with prefixed *N is being made transitive by means of *s-. The *s- would be responsible for the Vietnamese spirantized initial *gh-* [ɣ]; perhaps Vietnamese borrowed the word before the initial was voiced by *N, and *N was left out in the Vietnamese form.

In another instance, we appear to have the same two prefixes in reverse order. The intransitive verb 登 *tʰəŋ > *tong* > dēng ‘ascend’ is the root in 增 *s-tʰəŋ > *tsong* > zēng ‘increase (v.)’, where *s- is valency-increasing. The word

(803) 層 *N-s-tʰəŋ > *dzong* > céng ‘double’

is derived from 增 zēng by means of the stative/intransitive prefix *N-. It is possible that the string *s-tʰ- had already metathesized to *tsʰ- when *N was prefixed. In that case, our reconstruction is not a realistic reconstruction for one single period; it does, however, include the ingredients needed to derive the Middle Chinese form.

In example (645) above (section 4.4.4.2), we showed that 巠 jīng < *keng* ‘a vein of water’ and 經 jīng < *keng* ‘loom; regulate; norm’ have the onset *k.lʶ-. In the same phonetic series, the word 莖 jīng < *heang* ‘stalk (n.)’ appears to be etymologically related to 筳 tíng < *deng* ‘stalk, stem’. We reconstruct:

(804) 莖 *m-k-lʶ<r>eŋ > *heang* > jīng ‘stalk (n.)’

The function of the first prefix is unclear; perhaps the stem of a plant was thought of as a body part.

The word 懶 lǎn < *lanX* ‘lazy’ shows evidence of a velar preinitial in loans to Siamese: /graan 2/ and to Proto-Hmongic: *ŋglæn B ‘lazy’. The latter form also indicates prenasalization. Proto-Mǐn has *-d- (Jiànyáng /lyeŋ 5/, Fúzhōu /tiaŋ 6/), showing that the preinitial was loosely attached, and, by the time of Proto-Mǐn, entirely voiced. We may reconstruct *N-kə.rʶ-, evolving to Proto-Mǐn *gə.dʶ-, Norman’s *-d-:

(805) 懶 *[N-kə.]rʶanʔ > *lanX* > lǎn ‘lazy’, pMǐn *-d-; pHmong *ŋglæn B

Both pHM *ŋkjɔ:m A ‘hold in the mouth’ (Wáng and Máo 1995) and the Kra-Dai language Máonán (Liáng Mǐn 1980:100) /ᵑgam1/ ‘hold in mouth’ indicate a prenasalized voiceless stop in the onset of 含 hán < *hom* ‘hold in the mouth’. At the same time, Proto-Mǐn has *-g- (Jiànyáng /aŋ 9/): evidently voicing of the initial and softening are the work of different preinitials. We reconstruct:

(806) 含 *Cə-m-kʶ[ə]m > *hom* > hán ‘hold in the mouth’

The word 粗 *tshu* > cū ‘coarse, thick (as hair)’, would normally be reconstructed as *s.ɾʶa based on the comparison to the related word 疏 *sra > *srjo* > shū ‘wide apart’ (see example (607) for parallel examples). However, Proto-Hmongic *ntsha A ‘coarse’, which shows the aspirated affricate already in place, also indicates a nasal preinitial: on semantic grounds, presumably *N- or *Nə-. We reconstruct

(656) 粗 *Nə-s.r̥ˤa > *tshu* > cū ‘coarse, thick (as hair)’

since we would expect an OC *N-s.r̥ˤa to give MC *dzu*.

Another example is

(807) 旬 *s-N-qʷi[n] > *zwin* > xún ‘ten-day cycle’; cf.
鈞 *C.qʷi[n] > *kjwin* > jūn ‘potter’s wheel’
韻 *[m-qʷ]<r>i[n]-s > *hwinH* > yùn ‘harmony; rhyme’[107]

The root is *qʷi[n] with a meaning like ‘cycle, revolution’: in 旬 xún < *zwin*, we need an *N in the preinitial to account for the voicing, and an *s- to account for the sibilant *z-*; thus we reconstruct *s-N-qʷi[n].

This concludes our review of Old Chinese onsets and their developments. In the next chapter, we turn our attention to Old Chinese rhymes.

{ 5 }

Old Chinese rhymes

This chapter presents the rhymes of Old Chinese according to our reconstruction and describes their development to Middle Chinese and modern dialects. We reconstruct rhymes primarily on the basis of rhymes in Old Chinese poetry, distinctions in Middle Chinese, and xiéshēng evidence (especially from recently excavated documents). In principle, we should also systematically include correspondences with Mǐn and other modern dialects, and with early loans to Vietic, Hmong-Mien, and Kra-Dai, as we did in reconstructing syllable onsets in chapter 4. We do use some evidence from these sources: they support the reconstruction of the coda *-r, for example (see section 5.5.1). But so far, modern dialects and early loanwords have told us relatively little about rhymes that we did not already know from other evidence. In part this is because research on the relevant dialects and languages is still at a rather preliminary stage: achieving greater clarity and precision about the history of their rhymes is a high priority for future research (see the discussion in section 6.4).

5.1 Overview: vowels, codas, postcodas

Maximally, Old Chinese rhymes have four components: a main vowel, a coda, a postcoda *-ʔ, and a postcoda *-s. The only obligatory component is the vowel:

rhyme = vowel (coda) (ʔ) (-s)

There are six vowels, as shown in Table 5.1.[1]

The reconstructed vowel system is unchanged from Baxter (1992), except that the "barred-i" *ɨ of Baxter (1992) and Sagart (1999c) is replaced here by schwa *ə, for practical reasons: experience has shown that the schwa is more familiar to many users, and thus less confusing, and that the "barred-i" [ɨ] is often difficult to distinguish visually from an ordinary [i].

Codas include semivowels, nasals, a liquid *-r, and voiceless stops, as in Table 5.2. The system of codas is the same as in Baxter (1992) except for the addition of *-r, which will be discussed in detail in section 5.5.1 below. In describing the development of the rhymes, it will be convenient to speak of rhymes without a coda as having a zero coda *-∅. The account of individual rhymes will be organized according to the types

TABLE 5.1 The six vowels of Old Chinese

*i	*ə	*u
*e		*o
	*a	

TABLE 5.2 Old Chinese syllable codas

	1	2	3	4
vocalic	(*-∅)	*-j	*-w	
nasal	*-ŋ	*-n		*-m
liquid		*-r		
voiceless stop	*-k	*-t	*-wk	*-p

of codas shown in Table 5.2: column 1 in section 5.4, column 2 in section 5.5, column 3 in section 5.6, and column 4 in section 5.7. The general trends in development of codas are these:

Open syllables (those with zero coda *-∅) still end in vocalic segments in Middle Chinese and modern dialects, although a final glide sometimes develops, e.g., *C^{s}ə > *C(w)oj*, *C^{s}u > *Caw*, *C^{s}e > *Cej*.

The codas *-ŋ and *-k remain in Middle Chinese, except that *-iŋ and *-ik usually change to *-in and *-it, respectively, and before *-s we have *-ik-s > *-it-s > *-ij-s >*-ijH*.

The coda *-j remains in most environments, but in Middle Chinese and most modern dialects, it is lost after *a; e.g., *C^{s}aj becomes MC *Ca*.

The coda *-r usually merged with *-n, but in some dialects it became *-j instead. (Although there is some transcriptional evidence that our *-r was really [r] phonetically—see section 5.5.1.3—reconstructing this coda as *-l would also be plausible.)

Final *-n and *-t remain (except that *-t is lost before *-s: *-t-s > *-js > *-jH*).

The coda *-w normally remains in Middle Chinese; *-wk becomes MC *-k*.

The labial codas *-m and *-p usually remain in Middle Chinese, except for some dissimilations, e.g., 風 *prəm > *pjuwng* > fēng ‘wind (n.)’, 熊 *C.[ɢ]^{w}(r)əm > *hjuwng* > xióng ‘bear (n.)’. Final *-p-s changes very early to *-t-s and thus develops to *-js > *-jH*.

Not all combinations of vowels and codas are reconstructed; the permissible combinations are listed in Table 5.3. There is a slight asymmetry in that we reconstruct *-u as a rhyme but not “*-i,” and *-ij but not “*-uw.”[2] The codas *-w and *-wk appear occur only after unrounded vowels; also, we have found no reason to reconstruct *-əw or *-əwk.

Following the general scheme developed in Haudricourt (1954a, 1954b), we reconstruct the postcoda *-ʔ as the origin of the Middle Chinese shǎngshēng tonal category (marked in our Middle Chinese notation with a final *-X*); it can occur after all codas (including zero *-∅) except voiceless stops.[3] The hypothesis is that while

TABLE 5.3 Rhymes reconstructed for Old Chinese

	*-∅	*-j	*-w	*-n	*-m	*-ŋ	*-r	*-t	*-p	*-k	*-wk
*i	—	-ij	-iw	-in	-im	-iŋ	-ir	-it	-ip	-ik	-iwk
*u	-u	-uj	—	-un	-um	-uŋ	-ur	-ut	-up	-uk	—
*ə	-ə	-əj	—	-ən	-əm	-əŋ	-ər	-ət	-əp	-ək	—
*e	-e	-ej	-ew	-en	-em	-eŋ	-er	-et	-ep	-ek	-ewk
*o	-o	-oj	—	-on	-om	-oŋ	-or	-ot	-op	-ok	—
*a	-a	-aj	-aw	-an	-am	-aŋ	-ar	-at	-ap	-ak	-awk

the glottal stop was still present, there would have been a tendency for the glottis to become tenser in anticipation of the closure of the glottis, resulting in a rise in pitch; subsequently, the glottal stop disappeared (in most dialects, at least), and the rise in pitch became phonologically distinctive, creating shǎngshēng, the 'rising' or 'up' tone of Middle Chinese.

Also following Haudricourt, we reconstruct the postcoda *-s as the origin of the Middle Chinese qùshēng tonal category (marked in our Middle Chinese notation with a final *-H*); in Old Chinese (OC) it could occur after all codas, and after *-ʔ. Fairly early in the Old Chinese period, final *-p-s changed to *-t-s, a process that affects at least some *Shījīng* rhymes. Eventually, all voiceless stops before *-s were lost, and final *-s was weakened to [h], eventually leading to a different pitch contour that became phonologically distinctive, the qùshēng "departing tone" of MC (see Table 5.4).[4]

The final sibilants in *-js may have been the last to disappear, because characters for qùshēng words of this type are frequently used to transcribe Indic syllables ending in -s, -ś, or -ṣ, as in these examples (from Bailey 1946; Pulleyblank 1962–1963; Pulleyblank 1973):

(808) 貴 霜 Guìshuāng < *kjw+jH-srjang* for Kushan (early empire in central Asia); the crucial syllable is
貴 *kjw+jH* < *kuj-s

(809) 罽 賓 Jìbīn < *kjejH-pjin* for Kashmir (Prakrit *Kaśpir(a) according to Pulleyblank 1973:370):
罽 *kjejH* < *kajs < *[k](r)[a][t]-s

(810) 都 賴 Dūlài < *tu-lajH*, for the Talas river (in modern Kazakhstan and Kyrgyzstan):
賴 *lajH* < *rˤajs < *rˤa[t]-s

TABLE 5.4 Development of Old Chinese final voiceless stops plus *-s

OC			MC
*-Vk-s	> *-Vs		> *-VH*
*-Vt-s	> *-Vts	> *-Vjs	> *-VjH*
*-Vp-s	> *-Vts	> *-Vjs	> *-VjH*
*-Vwk-s	> *-Vws		> *-VwH*

(811) 波 羅 奈 Bōluónài < *pa-la-najH* for Sanskrit Vārāṇasī (Prakrit *Varanaz(ī), Pulleyblank 1973:370):
奈 *najH* < *nˢajs < *nˢa[t]-s ‘cope with’

(812) 毗 里 害 波 底 Pílǐhàibōdǐ < *bjij-liX-hajH-pa-tejX* for Sanskrit Bṛhaspati (Hindu deity):
害 *hajH* < *ɦˢajs < *N-kˢat-s

Provisionally, we treat all cases of final *-s as morphological suffixes. The sequence *-ʔ-s has the same reflexes as *-s; it is assumed on the basis of internal reconstruction to account for cases where qùshēng words appear to come from a root with final *-ʔ:

(813) 坐 *[dz]ˢo[j]ʔ > *dzwaX* > zuò ‘sit’
坐, 座 *[dz]ˢo[j]ʔ-s > *dzwaH* > zuò ‘seat (n.)’

(814) 下 *gˢraʔ > *haeX* > xià ‘down’, Xiàmén /e 6/, Shíbēi /ɦa 5/, pMǐn *ɦa B
下 *m-gˢraʔ-s > *haeH* > xià ‘descend’, Xiàmén /he 6/, pMǐn *ɣa C

(815) 語 *ŋ(r)aʔ > *ngjoX* > yǔ ‘speak’
語 *ŋ(r)aʔ-s > *ngjoH* > yù ‘tell’

Haudricourt’s final *-s hypothesis makes it unnecessary to reconstruct a contrast between voiced and voiceless stops in coda position as Karlgren had done in his Archaic Chinese reconstruction. Karlgren had reconstructed final voiced stops *-g, *-d, and *-b to account for xiéshēng contacts, and alternations in Middle Chinese, between stop-final and vocalic-final syllables; in this he was followed by Dǒng Tónghé (1948) and Fang-kuei Li (1971). See Table 5.5 for examples.

In addition, in some cases Karlgren overgeneralized this pattern and reconstructed final *-g even in forms that had little or no connection with final *-k; Dǒng Tónghé and Li (1971) also followed him in this. For example:

(816) Karlgren’s *-əg corresponds not only to our *-ək-s, but also to our *-ə.
Karlgren’s *-og corresponds not only to our *-awk-s, but also to our *-aw.
Karlgren’s *-ôg corresponds not only to our *-uk-s, but also to our *-u.

The details can be found in sections 5.4 through 5.7 below on individual rhyme types, where there are comparative tables showing how our reconstructions correspond to several other systems.

TABLE 5.5 Karlgren, Li’s *-g, *-d, *-b corresponding to OC *-k-s, *-t-s, *-p-s

	MC	B-S	Karlgren	Li[a]
覺 jué ‘be aware’	*kaewk*	*kˢruk	*kộk	*[krəkw]
覺 jiào ‘awaken’	*kaewH*	*kˢruk-s	*kộg	*[krəgwh]
脫 tuō ‘peel off’	*thwat*	*mə-l̥ˢot	*t’wât	*[thuat]
蜕 tuì ‘exuviae of insects or reptiles’	*thwajH*	*l̥ˢot-s	*t’wâd	*[thuadh]
盍 hé ‘thatch, cover (v.)’	*hap*	*m-[k]ˢap	*g’âp	*gap
蓋 gài ‘cover (v.); cover (n.)’	*kajH*	*[k]ˢap-s	*kâb	*kabh

[a] Forms in square brackets are reconstructed according to Li’s system but are not actually found in Li (1971).

5.2 The six-vowel system

The basic requirements for an adequate reconstruction of the Old Chinese vowel system are that it should account for (1) the distinctions observed in Middle Chinese and in modern dialects, (2) the rhyming distinctions found in the *Shījīng* and other early poetry, and (3) the way phonetic elements were used in the pre-Qín writing system. In this section we will sketch the reasoning that led to the reconstruction of a six-vowel system and show that this reconstruction makes correct predictions about otherwise unexplained facts. We will begin by seeing what is required to account for the distinctions in Middle Chinese.

It will be convenient to begin with syllables in the *Qièyùn* rhymes traditionally classified as "division I" and "division IV." Although the terms "division I" and "division IV" are derived from the Sòng-dynasty rhyme-table tradition, they correspond to a set of rhymes that are easily identified from internal evidence in the *Qièyùn* itself: those in which only the nineteen initial consonants listed in Table 5.6 occur.[5] We will use the capital letters in the leftmost column as cover symbols for the consonants listed to their right.

Let us consider now the division-I and division-IV finals ending in MC *-ng* and the initial consonant types that occur with them; these are displayed in Table 5.7. The two leftmost columns list the finals in our Middle Chinese notation and in terms of the traditional terminology. Each entry in the main body of the table stands for a type of Middle Chinese syllable, regardless of tone: thus "*Pang*" represents syllables such as 旁 páng < *bang* 'side', 芒 máng < *mang* 'awn, beard of grain', etc.

TABLE 5.6 The nineteen MC initial consonants occurring in division-I and division-IV rhymes

P-	*p-*	*ph-*	*b-*		*m-*	
T-	*t-*	*th-*	*d-*		*n-*	*l-*
Ts-	*ts-*	*tsh-*	*dz-*	*s-*		
K-	*k-*	*kh-*			*ng-*	
	'-	*x-*	*h-*			

TABLE 5.7 Middle Chinese division-I and division-IV syllable types in final *-ng*

MC final		*P-*	*T-*	*Ts-*	*K-*
-ang	唐一開	*Pang*	*Tang*	*Tsang*	*Kang*
-wang	唐一合	—	—	—	*Kwang*
-uwng	東一	*Puwng*	*Tuwng*	*Tsuwng*	*Kuwng*
-eng	青四開	*Peng*	*Teng*	*Tseng*	*Keng*
-weng	青四合	—	—	—	*Kweng*
-ong	登一開	*Pong*	*Tong*	*Tsong*	*Kong*
-wong	登一合	—	—	—	*Kwong*
-owng	冬一	*Powng*	*Towng*	*Tsowng*	*Kowng*

Notice that the finals *-wang*, *-weng*, and *-wong* occur only with *K*-type initials. This distribution suggests that at an earlier period, the syllable structure (ignoring tone category) was not as in (817), but as in (818).

(817) $\begin{pmatrix} *P \\ *T \\ *Ts \\ *K \end{pmatrix}$ (w) vowel coda

(818) $\begin{pmatrix} *P \\ *T \\ *Ts \\ *K \\ *K^{w} \end{pmatrix}$ vowel coda

The limitation of the MC finals *-wang*, *-weng*, and *-wong* to *K*-type initials suggests that the *-w-* was originally a feature of the initial, and that there is no need to assume that there was a separate position for **-w-* between the initial consonant and the vowel in Old Chinese. Instead of the skewed distribution of initials and finals that we see in Table 5.7, then, we assume that in Old Chinese, the pattern was as in Table 5.8. Old Chinese reconstructions are in the top row and leftmost column; their Middle Chinese reflexes are in the body of the table. Each row corresponds to one of the traditional rhyme groups, named in the second column from the left.

The only gaps in the table now are those for labialized onsets before rounded vowels, syllables like "*$K^{w\varsigma}$oŋ" or "*$K^{w\varsigma}$uŋ." It is possible that such syllable types did exist, but so far we have found no evidence for reconstructing them.

The argument so far suggests that in order to account for the syllable types in final *-ŋ, we must reconstruct at least the five vowels *o, *u, *a, *e, and *ə.[6] Would this also be sufficient to account for syllables ending in MC *-n*? The Middle Chinese division-I and division-IV syllable types in final *-n* are displayed in Table 5.9, comparable to Table 5.7 above.

Here the pattern of distribution is more subtle. MC *-wen* is like the finals *-wang*, *-weng*, and *-wong* of Table 5.7 in that it only occurs with *K*-type initials. But although there are no Middle Chinese syllables like "*Twang*" or "*Tswang*," we do have syllables like *Twan* and *Tswan*. One way to account for this would be to revert to allowing *w

TABLE 5.8 Old Chinese origins of MC division-I and division-IV syllables in final *-ng*

OC	traditional rhyme group	*P^{ς}-	*T^{ς}-	*Ts^{ς}-	*K^{ς}-	*$K^{w\varsigma}$-
*-aŋ	陽 Yáng	*Pang*	*Tang*	*Tsang*	*Kang*	*Kwang*
*-oŋ	東 Dōng	*Puwng*	*Tuwng*	*Tsuwng*	*Kuwng*	—
*-eŋ	耕 Gēng	*Peng*	*Teng*	*Tseng*	*Keng*	*Kweng*
*-əŋ	蒸 Zhēng	*Pong*	*Tong*	*Tsong*	*Kong*	*Kwong*
*-uŋ	冬 Dōng	*Powng*	*Towng*	*Tsowng*	*Kowng*	—

TABLE 5.9 Middle Chinese division-I and division-IV syllable types in final *-n*

MC final		*P-*	*T-*	*Ts-*	*K-*
-an	寒一開	*Pan*	*Tan*	*Tsan*	*Kan*
-wan	桓一合	—	*Twan*	*Tswan*	*Kwan*
-en	先四開	*Pen*	*Ten*	*Tsen*	*Ken*
-wen	先四合	—	—	—	*Kwen*
-on	痕一開	—	—	—	*Kon*
-won	魂一合	*Pwon*	*Twon*	*Tswon*	*Kwon*

to occur freely before the main vowel, as in (817) above, as Karlgren had originally done. But Jaxontov (1960b) suggested an alternative hypothesis: that the *-w-* in syllables like *Twan*, *Tswan*, *Twon*, and *Tswon* is a secondary development from an original rounded vowel. According to his hypothesis, syllables like MC *Twan* and *Tswan* came from OC *Ton and *Tson, respectively; syllables like *Twon* and *Tswon* came from OC *Tun and *Tsun. Between Old Chinese and Middle Chinese, there was a diphthongization of the rounded vowels *o and *u before acute codas (in our system, *-j, *-n, *-t, and *-r, column 2 in Table 5.2): e.g., *Ton > *Twan*, *Tun > *Twon*. We call this the *rounded-vowel hypothesis*, and it is a crucial element of the six-vowel system. It accounts for the *n*-final syllable types as shown in Table 5.10 (to be revised below), which should be compared with Table 5.8.

Several points should be made about Table 5.10. We assume that there were originally contrasts between *Pˁan and *Pˁon, *Kʷˁan and *Kˁon, *Pˁən and *Pˁun, and *Kʷˁən and *Kˁun, but that these pairs merged in Middle Chinese as the result of two sound changes: (1) rounded vowels diphthongized before acute codas, and (2) *w became nondistinctive after labial initials. That is, *Kˁon diphthongized to *Kˁwan, merging phonologically with original *Kʷˁan (> MC *Kwan*); *Kˁun diphthongized to *Kˁwən, merging phonologically with original *Kʷˁən (> MC *Kwon*). Then, at some point, *w became nondistinctive after labial initials: *Pˁon diphthongized to *Pˁwan, but this merged with original *Pˁan (> MC *Pan*); *Pˁun diphthongized to *Pˁwən, merging with original *Pˁən (> MC *Pwon*). (As with "*Kʷˁoŋ" and "*Kʷˁuŋ," it is possible that there were also syllables like *Kʷˁon or *Kʷˁun, but we have found no reason to reconstruct them.)

So far, our analysis has been based entirely on the syllable types of Middle Chinese, and has not taken Old Chinese rhyming into account. Our reconstruction of the rhymes in final *-ŋ is unproblematic from the point of view of Old Chinese rhyming: each reconstructed rhyme corresponds exactly to a traditional rhyme group, as in Table 5.11.

At first glance, Table 5.10 would appear to indicate that the same five vowels that were necessary to account for the syllables in MC *-ng* will also account for the syllables in MC *-n*. But the relationship between the traditional rhyme groups and our reconstructions is more complex with *-n than with *-ŋ. This is because, according to the traditional rhyme analysis, MC *-en* can come from three different Old Chinese

TABLE 5.10 OC origins of MC division-I and division-IV syllables in final *-n* (incomplete)

OC	*P^{ʕ}-	*T^{ʕ}-	*Ts^{ʕ}-	*K^{ʕ}-	*K^{wʕ}-
*-an	*Pan*	*Tan*	*Tsan*	*Kan*	*Kwan*
*-on	*Pan*	*Twan*	*Tswan*	*Kwan*	—
*-en	*Pen*	*Ten*	*Tsen*	*Ken*	*Kwen*
*-ən	*Pwon*	?	?	*Kon*	*Kwon*
*-un	*Pwon*	*Twon*	*Tswon*	*Kwon*	—

TABLE 5.11 OC rhymes in *-ŋ (incomplete) and the corresponding traditional rhyme groups

OC reconstruction	traditional rhyme group (yùnbù 韻部)
*-aŋ	陽 Yáng
*-oŋ	東 Dōng
*-eŋ	耕 Gēng
*-əŋ	蒸 Zhēng
*-uŋ	冬 Dōng

rhyme groups: 真 Zhēn, 元 Yuán, and 文 Wén. (Karlgren accounted for this by reconstructing *-ien, *-ian, and *-iən, respectively, as the sources of MC *-en* in these cases, but the front-vowel hypothesis proposes a different solution; see the discussion below.) Examples are given in Table 5.12, with references to relevant *Shījīng* rhyme sequences.

While MC *-en* corresponds to three different traditional rhyme groups, the syllable types we reconstruct with OC *-an, *-on, and *-en are all assigned in the traditional analysis to a single rhyme group, 元 Yuán; likewise, the syllable types we reconstruct with *-ən and *-un are all assigned to the single group 文 Wén. If we incorporate the distinctions implied by Old Chinese rhyming into Table 5.10, we get Table 5.13 (the rows are numbered this time for convenience; this table, too, will be revised below).

Now, instead of one row with MC *-(w)en*, as in Table 5.10, we have three (rows 3, 4, and 5), one for each of the three traditional rhyme groups that MC *-(w)en* can come from: 元 Yuán (corresponding to our *-en), 真 Zhēn (for which we reconstruct *-in), and 文 Wén (whose reconstruction we will discuss shortly). Now instead of five rows, as in Tables 5.8 and 5.10, we have seven rows. Does this mean that we need to reconstruct seven different vowels? No, because it turns out that rows 5 and 6 are in complementary

TABLE 5.12 Examples of MC *-en* from three traditional OC rhyme groups

	MC	traditional rhyme group	*Shījīng* rhymes
賢 xián ‘worthy’	*hen*	真 Zhēn	205.2, 246.3
見 jiàn ‘see’	*kenH*	元 Yuán	217.3
先 xiān ‘go first’	*senH*	文 Wén	197.6

TABLE 5.13 Origins of MC syllables in final *-n*, with their traditional OC rhyme groups (incomplete)

	rhyme	traditional rhyme group	*P^{ʂ}-	*T^{ʂ}-	*Ts^{ʂ}-	*K^{ʂ}-	*K^{wʂ}-
1	*-(w)an* < *-an	元 Yuán	*Pan*	*Tan*	*Tsan*	*Kan*	*Kwan*
2	*-(w)an* < *-on*		*Pan*	*Twan*	*Tswan*	*Kwan*	—
3	*-(w)en* < *-en*		*Pen*	*Ten*	*Tsen*	*Ken*	*Kwen*
4	*-(w)en* < *-in*	真 Zhēn	*Pen*	*Ten*	*Tsen*	*Ken*	*Kwen*
5	*-(w)en* < *?*	文 Wén	—	*Ten*	*Tsen*	—	—
6	*-(w)on* < *-ən*		*Pwon*	—	—	*Kon*	*Kwon*
7	*-won* < *-un*		*Pwon*	*Twon*	*Tswon*	*Kwon*	—

distribution. There are no convincing examples of MC *-en* from the 文 Wén group in syllables with *P-* or *K*-type initials, and the only examples of MC *-on* after *T-* or *Ts*-type initials are clearly exceptional.

In fact, the only example of a syllable like *Ton* or *Tson* in the entire *Guǎngyùn* is

(819) 吞 tūn < *thon* 'to swallow' (pMǐn: *thun A),

which also has the alternate reading

(820) 吞 tiān < *then* '(surname)'

We account for this situation by reconstructing both rows 5 and 6 of Table 5.13 with *-ən, and assuming that *ə normally became fronted when it was between an acute onset and an acute coda. Thus *-ən becomes *-en* in the second reading 吞 *l̥^{ʂ}ən > *then,* representing the regular development; and 吞 *l̥^{ʂ}ən > *thon* 'swallow', where *-ən becomes MC *-on* after an acute initial, is exceptional, possibly due to onomatopoeia. Notice that for MC *thon*, Mandarin has tūn instead of the "tēn" (a nonexistent syllable) that might be expected. Although MC *-on* itself is rare after acute initials, there are a number of alternations between MC *-en* and *-won* after acute initials that suggest a further development *-ən > *-on* > *-won* in some dialects.

Consider, for example,

(821) 存 cún < *dzwon* 'exist'

Ordinarily, we would assign a word with MC *-won* to row 7 of Table 5.13 and reconstruct it with *-un, but we have good evidence that the correct reconstruction is not *dz^{ʂ}un but *[dz]^{ʂ}ə[n], and that MC *-won* here is an irregular development from *-ən. According to the *Shuōwén*, the phonetic in 存 cún is 才 cái, which is also reconstructed with *ə:

(822) 才 cái < *dzoj* < *[dz]^{ʂ}ə 'talent, ability' (*SWGL* 6607a)

Moreover, it is likely that 存 cún < *dzwon* 'exist' is etymologically related somehow to

(823) 在 zài < *dzojX* < *[dz]^{ʂ}əʔ 'be at, be present'

The *Shuōwén* says that 才 cái is phonetic in 在 zài also, and uses 存 cún < *[dz]ˢə[n] as a sound gloss for 在 zài < *[dz]ˢəʔ:

(824) 在: 存 也。从 土 、 才 聲 。[7]

'在 zài [*[dz]ˢəʔ] means 存 [*[dz]ˢə[n]] 'exist'; it is from 土 tǔ 'earth' [i.e., it has 土 tǔ as a graphic component] and has 才 cái [*[dz]ˢə] as phonetic.' (*SWGL* 6120b)

The reason for the alternation between *-əʔ and *-ə[n] in words that may be etymologically related is not clear, but in any case, it is likely that analogy to 在 zài < *[dz]ˢəʔ played a role in preventing the regular development *-ən > *-en* in this case; instead we have perhaps 存 *[dz]ˢə[n] > *dzon* > *dzwon*. Words with 存 cún as phonetic usually have MC *-en* as expected, following the normal development of *-ən to MC *-en* after acute initials:

(825) 荐 *N-tsˢə[n]-s > *dzenH* > jiàn 'grass, herb' (also read *dzwonH*)
栫 *[dz]ˢə[n]-s > *dzenH* > jiàn 'to fence in'
荐 *[N-ts]ˢə[n]-s > *dzenH* > jiàn 'twice; a second time', probably related to
再 *[ts]ˢə(ʔ)-s > *tsojH* > zài 'twice; a second time'

Li (1971) followed Karlgren in reconstructing *-iən as the origin of the rhymes in row 5 of Table 5.13—that is, in those words with MC *-en* that are assigned to the traditional 文 Wén rhyme group. But recognizing the complementary distribution between rows 5 and 6 makes reconstructing this *-iən unnecessary: both rows 5 and 6 can just be reconstructed with *-ən. Incorporating this hypothesis, we can revise Table 5.13 as in Table 5.14, accounting for all forms with six vowels.

These arguments, based on the distribution of Middle Chinese initials and finals and on Old Chinese rhyming, are the basis for the six-vowel system.

5.2.1 THE ROUNDED-VOWEL AND FRONT-VOWEL HYPOTHESES

The six-vowel reconstruction incorporates two main hypotheses about Old Chinese vowels: the rounded-vowel hypothesis, discussed above, and the front-vowel hypothesis, to be discussed below. The rounded-vowel hypothesis, due to Jaxontov (1960b), claims that where Middle Chinese has a contrast between syllables with and without *-w-* before the vowel (in traditional terms, a contrast between hékǒu 合 口 closed-mouth finals and kāikǒu

TABLE 5.14 Origins of MC syllables in final *-n* in divisions I and IV (revised)

	rhyme	traditional rhyme group	*Pˢ-	*Tˢ-	*Tsˢ-	*Kˢ-	*Kʷˢ-
1	*-(w)an* < *-an	元 Yuán	*Pan*	*Tan*	*Tsan*	*Kan*	*Kwan*
2	*-(w)an* < *-on*		*Pan*	*Twan*	*Tswan*	*Kwan*	—
3	*-(w)en* < *-en*		*Pen*	*Ten*	*Tsen*	*Ken*	*Kwen*
4	*-(w)en* < *-in*	真 Zhēn	*Pen*	*Ten*	*Tsen*	*Ken*	*Kwen*
5	*-(w)on* ~ *-en* < *-ən	文 Wén	*Pwon*	*Ten*	*Tsen*	*Kon*	*Kwon*
6	*-won* < *-un		*Pwon*	*Twon*	*Tswon*	*Kwon*	—

開口 open-mouthed finals), the *-w-* has only two possible origins: either the Old Chinese onset was labialized (e.g., *k^{w}-), or the *-w-* results from the diphthongization of one of the rounded vowels before acute codas: for example, *-on > *-wan or *-un > *-wən. The reason that Middle Chinese has syllables like *Kweng* and *Kwen*, but no syllables like "*Tweng*" or "*Twen*," is that Old Chinese had labiovelar and labiouvular onsets like *k^{w}(^{ʕ})- and *q^{w}(^{ʕ})- but no labialized dental onsets like "*t^{w}(^{ʕ})-"; nor was there any rounded vowel that diphthongized to produce MC *-we-*.

The other main hypothesis involved in the six-vowel reconstruction is the *front-vowel hypothesis*. The front-vowel hypothesis essentially claims that Old Chinese had no vowel combinations such as the *ia, *ie, or *iə that Karlgren and Li reconstructed in division-IV rhymes: division-IV finals just come from the front vowels *e and *i (as in rows 3 and 4 of Table 5.14 above), or from the fronting of *ə between acute onsets and acute codas (as in row 5 of Table 5.14). Table 5.15 below shows how the three reconstructions compare on this point.

If combinations like *ia, *ie, or *iə are not available in the Old Chinese system, then it follows that the Middle Chinese division-IV syllables (those whose vowel is written as *-e-* in our notation, with no *-a-*, and no *-j-* or *-y-* to the left) must be reconstructed with one of the front vowels *e or *i (as in rows 1 and 2 of Table 5.15, respectively), or else with a *ə that becomes fronted between an acute onset and an acute coda (as in row 3).[8]

The other main point of the front-vowel hypothesis involves type-B (nonpharyngealized) syllables, and has to do with the so-called *chóngniǔ* 重紐 "repeated-initial" finals of Middle Chinese (for discussion, see section 2.1.2.3). Briefly, in our reconstruction (as in other versions of the six-vowel reconstruction), the syllables traditionally called "division-IV chóngniǔ" (in our Middle Chinese notation, those that are written with both prevocalic *-j-* and *-i-*) must all be reconstructed with front vowels, OC *i or *e. We will discuss the chóngniǔ problem in more detail in section 5.3.2; for now, we only illustrate the situation with a couple of examples. Table 5.16 shows a three-way minimal contrast in Middle Chinese, among the syllables we transcribe as *bjonH*, *bjenH*, and *bjienH*, with our reconstructions and those of Karlgren and Li. In the traditional analysis, all three words are assigned to the 元 Yuán rhyme group.

Both 弁 *bjenH* 'cap' (row 2) and 便 *bjienH* 'comfortable' (row 3) are in the *Qièyùn*'s 線 Xiàn rhyme, but they are in different homophone groups, with different fǎnqiè spellings. It is pairs like this that are called chóngniǔ 重紐 'repeated initials', because the 線 Xiàn rhyme includes two homophone groups with the same initial *b-*. Since the two syllables have the same reflexes in virtually all dialects, it is not readily apparent how

TABLE 5.15 Three sources of MC *-en* in three reconstructions, with examples

		Baxter-Sagart	Karlgren	Li (1971)
1	MC *-en* from 元 Yuán: 肩 jiān < *ken* 'shoulder (n.)'	*-e[n] *[k]^{ʕ}e[n]	*-ian *kian	*-ian *kian
2	MC *-en* from 真 Zhēn: 眠 mián < *men* 'sleep'	*-i[n] *m^{ʕ}i[n]	*-ien *mien	*-in *min
3	MC *-en* from 文 Wén: 荐 jiàn < *dzenH* 'grass, herb'	*-ə[n] *N-ts^{ʕ}ə[n]-s	*-iən *dz'iən	*-iən *dziənh

TABLE 5.16 A three-way Middle Chinese contrast in type B, in the traditional 元 Yuán group

		MC	Baxter-Sagart	Karlgren	Li (1971)
1	飯 fàn ‘cooked rice’	*bjonH* 願	*bo[n]ʔ-s	*b’i̯wăn	*bjanh
2	弁 biàn ‘cap’	*bjenH* 線 三	*C.[b]ro[n]-s	*b’i̯an	*bjianh
3	便 biàn ‘comfortable’’	*bjienH* 線 四	*[b]e[n]-s		

they were distinguished phonetically, but in the Sòng-dynasty rhyme tables, 弁 *bjenH* (row 2 in Table 5.16) is put in division III, while 便 *bjienH* (row 3 in Table 5.16) is put in division IV; so 弁 *bjenH* and 便 *bjienH* are called division-III and division-IV chóngniǔ syllables, respectively.[9] In our Middle Chinese notation, we use an arbitrary convention to distinguish the two types: division-III chóngniǔ syllables are written with prevocalic *-j-*, or with the vowel *-i-*, but not both; division-IV chóngniǔ syllables are written with both *-j-* and *-i-*.

As for their Old Chinese reconstructions, Karlgren thought that the chóngniǔ distinctions were artificial, and that 弁 *bjenH* and 便 *bjienH* were simply homonyms in both Middle Chinese and Old Chinese. Li recognized the distinction in Middle Chinese, but was unable to account for it in his Old Chinese reconstruction system. He used the vowel combination *ia to distinguish 弁 *bjenH* and 便 *bjienH* (his ‘*bjianh’) from 飯 *bjonH* (his ‘*bjanh’), but had no way to distinguish 弁 *bjenH* and 便 *bjienH* from each other (1971:41). In the six-vowel system, Old Chinese prevocalic *-r- plays an important role in accounting for the necessary distinctions, as will be shown below. But briefly, in the six-vowel system, syllables like *bjonH* (row 1) must be reconstructed with a nonfront vowel; division-III chóngniǔ syllables like *bjenH* (row 2) can be reconstructed with either front or nonfront vowels; and division-IV chóngniǔ syllables like *bjienH* (row 3) can be reconstructed only with a front vowel.

Table 5.17 illustrates a parallel contrast in high-vowel syllables, in this case with the three-way contrast among MC *mjut*, *mit*, and *mjit*. In this case too, Karlgren regarded 密 *mit* and 蜜 *mjit* as homonyms, even though both the rhyme books and the rhyme tables clearly distinguish them. Li recognized the distinction, but as with the previous example, was unable to account for it in his reconstruction; he gave them the same Old Chinese reconstruction, but with a question mark after 蜜 *mjit* (1971:47). In our reconstruction, they are distinguished by the fact that 密 *mit* < *mri[t] has a prevocalic *-r-, while 蜜 *mjit* < *mit does not.

The main point here is that according to the front-vowel hypothesis, on the basis of their Middle Chinese readings alone, division-IV chóngniǔ syllables like 便 *bjienH* and

TABLE 5.17 A three-way Middle Chinese contrast in type B, 物 Wù and 質 Zhì groups

		MC	Baxter-Sagart	Karlgren	Li (1971)
1	物 wù ‘thing’	*mjut* 物	*C.mut	*mi̯wət	*mjət
2	密 mì ‘dense’	*mit* 質 三	*mri[t]	*mi̯ĕt	*mjit
3	蜜 mì ‘honey’	*mjit* 質 四	*mit		*mjit (?)

蜜 *mjit* must be reconstructed with front vowels (*e and *i, respectively); the details of how our system accounts for the chóngniǔ distinctions are given later in this chapter, when individual rhymes are discussed.

We began our discussion by focusing on division-I and division-IV syllables ending in MC *-ng* and *-n*, but it turns out that the six vowels we have reconstructed in order to account for these syllables are also sufficient to account for division-II and division-III syllables, and for syllables with other codas, as the later sections of this chapter will show. It is this line of reasoning that suggests that Old Chinese should be reconstructed with a system of six vowels.

The arguments for a six-vowel system sketched above were based largely on the distribution of rhymes and onsets in Middle Chinese. We did rely on Old Chinese rhyme evidence to distinguish three sources of MC *-en* (OC *-en, *-in, and in certain environments, *-ən), but the decision to reconstruct *-an, *-on, and *-en with different vowels was based mainly on the pattern of distribution of phonological elements in Middle Chinese, not inferred inductively from the corpus of pre-Qín verse. In fact, as we can see from Table 5.14, there is a mismatch between the phonological rhymes we have reconstructed with the coda *-n and the traditional rhyme categories: in the traditional analysis, our *-an, *-on, and *-en are all assigned to the 元 Yuán group, and both *-ən and *-un are assigned to the 文 Wén group. Karlgren and Li reconstructed these rhymes in such a way as to agree with the traditional analysis: see Table 5.18, which compares our reconstructions with theirs.[10]

Is this disagreement with the traditional analysis an argument against the six-vowel system? There is no guarantee that rhyming practices in a literary tradition will necessarily correspond in a simple way to the phonological rhymes of any particular dialect; for example, for some 800 years, Chinese poets—regardless of what kind of Chinese they actually spoke—have been writing the genre called regulated verse (lǜshī 律詩) according to a rhyme standard called the "*Píngshuǐ yùn* 平水韻," which defines 106 rhyme categories (a simplification of the categories of the *Qièyùn* system), set out in various reference books. The same kind of verse is even composed by Japanese poets, so as to rhyme according to this Chinese standard.

However, we have no evidence of prescriptive rhyme books or similar literature from the pre-Qín period, and our default expectation would be that in the absence of other constraints, poets would have found it most natural to rhyme according to the

TABLE 5.18 OC rhymes in final *-n, in three reconstructions

	MC	Baxter-Sagart	traditional rhyme group	Karlgren	Li (1971)
1	*-an*	*-an	元 Yuán	*-ân	*-an
2	*-wan*	*-on		*-wân	*-uan
3	*-en*	*-en		*-ian	*-ian
4	*-en*	*-in	真 Zhēn	*-ien	*-in
5	*-on/-en*	*-ən	文 Wén	*-ən/*-iən	*-ən/*-iən
6	*-won*	*-un		*-wən	*-ən

phonological rhymes of their own pronunciation. The six-vowel reconstruction sketched above predicts, in effect, that Old Chinese poets should distinguish in rhyming among *-an, *-on, and *-en, even though the traditional analysis assigns them all to the 元 Yuán group, and between *-ən and *-un, even though the traditional analysis assigns them both to the 文 Wén group.

In other words, the mismatches between our vowel reconstruction and the traditional rhyme categories do not necessarily mean that our reconstruction is wrong; it may be that our reconstruction is correct, and it is the traditional analysis that is at fault. It was pointed out in section 2.2 that identifying rhyme groups inductively from a corpus of rhymes, unguided by any hypotheses, is a computationally difficult task. It is easy to notice cases where words that rhymed in Old Chinese do not rhyme anymore; it is much harder to notice cases where words that do rhyme now did *not* rhyme in Old Chinese. In fact, the words we reconstruct with *-an, *-on, and *-en are usually regarded as a single rhyme group in modern Mandarin poetry, so even if they are distinguished in *Shījīng* rhyming, a modern reader will not easily notice this. The situation is similar to that faced by the Qīng-dynasty philologists regarding the *Qièyùn* rhymes 支 Zhī, 脂 Zhī, and 之 Zhī. In their own speech, these had all merged, and it would have been difficult for them to notice that they were distinct in the *Shījīng*, except for the fact that the *Qièyùn* separated these words into three different rhymes, suggesting that they may have been distinct in Old Chinese as well—which turned out to be true.[11]

In the same way, the distributional arguments sketched above for reconstructing *-an, *-en, and *-on with different vowels (and similarly for *-ən and *-un) also suggest hypotheses to check against the corpus of Old Chinese rhymes. In other words, rather than reject the six-vowel reconstruction because it disagrees with the traditional rhyme categories, we can test the predictions of this reconstruction against the Old Chinese rhymes themselves to see if they reveal previously unnoticed rhyming distinctions. Using a probabilistic method for testing hypotheses about rhyming distinctions, Baxter (1992) showed that in fact, the predictions of the six-vowel reconstruction are correct: our reconstructed *-an, *-on, and *-en do indeed rhyme separately, as do *-ən and *-un; and the same is true of the rhymes with other codas.[12] These are facts about Old Chinese rhyming that neither the traditional rhyme categories, nor the reconstructions of Karlgren and Li that are based on them, can account for.

5.2.2 THE SIX-VOWEL RECONSTRUCTION AS A PHILOLOGICAL HEURISTIC

As much work in Chinese philology still relies on the traditional rhyme categories, it is worthwhile to point out that the six-vowel reconstruction is not just of interest to historical linguists, but also has consequences for philological work on early Chinese texts. The Qīng scholars who developed the traditional analysis of Old Chinese rhyming were not primarily motivated by an abstract interest in how the pre-Qín language sounded; rather, they were interested in using their analysis as a philological tool to understand early texts better. In this section we give some examples to show that our

reconstruction is a better philological tool than the traditional analysis and the reconstructions based on it.

Ode 106.3

As pointed out in Baxter (1992:387–388), there is a textual problem in stanza 3 of Ode 106 of the *Shījīng* (Qí fēng: Yījiē《齊風・猗嗟》). The Máo 毛 version reads as in (826), with our Middle Chinese notation added for the rhyme words.[13]

(826) Ode 106.3: Qí fēng: Yījiē《齊風・猗嗟》 rhyme words (MC)

猗嗟孌兮	yījiē LUÁN xī	孌 *ljwenX*
清揚婉兮	qīng yáng WǍN xī	婉 *'jwonX*
舞則選兮	wǔ zé XUÀN xī	選 *sjwenH*
射則貫兮	shè zé GUÀN xī	貫 *kwanH*
四矢反兮	sì shǐ FǍN xī	反 *pjonX*
以禦亂兮	yǐ yù LUÀN xī	亂 *lwanH*

The textual problem occurs in line 5. The Máo commentary has no gloss here, but the Eastern Hàn commentator Zhèng Xuán 鄭玄 (127–200) glosses 反 fǎn as 'to revert' (復也 fù yě). The *Jīngdiǎn shìwén* has this comment:

(827) 反兮:如字[*pjonX*]、復也、韓詩作變[*pjenH*]、變易。
[On] "反兮 fǎn xī": [反 fǎn has its] usual pronunciation [i.e., MC *pjonX*]; it means 復 fù 'to revert'. The Hán 韓 version of the *Shī* reads "變 biàn" [MC *pjenH*], meaning 'to change' (*JDSW* 67).

So there are two versions of the text here: where the Máo version has 反 fǎn 'to revert', the Hán version (of which only fragments remain such as in quotations like this) had 變 biàn 'to change'. In his "Glosses on the Book of odes" (1942–1946, *14*:195), Karlgren gives two translations of the line, one for each possibility:

(828) Máo: 四矢反兮 sì shǐ FǍN xī "The four arrows (revert =) come (one after the other) to the same place" "(all hit the center of the target)"
Hán: 四矢變兮 sì shǐ biàn xī "The four arrows (change =) succeed one another"

Since both interpretations make acceptable sense, Karlgren concludes: "Undecidable which version best repr[resents] the orig[inal] Shī."

In terms of traditional reconstructions, there is no phonological argument favoring one reading over the other, either. But in our six-vowel reconstruction, the rhyme in line 5 stands out as irregular: all the other rhyme words have the main vowel *-o-, but 反 fǎn must be reconstructed with *-anʔ to account for its rhymes elsewhere. Table 5.19 shows the rhyme words of the Máo version as reconstructed by Karlgren, Fang-kuei Li, Guō Xīliáng (1986, based on the system of Wáng Lì), and us.[14]

TABLE 5.19 The rhyme words of *Máo Shī* 106.3, in several reconstructions

	MC	rhyme group	Karlgren	Li	Guō Xīliáng	Baxter-Sagart
1	變 *ljwenX*	元 Yuán	*bli̯wan	[*bljuanx][a]	*lĭwan	*[r]onʔ
2	婉 *'jwonX*	元 Yuán	*•ji̯wăn	*•wjanx	*ĭwan	*[ʔ]o[n]ʔ
3	選 *sjwenH*	元 Yuán	*si̯wan	*sjuanh	*sĭwan	*[s]o[n]ʔ-s
4	貫 *kwanH*	元 Yuán	*kwân	*kwanh	*kuan	*kʷon-s
5	反 *pjonX*	元 Yuán	*pi̯wăn	*pjanx	*pĭwan	*Cə.panʔ
6	亂 *lwanH*	元 Yuán	*lwân	*luanh	*luan	*[r]ʷo[n]-s

[a] Li (1971) does not provide a reconstruction for 戀 liàn < *ljwenX*, but we can infer a reconstruction "*bljuanx" by analogy to the words that he does reconstruct.

In the three earlier reconstructions, there is nothing to indicate that the rhyme in line 5 is in any way unusual or suspect.[15] However, in our reconstruction, 反 fǎn must be reconstructed with *-an, while all the other words must be reconstructed with *-o[n].[16] The Hán *Shī* reading 變 biàn < *pjenH* 'change (v.)' for the rhyme word in line 5 must be reconstructed as *pro[n]-s, which fits the other rhyme words perfectly.[17] The Hán *Shī* reading is therefore preferable on phonological grounds, as pointed out in Baxter (1992:364–366).

Further confirmation for the reading {變} *pro[n]-s 'change (v.)' in line 5 has recently come from the bamboo-strip document called "Kǒngzǐ *Shī* lùn"《孔子詩論》('Kǒngzǐ's discussion of the *Shī*"), in the Shànghǎi Museum texts (*SB* 1.13–1.41, 1.121–1.168). Line 5 of Ode 106.3 is quoted on strip 22, where the word corresponding to {變} *pro[n]-s is written as

(829) 

As shown by Lǐ Jiāhào (1979), this is a graph used in Warring States documents for

(830) {弁} biàn < *bjenH* < *C.[b]ro[n]-s 'cap'

and is often used as a loan character for {變} *pro[n]-s 'change (v.)'—but not, as far as we know, for 反 fǎn. The word 弁 *C.[b]ro[n]-s 'cap' itself rhymes as *-o[n]-s in Ode 102.3.

In effect, the six-vowel system predicted that "四矢變兮 sì shǐ biàn xī" should be the earlier version of line 5; we would expect that 反 fǎn < *panʔ would have been substituted for {變} *pro[n]-s only after the diphthongization *-on > *-wan had occurred (see section 5.2.1 above), after which it would have seemed to be a satisfactory rhyme with the other words of the sequence. Baxter (1992) predicted that if an earlier version of line 5 were found, it would be consistent with the reading {變} *pro[n]-s rather than with {反} fǎn < *panʔ 'reverse'; and the Shànghǎi strips show that this prediction was correct.

A very similar case is the rhyme sequence from *Lǎozǐ* 39, given in Table 5.20 (there is also an internal rhyme sequence in *-eŋ that is not relevant here). In terms of the traditional categories and reconstructions based on them, there is nothing unusual about the rhymes; they all belong to the traditional 月 Yuè group. But in terms of our reconstruction, all the rhyme words in Table 5.20 are to be reconstructed with *-at except that

TABLE 5.20 A rhyme sequence from *Lǎozǐ* 39[18]

	from *Lǎozǐ* 39:		MC	OC
1	天無以清將恐裂	tiān wú yǐ qīng jiāng kǒng liè	*ljet*	*[r]at
2	地無以寧將恐發	dì wú yǐ níng jiāng kǒng fā	*pjot*	*Cə.pat
3	神無以靈將恐歇	shén wú yǐ líng jiāng kǒng xiē	*xjot*	*q^{h}at
4	谷無以盈將恐竭	gǔ wú yǐ yíng jiāng kǒng jié	*gjet*	*N-[k](r)at
5	萬物無以生將恐滅	wàn wù wú yǐ shēng jiāng kǒng miè	*mjiet*	*[m]et
6	侯王無以貴高將恐蹶	hóu wáng wú yǐ guì gāo jiāng kǒng jué	*kjwot*	*k^{w}at

in line 5. According to the front-vowel hypothesis, MC *mjiet* (a division-IV chóngniǔ syllable) can only reflect *-et (see the discussion in section 5.2.1 above). So line 5 stands out as phonologically unusual and philologically suspect. See the reconstructions in Table 5.21.

As it happens, there are several other reasons to believe that line 5 is a late addition to the text. Using entirely independent evidence, William Boltz (1984:220–224, 1985) identified this same line as a late addition, and the line is absent in both of the Mǎwángduī silk manuscripts of the *Lǎozǐ*, dating from early Western Hàn. (Unfortunately, this passage is not among the parts of the *Lǎozǐ* found at Guōdiàn.) On purely system-internal grounds, our reconstruction predicts that line 5 should not have been a good rhyme in the pre-Qín period. Later, *-at was raised and fronted to *-et in certain environments (see section 5.5.2); as a result of these changes, existing poetry would have contained many examples of rhymes mixing *-at and *-et (from original *-at) in contemporary pronunciation, with the result that rhyming standards became laxer, and adding 滅 *[m]et as a rhyme would not have seemed improper. Our reconstruction can explain both why 滅 miè was not a good rhyme earlier, and why it became an acceptable rhyme later. Nothing in the traditional rhyme groups or reconstructions has the power to do this.

In summary, the fact that the six-vowel reconstruction does not match the traditional rhyme categories is an advantage, not a disadvantage: it does not match because the traditional rhyme categories are not fine-grained enough, less sharp a tool for the philological analysis of early texts. The hypotheses of the six-vowel

TABLE 5.21 The rhyme words of *Lǎozǐ* 39, in several reconstructions

	MC	rhyme group	Karlgren (1957)	Li (1971)	Guō Xīliáng (1986)	Baxter-Sagart
1	裂 *ljet*	月 Yuè	*liạt	*ljat	*lĭăt	*[r]at
2	發 *pjot*	月 Yuè	*pi̯wăt	*pjat	*pĭwăt	*Cə.pat
3	歇 *xjot*	月 Yuè	*xi̯ăt	*xjat	*xĭăt	*q^{h}at
4	竭 *gjet*	月 Yuè	*gʼi̯ăt	*gjat	*gĭăt	*N-[k](r)at
5	滅 *mjiet*	月 Yuè	*mi̯at	*mjiat	*mĭăt	*[m]et
6	蹶 *kjwot*	月 Yuè	*ki̯wăt	*kwjat	*kĭwăt	*k^{w}at

system are subject to falsification every time a new early document is discovered; so far, they have stood the test of time.

Even though we argue that the traditional Old Chinese rhyme categories are insufficiently fine-grained, we make frequent reference to them in the rest of this chapter, because they will be meaningful to some readers, and other readers will need to become familiar with them to read the literature on the phonology and philology of the pre-Qín period. Some of our reconstructed rhymes correspond exactly to traditional groups: for example, the set of words we reconstruct with the rhyme *-e is virtually identical to the set of words traditionally assigned to the 支 Zhī rhyme group; in such cases we will sometimes write "*-e = 支 Zhī." But in many cases our reconstructed rhymes correspond to only part of a traditional group: for example, the rhyme *-en is only part of the traditional 元 Yuán rhyme group. In such cases, we sometimes write "*-en ⊂ 元 Yuán," using the mathematical symbol for a proper subset, to remind the reader that the correspondence to the traditional rhyme groups is inexact. Details will be given in the discussion of individual rhymes in sections 5.4 through 5.7.

5.3 Rhyme development: main processes

The main factors affecting the development of rhymes after the Old Chinese period were (1) whether or not the onset was pharyngealized, and (2) whether or not there was an *-r- before the vowel. There were also a number of assimilatory and dissimilatory processes involving onsets, vowels and codas: we will discuss the main trends in this section, but the details will be found in sections 5.4 through 5.7.

5.3.1 THE EFFECTS OF PHARYNGEALIZED ONSETS

A pharyngealized onset generally caused a lowering of the following vowel; a similar effect is common in other languages with pharyngealized consonants, such as Arabic (Jakobson [1957] 1971) and (biblical) Hebrew (Weingreen 1959:19). This characteristic lowering is one of the main arguments for reconstructing the type-A syllables with pharyngealized onsets (see section 3.1.1). The lowering was phonologically nondistinctive at first, but at some point the pharyngealization feature was lost, and many of these vowel distinctions became contrastive.

In Old Chinese, high-vowel syllables in type A and type B rhymed with each other freely, as in example (831). (Note that here original *-iŋ changed to *-in, which seems to be the usual development; some forms indicate an alternative development, *-iŋ > *-eŋ; see section 5.4.4.)

(831)	rhyme words in Ode 28.4:	MC	OC
	淵 yuān 'abyss'	*'wen*	< *ʔ$^{w\varsigma}$in < *[ʔ]$^{w\varsigma}$i[ŋ]
	身 shēn 'body; self'	*syin*	< *n̥in < *n̥i[ŋ]
	人 rén 'person'	*nyin*	< *nin < *ni[ŋ]

But in the *Qièyùn*, 身 shēn < *n̥i[ŋ] and 人 rén < *ni[ŋ], with originally nonpharyngealized onsets, are in the 真 Zhēn rhyme (MC *-in*), while 淵 yuān < *[ʔ]$^{w\text{ˤ}}$i[ŋ], with an originally pharyngealized onset, is in the 先 Xiān rhyme (MC *-en*). On this point the *Qièyùn* agrees with the typical rhyming practice of the sixth century CE and later: 淵 yuān < *[ʔ]$^{w\text{ˤ}}$i[ŋ] no longer rhymes with 身 shēn < *n̥i[ŋ] and 人 rén < *ni[ŋ]; instead, it rhymes with words like 前 qián < *dzen* < *dz^{ˤ}en, which originally had the nonhigh vowel *e. The general pattern is as in Table 5.22.

In general, type-A and type-B syllables that had the same rhyme in Old Chinese are placed in different rhymes in the *Qièyùn*. The lowering of vowels after pharyngealized onsets seems to be the best explanation for this. The precise processes probably varied from dialect to dialect, but the system of the *Qièyùn* indicates the following effects, which are generally supported by sixth-century rhyming practice. (We omit the possible MC *-w-* resulting from labialized initials.)

(832) *Cin > *Cin* (真)
*C^{ˤ}in > *Cen* (先), merging with *Cen* < *C^{ˤ}en

(833) *Cən > *Cj+n* (欣) ~ *Cjun* (文) ~ *Cin* (真)
*C^{ˤ}ən > *Con* (痕) ~ *Cwon* (魂), rhyming with *Cjon* (元) < *Can[19]

(834) *Can > *Cjen* (仙), rhyming with *Cjen* < *Cen
or > *Cjon* (元), rhyming with *Con* or *Cwon* < *C^{ˤ}ən
*C^{ˤ}an > *Can* (寒) ~ *Cwan* (桓), no longer rhyming with original *Can

(835) *Cu > *Cjuw* (尤)
*C^{ˤ}u > *Caw* (豪), merging with *Caw* < *C^{ˤ}aw

(836) *Caw > *Cjew* (宵), rhyming with *Cjew* < *Cew
*C^{ˤ}aw > *Caw* (豪), no longer rhyming with OC type-B *Caw

(837) *Ciw > *Cjiw* (幽) ~ *Cjuw* (尤)
*C^{ˤ}iw > *Cew* (蕭), merging with *Cew* < *C^{ˤ}ew

The effects of pharyngealization differed slightly from rhyme to rhyme, and were complicated by other factors. For example, the low vowel *a tended to stay low before velar codas, so *Cjang* (陽) < *Caŋ generally continued to rhyme with Cang (唐) < *C^{ˤ}aŋ; the two rhymes are designated as tóngyòng 同 用 in the *Guǎngyùn*, and were combined in the *Píngshuǐ yùn*. For details, see the discussion of individual rhymes below.

TABLE 5.22 Changes in rhyming of OC *-in and *-en

OC	OC rhyme	OC group	MC final	*Guǎngyùn* rhyme
*Cin *C^{ˤ}in	*-in	⊂ 真 Zhēn	*-in*	真 Zhēn
*C^{ˤ}en	*-en	⊂ 元 Yuán	*-en*	先 Xiān

5.3.2 THE EFFECTS OF PREVOCALIC *-r-

Prevocalic *-r- is reconstructed to account for three kinds of Middle Chinese syllables: (1) those that have retroflex sibilant initials (*tsr-, tsrh-, dzr-, sr-, zr-*) or retroflex stop initials (*tr-*, *trh-*, *dr-*, *nr-*) in Middle Chinese (see section 4.1.3); (2) division-II syllables; and (3) certain division-III syllables (including many of the division-III chóngniǔ syllables). Reconstructing *-r- in division II was proposed (in slightly different form) by Jaxontov (1960a, 1963); reconstructing *-r- in division III was proposed by Pulleyblank (1962–1963). Li (1971) reconstructed *-r- in cases (1) and (2), but not (3); the six-vowel reconstructions (including Starostin 1989, Baxter 1992, Zhèngzhāng 2003, and the reconstruction presented here) reconstruct *-r- in all three cases.[20] Reconstructing *-r- in cases (2) and (3) involves assuming that prevocalic *-r- sometimes influenced the quality of the following vowel. Although *-r- was preserved after coronal initials as a feature of retroflexion, after *K- and *P-type initials it disappeared; some of the vocalic distinctions introduced by *-r- then became phonologically distinctive. We will discuss pharyngealized and nonpharyngealized syllables separately.

5.3.2.1 Prevocalic *-r- in pharyngealized (type-A) syllables ("division II")

In type-A syllables, prevocalic *-r- seems to have fronted a following unrounded vowel, and introduced some other feature as well, producing the distinctive division-II vowels that we transcribe as *-ae-* and *-ea-* (often reconstructed for Middle Chinese as [æ] and [ɛ], respectively); the result is usually *-ae-* from original *a, and *-ea-* from the nonlow unrounded vowels, as shown in Table 5.23.

It is still unclear exactly what feature distinguished the Middle Chinese division-II syllables from others; very likely the answer would be different for different dialects in the Middle Chinese period. Pulleyblank reconstructed our *-ae-* and *-ea-* as retroflex vowels [aʳ] and [ɛʳ] for the Early Middle Chinese period, which is suggested by some evidence from Chinese transcriptions of Indic words (1984:191–193), and this is a reasonable hypothesis, since they result from the effects of a preceding *-r-. But there is little direct evidence on the matter.

Although the main pattern is as illustrated in Table 5.23, MC *-ae-* does not always come from OC *a, nor does MC *-ea-* always reflect a nonlow vowel. For example, OC

TABLE 5.23 Development of unrounded vowels after *-r- in pharyngealized syllables

OC	MC	examples
*C$^{\varsigma}$riC >	*CeaC*	皆 *k$^{\varsigma}$rij> *keaj* > jiē 'all' 脈 *C.m$^{\varsigma}$<r>[i]k > *meak* > mài 'vein'
*C$^{\varsigma}$rəC >		革 *k$^{\varsigma}$rək> *keak* > gé 'hide, skin' 儕 *[dz]$^{\varsigma}$<r>əj> *dzreaj* > chái 'category, equals'
*C$^{\varsigma}$reC >		狹 *N-k$^{\varsigma}$<r>ep > *heap* > xiá 'narrow' 察 *[ts^{h}]$^{\varsigma}$ret> *tsrheat* > chá 'examine'
*C$^{\varsigma}$raC >	*CaeC*	馬 *m$^{\varsigma}$ra?> *maeX* > mǎ 'horse' 沙 *s$^{\varsigma}$raj > *srae* > shā 'sand'

*K$^{w\text{ʶ}}$ren does not become MC "*Kwean*" as might be expected, but rather MC *Kwaen*, as shown by rhymes, xiéshēng evidence, and word-family connections (see Baxter 1992:382–383); for example:[21]

(838) 環 *C.ɢ$^{w\text{ʶ}}$<r>en > *hwaen* > huán 'ring (n.)'

(839) 圜, 圓 *ɢ^{w}<r>en > *hjwen* > yuán 'round'

(840) 還 *s-ɢ^{w}en > *zjwen* > xuán 'turn around, return'

(841) 翾 *q^{wh}en > *xjwien* > xuān 'fly about'. (The division-IV chóngniǔ final can only reflect *-en.)

Similarly, if we assumed that MC *-ea-* invariably indicated a nonlow vowel, we might be tempted to reconstruct 殺 shā < MC *sreat* 'kill' as "*s^{ʶ}ret." Actually, 殺 shā is from type-B *s<r>at, which would have become *srjet* by normal changes,[22] but in most varieties of Middle Chinese, type-B syllables with initials of the *Tsr-* type developed as if they lost the *-j-*: thus *s<r>at > *srjet* > *sreat*. The Sòng-dynasty rhyme tables appear to reflect this change, because syllables beginning with retroflex initials are all placed in division II. There are no *Tsr-* initials in division III; thus, 殺 *sreat* is placed in division II, like 八 *p^{ʶ}r[e]t > *peat* > bā 'eight'. Similarly, 山 shān < *srean* is from *a in type B, not *e in type A: we reconstruct 山 shān < *srean* < *srjen* < *s-ŋran < *s-ŋrar.[23] Confusion about whether to reconstruct *e or *a in such cases has tended to obscure the fact that Old Chinese rhyming distinguishes front-vowel rhymes like *-en, *-et, and *-ew from nonfront *-an, *-at, and *-aw.

Prevocalic *-r- seems to have left no trace on vowels that were rounded at the time the other vowels preceded by *-r- became phonologically distinct. For example, there are no division-II words in the traditional 侯 Hóu rhyme group, which we reconstruct with *-o, and unless there is a retroflex initial, we generally cannot distinguish between *C^{ʶ}o and *C^{ʶ}ro on the basis of Middle Chinese evidence alone; in such cases we write *C^{ʶ}(r)o. In a few cases, though, we can reconstruct *-r- on the basis of other evidence. For example, expressive binomes with an *e/o alternation generally either have *-r- in both syllables or in neither:

(842) 輾 轉 zhǎnzhuǎn < *trjenX-trjwenX* < *trenʔ-tronʔ 'toss and turn' (Ode 1.2, 145.3)

(843) 間 關 jiānguān < *kean-kwaen* < *k^{ʶ}re[n]-k^{ʶ}ro[n] 'sound of a chariot's linchpin' (Ode 218.1)

(844) 契 闊 qìèkuò < *khet-khwat* < *k$^{h\text{ʶ}}$et-k$^{h\text{ʶ}}$ot 'hard-working' (Ode 31.4)

(845) 斯 須 sīxū < *sje-sju* < *se-so 'a short time' (*Lǐ jì*: Jì yì《禮記・祭義》)

On this basis, we can infer that there was probably an *-r- in both syllables of the following expression, even though MC *huwH* by itself could represent either *g^{ʶ}o-s or *g^{ʶ}ro-s:

(846) 邂 逅 xièhòu < *heaH-huwH* < *g^{ʶ}re-s-g^{ʶ}ro-s 'carefree' (Odes 94.1–2, 118.2)

Similarly, in 狗 gǒu < *kuwX* 'dog', Hmong-Mien forms indicate an *-l- before the vowel, which probably represents an *-r- in the Chinese source, even though it is not apparent from the Middle Chinese reading *kuwX*; our reconstruction is *Cə.kˁroʔ.[24]

(847) 狗 *Cə.kˁroʔ > *kuwX* > gǒu 'dog'; cf. pHM *qluwX, Proto-Mienic *klo B (L-Thongkum 1993:188)

But in general, we cannot distinguish syllables like *Cˁro from *Cˁo when the onset is grave.[25] However, *Cˁroŋ and *Cˁrok do have reflexes distinct from *Cˁoŋ and *Cˁok, probably because before *-ŋ and *-k, *o diphthongized to something like [aw]—a change that did not happen when the coda was zero:

(848) 江 *kˁroŋ > *kˁrawŋ > *kaewng* > jiāng '(Yángzǐ) river'; cf. Proto-Monic *kroːŋ 'large river' (Diffloth 1984:132)

(849) 邦 *pˁroŋ > *pˁrawŋ > *paewng* > bāng 'country'

(850) 角 *C.[k]ˁrok > *kˁrawk > *kaewk* > jiǎo 'horn, corner'

(851) 剝 *[p]ˁrok > *pˁrawk > *paewk* > bō 'cut, flay, peel'

In other cases too, when diphthongization of an original rounded vowel produces an unrounded vowel, *-r- acts on the unrounded vowel as expected. In the following cases, the diphthongization of the main vowel reflects the lowering of vowels after pharyngealized onsets:

(852) 降 *m-kˁru[ŋ] > *m-kˁrawŋ > *haewng* > xiáng 'submit'

(853) 學 *m-kˁruk > *m-kˁrawk > *haewk* > xué 'study; imitate'

(854) 爪 *[ts]ˁ<r>uʔ > *[ts]ˁrawʔ > *tsraewX* > zhǎo 'claw'

(855) 卯 *mˁruʔ > *mˁrawʔ > *maewX* > mǎo 'fourth earthly branch'

(856) 壞 *N-[k]ˁ<r>ujʔ-s > *gˁrwəj-s > *hweajH* > huài 'be destroyed'

(857) 滑 *Nə-gˁrut > *Nə-gˁrwət > *hweat* > huá 'slippery'; pHM *ɴgu̱at 'smooth/slippery'

(858) 蠻 *mˁro[n] > *mˁrwan > *mˁran > *maen* > mán 'southern foreigner'

(859) 踝 *m-kˁ<r>o[r]ʔ > *m-kˁ<r>wajʔ > *hwaeX* > huà 'ankle'

5.3.2.2 Prevocalic *-r- in nonpharyngealized (type-B) syllables

We can tell from Middle Chinese written sources that prevocalic *-r- often affected the following vocalic segments in nonpharyngealized syllables also, although the phonetic details are difficult to pin down because of our lack of knowledge about the phonetics of Middle Chinese and its varieties. When original nonfront unrounded vowels *ə and *a appear to be fronted in Middle Chinese, this can often be attributed to a preceding *-r-, as shown in examples (860) through (863).

(860) 卬 *[k.ŋ]ˁaŋ > *ngang* > áng 'high; lift high'
迎 *ŋraŋ > *ngjaeng* > yíng 'go to meet'

(861) 卻 *[k]^{h}ak > *khjak* > què ‘decline, refuse’
綌 *[k]^{h}rak > *khjaek* > xì ‘coarse kudzu cloth’

(862) 分 *pə[n]> *pjun* > fēn ‘divide’
貧 *[b]rə[n] > *bin* > pín ‘poor’

(863) 馮 *[Cə.b]əŋ > *bjuwng* > píng ‘Féng (surname)’
馮, 憑 *[b]rəŋ > *bing* > píng ‘lean on’

However, *-r- also had an effect in syllables that already had front vowels, because there are also contrasting reflexes in front-vowel syllables with and without a preceding *-r-, as in examples (864) through (869).

(864) 名 *C.meŋ > *mjieng* > míng ‘name’
鳴 *m.reŋ (dial.) > *mreŋ > *mjaeng* > míng ‘cry (of birds or animals)’

(865) 營 *[ɢ]^{w}eŋ > *yweng* > yíng ‘demarcate, encamp’
榮 *[N-q^{w}]reŋ > *hjwaeng* > róng ‘glory, honor’

(866) 卑 *pe > *pjie* > bēi ‘low, humble’
碑 *pre > *pje* > bēi ‘pillar’

(867) 蜜 *mit > *mjit* > mì ‘honey’
密 *mri[t] > *mit* > mì ‘dense’

(868) 匀 *[N-q]^{w}i[n] > *ywin* > yún ‘even, uniform’
筠 *[ɢ]^{w}ri[n] > *hwin* > yún ‘rind of bamboo’

(869) 脂 *kij > *tsyij* > zhī ‘fat, grease’
耆 *[g]rij > *gij* > qí ‘old’

In each pair of examples cited in (864) through (868), we can tell from rhymes or xiéshēng evidence or both that the two forms had the same main vowel in Old Chinese; yet the Middle Chinese sources clearly indicate that they had different finals. In examples (864) and (865), the two forms are in different *Qièyùn* rhymes. In examples (866) through (868), the forms are in the same rhymes, but are given different fǎnqiè spellings: these are chóngniǔ 重紐 or ‘repeated-initial’ pairs, discussed above.[26] Furthermore, such pairs are systematically distinguished in the Sòng rhyme tables: in examples (866) through (868), the first member of each pair is put in division IV while the second is put in division III. In example (869), the phonetic elements indicate that both forms originally had velar initials, but in 脂 *kij > *tsyij*, the *k- is palatalized to MC *tsy-* before the front vowel *i; in 耆 *[g]rij > *gij*, palatalization has been blocked by *-r-. (In this example both words are in division III of the rhyme tables, because *tsy-* and other palatal initials are always put in division III.)

The phonetic interpretation of these distinctions is difficult, because there are hardly any traces of the distinction in modern dialects, and the treatment of the relevant words in the written sources very likely represents a compromise among two or more dialects. But there is little doubt that the distinctions were real in some varieties of Chinese, and there are good arguments that whatever their nature, they can be attributed to OC

prevocalic *-r-. For example, the syllables we reconstruct with prevocalic *-r- on this basis often have xiéshēng contacts with MC *l-* < *r(ˢ)- or other evidence of *-r-, as in examples (870) through (874).

(870) 京 *[k]raŋ > *kjaeng* > jīng 'hill; capital city'
涼 *C.raŋ > *ljang* > liáng 'cold'; cf. Written Tibetan *grang-ba* 'cold, cool'

(871) 變 *pro[n]-s > *pjenH* > biàn 'change (v.)'
縊 *mə.rˢo[n] > *lwan* > luán 'harness bells'; cf. Thai bruan A 'neck bells (for domestic animals)' (Bodman 1980:74)

(872) 丙 *praŋʔ > *pjaengX* > bǐng 'third heavenly stem'
兩 *p.raŋʔ > *ljangX* > liǎng 'a pair'. The early character is just the character 丙 bǐng doubled.

(873) 冰 *p.rəŋ > *prəŋ > *ping* > bīng 'ice' (representing a dialect where *p.r- > *pr-; see section 4.4.4.4)
凌 *p.rəŋ > *ling* > líng 'ice'[27]

(874) 命 *m-riŋ-s (dialectally > *mreŋ-s) > *mjaengH* > mìng 'command (n.)'
令 *riŋ-s (dialectally > *reŋ-s) > *ljengH* > lìng 'issue a command'. Note: in pre-Qín script, 命 mìng and 令 lìng are not clearly distinguished.[28]

The hypothesis that such contrasts should be accounted for by reconstructing prevocalic *-r- is sometimes summarized by stating it as a rule that *-r- should be reconstructed in all division-III chóngniǔ syllables; but this is an overgeneralization. The relationship between OC prevocalic *-r- and division-III chóngniǔ syllables is more indirect: *-r- must be reconstructed to account for some of these syllables, but not all. In cases like examples (875) and (876), there is a contrast in Middle Chinese between earlier syllables of the form *CaC and *CraC or between *CəC and *CrəC; in such cases, *-r- is required to account for the contrast.[29]

	OC	MC	examples
(875)	*Paŋ	*Pjang* (陽)	昉 *paŋʔ > *pjangX* > fǎng 'just then, at that time'
	*Praŋ	*Pjaeng* (庚 三)	丙 bǐng < *pjaengX* < *praŋʔ 'third heavenly stem'
(876)	*Pə[n]	*Pjun* (文)	分 *pə[n] > *pjun* > fēn 'divide'
	*Prə[n]	*Pin* (真 三)	貧 *[b]rə[n] > *bin* > pín 'poor'

But there are also situations where *Cra(C) has evidently merged with *Ca(C) or *Crə(C) with *Cə(C); in such cases there is no contrast in Middle Chinese between the form with *-r- and the form without, so unless we have other evidence, we do not know whether there was an *-r- there or not. In such cases, we write *-(r)- to indicate that for all we know, there could have been an *-r- before the vowel. The notation *-(r)- does

not mean that there is any positive reason to believe that an *-r- was present, only that we do not know. Here are some examples:

	OC	MC	examples
(877)	*Paj *Praj	*Pje* (支 三)	靡 *m(r)ajʔ > *mjeX* > mǐ ‘fall over’
(878)	*Paw *Praw	*Pjew* (宵 三)	表 *p(r)awʔ > *pjewX* > biǎo ‘exterior’
(879)	*Kə *Krə	*Ki* (之)	基 *k(r)ə > *ki* > jī ‘base (n.)’
(880)	*Kək *Krək	*Kik* (職)	亟 *k(r)ək > *kik* > jí ‘urgently’

Such cases will be discussed below as they arise.

5.3.3 ASSIMILATIONS AND DISSIMILATIONS

A variety of assimilatory and dissimilatory processes affected the development of rhymes. For example, in syllables of the form *K^{w}(r)u, the vowel *u evidently dissimilated to *ə under the influence of the labialized initial:

(881) 軌 *k^{w}ruʔ >*k^{w}rəʔ > *kwijX* > guǐ ‘wheel ruts’

We can tell from both rhymes and xiéshēng connections that the main vowel in (881) was *u, but the syllable develops to Middle Chinese as if it had *ə.[30]

Final labials *-m and *-p frequently dissimilated to [ŋ] and [k], respectively, after labial and labialized onsets:

(882) 熊 *C.[ɢ]^{w}(r)əm > *C.ɢ^{w}əŋ > *hjuwng* > xióng ‘bear (n.)’; cf. Xiàmén /him 2/

Conversely, when no *-r- intervened, the vowel *ə was rounded to *u (> MC *-juw*) after (nonpharyngealized) *P- and *K^{w}-, an assimilation of rounding:

(883) 有 *[ɢ]^{w}əʔ > *ɢ(^{w})uʔ > *hjuwX* > yǒu ‘have, exist’

Finally, *ə and *a were both regularly fronted between an acute onset and an acute coda; with *ə, this happened even when the onset was pharyngealized:

(884) 先 *s^{ʕ}ər > *s^{ʕ}ən > *s^{ʕ}in > *sen* > xiān ‘first’[31]

(885) 壇 *[d]anʔ > *denʔ > *dzyenX* > shàn ‘leveled area’

Such dissimilations are discussed in more detail in the sections below on individual rhymes.

The remainder of this chapter gives the details of our reconstructed rhymes and their Middle Chinese reflexes under different conditions. Reflexes in Mǐn and other dialects

TABLE 5.24 Sections according to type of coda

section	type of coda
5.4	back codas: *-∅, *-k, and *-ŋ
5.5	acute codas: *-j, *-t, *-n, and *-r
5.6	codas *-w and *-wk
5.7	labial codas: *-p and *-m

are mentioned occasionally, but not systematically; more research needs to be done before these developments are entirely clear.

The rhymes are grouped according to the types of codas, as in Table 5.24. Within each section, rhymes with the same main vowel are discussed together: for example, in section 5.4, the first subsection 5.4.1 discusses rhymes with *a before the back codas *-∅, *-k, and *-ŋ; subsection 5.4.2 discusses rhymes with *ə before the back codas; and so forth. For efficiency of presentation, most of the information is presented in tables; general comments and specific problems are discussed in the accompanying text.

5.4 Rhymes with back codas (*-∅, *-k, and *-ŋ)

As noted above, there is a tendency for vowels to be lowered or to stay low before the velar codas *-k and *-ŋ. Open syllables (those with the zero coda) do not show this tendency, however. Vowels generally develop as expected, except that original *-ik and *-iŋ show several different developments, presumably due to dialect differences (see section 5.4.4 below).

Our reconstruction distinguishes among rhymes of the form *-V-s, *-Vʔ-s, and *-Vk-s. Some other reconstructions do not make this distinction: for example, our *-ə-s, *-əʔ-s, and *-ək-s are all *-əg in Karlgren's reconstruction and *-əgh in Li's reconstruction.

5.4.1 *a WITH BACK CODAS

For each combination of main vowel and coda type, we include a table like Table 5.25 that includes traditional Old Chinese rhyme groups, Middle Chinese readings, and reconstructions in several systems.[32] Only reflexes in type-A (pharyngealized-onset) syllables with no prevocalic *-r- are included in tables of this type, since these syllables have a rather simple development that makes them convenient for comparing different reconstructions. In traditional terms, this means that the syllable types represented in tables like this are either division I (as here) or division IV.[33]

In tables like Table 5.25, the column numbered 1 includes the rhyme we reconstruct with zero or vocalic codas (here *-a); column 2 has the corresponding rùshēng rhyme, that is, the rhyme with a voiceless stop coda (here *-ak). Column 3 (here *-ak-s) gives the result of adding an *-s suffix to the rùshēng rhyme in column 2; and column 4 gives the corresponding rhyme with a nasal coda (here *-aŋ).

TABLE 5.25 OC *a with back codas (type-A syllables): recontructions compared

		1	2	3	4
1	Baxter-Sagart	*-a	*-ak	*-ak-s	*-aŋ
2	OC rhyme group	= 魚 Yú	= 鐸 Duó		= 陽 Yáng
3	Middle Chinese	*-u* 模	*-ak* 鐸	*-uH* 暮	*-ang* 唐
4	Karlgren (1957)	*-o	*-âk	*-âg	*-âng
5	Dǒng Tónghé (1948)	*-âg	*-âk	*-âg	*-âng
6	Wáng Lì (1958)	*-ɑ	*-ɑ̆k	*-ɑ̄k	*-ɑŋ
7	Li (1971)	*-ag	*-ak	*-agh	*-ang
8	Pulleyblank (1977–1978)	*-áɣ	*-ák	*-áks	*-áŋ
9	Starostin (1989)	*-ā	*-āk	*-āks	*-āŋ
10	Baxter (1992)	*-a	*-ak	*-aks	*-ang
11	Zhèngzhāng (2003)	*-aa	*-aag	*-aags	*-aaŋ

The rhymes *-aʔ, *-a-s, and *-aʔ-s all develop as in column 1, except for tone category. We list *-ak and *-ak-s separately in these tables because the treatment of *-ak-s differs in different reconstructions; see examples (886) through (888) below, where our reconstructions are compared with those of Karlgren, Wáng Lì, and Fang-kuei Li.

			MC	B-S	Karlgren	Wáng	Li
(886)	a	呼 hū ‘call out, shout’	*xu*	*q^{hʕ}a	*χo	*xɑ	*xag
	b	呼 hù ‘call out, shout’	*xuH*	*q^{hʕ}a-s	*χo	*xɑ	*xagh
(887)	a	吐 tǔ ‘eject from mouth, spit’	*thuX*	*t^{hʕ}aʔ	*t’o	*t’ɑ	*thagx
	b	吐 tù ‘vomit’	*thuH*	*t^{hʕ}aʔ-s	*t’o	*t’ɑ	*thagh
(888)	a	度 duó ‘measure (v.)’	*dak*	*d^{ʕ}ak	*d’âk	*dɑ̆k	*dak
	b	度 dù ‘measure (n.)’	*duH*	*[d]^{ʕ}ak-s	*d’âg	*dɑ̄k	*dagh

Note that the finals in (886b), (887b), and (888b) are all the same in Middle Chinese (*-uH*). In Li’s reconstruction, they are the same in Old Chinese as well, namely *-agh. But in our reconstruction, as in Karlgren’s and Wáng Lì’s, *-ak-s (in 888b) is distinguished from *-a-s (in 886b) and *-aʔ-s (in 887b). Neither Karlgren, Wáng Lì, nor Fang-kuei Li distinguished *-a-s (in 886b) from *-aʔ-s (in 887b), however. The three different Old Chinese finals in (886b), (887b), and (888b) are not distinguishable from Middle Chinese alone; we reconstruct them on the basis of xiéshēng and word-family relationships such as those between the (a) and (b) forms in each example above.

In assigning words to traditional rhyme categories, there is a similar difference of treatment: Wáng Lì assigned the rhymes we reconstruct as *-ak and *-ak-s to the traditional rùshēng rhyme group 鐸 Duó (putting column 3 with column 2), but

others would assign our *-ak-s to the traditional yīnshēng rhyme group 魚 Yú (putting column 3 with column 1). Our treatment here is like that of Wáng Lì.

In row 2 of Table 5.25, "= 魚 Yú" means that our *-a corresponds exactly to the traditional rhyme group 魚 Yú (under Wáng Lì's interpretation of it; see the previous paragraph); similarly, our *-ak and *-ak-s correspond to the traditional 鐸 Duó group (in the version of the traditional analysis used by Wáng Lì); and our *-aŋ (subsuming *-aŋʔ, *-aŋ-s, and *-aŋʔ-s, not listed separately) corresponds to the traditional 陽 Yáng group. By contrast, in similar tables below we sometimes write the mathematical symbol "⊂," meaning "is a proper subset of," instead of "=": for example, under *-an we write "⊂ 元 Yuán" (see Table 5.55 below), because the traditional 元 Yuán group does not exactly correspond to our *-an, but also includes the rhymes *-en and *-on.[34]

In row 3 of Table 5.25, we give the Middle Chinese reflexes of the Old Chinese rhymes in each column, followed by the name of the relevant *Guǎngyùn* rhyme. Some readers will be more familiar with the names of the *Guǎngyùn* rhymes than with any alphabetic representation of them; other readers are advised to become familiar with the *Guǎngyùn* rhymes, so that they can understand literature that uses traditional terminology, and relate the terminology used there to our reconstruction. In rows 4 through 11, we give the corresponding Old Chinese reconstructions from eight previous systems, for comparison.

5.4.1.1 *-a (= traditional 魚 Yú)

When discussing individual rhymes such as *-a, we include a more detailed table like Table 5.27 below, which gives the reflexes of both type-A and type-B syllables, with and without prevocalic *-r-, with different types of initial consonants. General cover symbols are used for types of initials that show similar development. Table 5.26 shows which simple initials of Old Chinese are included under each cover symbol.

TABLE 5.26 Cover symbols for simple Old Chinese initials

*Kˢ	velars, uvulars, glottal stop	*kˢ *kʰˢ *gˢ *ŋˢ *ŋ̊ˢ; *qˢ *qʰˢ *ɢˢ; *ʔˢ
*K		*k *kʰ *g *ŋ *ŋ̊; *q *qʰ *ɢ; *ʔ
*Kʷˢ	labiovelars, labiouvulars, labialized glottal stop	*kʷˢ *kʷʰˢ *gʷˢ *ŋʷˢ *ŋ̊ʷˢ; *qʷˢ *qʷʰˢ *ɢʷˢ; *ʔʷˢ
*Kʷ		*kʷ *kʷʰ *gʷ *ŋʷ *ŋ̊ʷ; *qʷ *qʷʰ *ɢʷ; *ʔʷ
*Pˢ	bilabials	*pˢ *pʰˢ *bˢ *mˢ *m̥ˢ
*P		*p *pʰ *b *m *m̥
*Tˢ	dentals, liquids	*tˢ *tʰˢ *dˢ *nˢ *n̥ˢ; *lˢ *l̥ˢ *rˢ *r̥ˢ
*T		*t *tʰ *d *n *n̥; *l *l̥ *r *r̥
*Tsˢ	sibilants	*tsˢ *tsʰˢ *dzˢ *sˢ
*Ts		*ts *tsʰ *dz *s

Ten Old Chinese onset types are distinguished by these cover symbols: five pharyngealized and five nonpharyngealized. When it is unnecessary to specify the position of articulation, we also use *C^{ʕ}- and *C- as cover symbols for any pharyngealized or nonpharyngealized initial, respectively. Similarly, for Middle Chinese, we use *C*- as a cover symbol for an arbitrary initial consonant.

Table 5.27 gives the Middle Chinese reflex types for the finals *-a and *-ra after different types of Old Chinese initials. For example, the first row gives *Cu* as the reflex of *C^{ʕ}a; this means that *-a (but not *-ra) becomes MC *-u* after any pharyngealized initial. The next two rows give MC *Kwae* as the reflex of *K^{wʕ}ra and MC *Cae* as the reflex of *C^{ʕ}ra; this means that *-ra becomes MC *-wae* after pharyngealized labialized initials (represented by *K^{wʕ}-), but it becomes MC *-ae* after all other pharyngealized initials (represented by *C^{ʕ}-). (In other words, syllable types like *K^{wʕ}ra that have special developments are listed first, and the syllable types below with *C^{ʕ}- or *C- represent syllable types not already included above.) The cover symbols for Middle Chinese initials are those given in Table 2.3. The identity of MC *C*- can be inferred from the principles given in chapter 4.

The rightmost column gives examples of the developments in that row. The development *C^{ʕ}a > *Cu* is illustrated by 苦 *k^{hʕ}aʔ > *khuX* > kǔ ‘bitter’.

Tables like Table 5.27 give the reflexes of Old Chinese rhymes after singleton initials. The development after more complex syllable onsets can usually be inferred by analogy to simpler ones: for example, *m-k^{ʕ}- later becomes *g^{ʕ}-, so its development is the same as the development after the simple initials included under the cover symbol “*K^{ʕ}-.” When a presyllable affects the position of articulation of the main consonant, the developments will not match those in our tables exactly. An example is

(889) 宣 *s-q^{w}ar > *sjwen* > xuān ‘spread (v.)’

where the main initial *q^{w}- would fall under the cover symbol *K^{w}-, but because of the change of *s-q^{w}- to *sw-, after a certain point the development follows the pattern of initials of type *Ts-.

For some of the syllable types envisaged in our reconstruction, there are no attested examples, or no examples that can be clearly assigned to that type; in that case the table will will be accompanied by a note to that effect. For some Old Chinese syllable types, more than one possible outcome is given; we assume that these cases are generally due either to dialect mixture or to phonological conditions that have not yet been identified. Such cases will be discussed in the comments accompanying each table. For example, in Table 5.27, some syllables of the type *Ta develop into MC *Tsyo*, while others develop into MC *Tsyae*: at present we cannot fully explain these divergent developments, and as an ad hoc notational device, we write *TA instead of *Ta when the result is MC *Tsyae*.

Developments that need further discussion are identified by numbers in square brackets to the left of the relevant examples; the explanatory notes are given after the table. Here, then, is Table 5.27.

TABLE 5.27 Middle Chinese reflexes of *-a

OC	MC		examples
*C$^{\varsigma}$a	*Cu*	[1]	苦 *k$^{h\varsigma}$aʔ > *khuX* > kǔ ‘bitter’ 孤 *k$^{w\varsigma}$a > *ku* > gū ‘orphan’ 土 *t$^{h\varsigma}$aʔ > *thuX* > tǔ ‘earth’
*K$^{w\varsigma}$ra	*Kwae*		瓜 *k$^{w\varsigma}$ra > *kwae* > guā ‘melon, gourd’
*C$^{\varsigma}$ra	*Cae*		家 *k$^{\varsigma}$ra > *kae* > jiā ‘household’ 豝 *p$^{\varsigma}$ra > *pae* > bā ‘sow, pig’ 柤 *ts$^{\varsigma}$ra > *tsrae* > zhā ‘kind of fruit tree’
*P(r)a	*Pju*	[2] [3]	無 *ma > *mju* > wú ‘not have’ 膚 *pra > *pju* > fū ‘skin’
*K^{w}(r)a	*Kju*		娛 *ŋ^{w}(r)a > *ngju* > yú ‘rejoice’
*C(r)A	*Cjae*	[4]	邪 *[ɢ](r)A > *yae* > yé ‘(interrogative particle)’
*TA	*Tsyae*		者 *tAʔ > *tsyaeX* > zhě ‘(nominalizing particle)’
*TsA	*Tsjae*		且 *[ts^{h}]Aʔ > *tshjaeX* > qiě ‘moreover’
*C(r)a	*Cjo*	[2]	語 *ŋ(r)aʔ > *ngjoX* > yǔ ‘speak’ 筥 *[k]raʔ > *kjoX* > jǔ ‘round basket’ 豬 *tra > *trjo* > zhū ‘pig’ 初 *[ts]^{h}ra > *tsrhjo* > chū ‘beginning’

Notes on Table 5.27:

[1] *K$^{w\varsigma}$a and *K$^{\varsigma}$a both become MC *Ku*, so they cannot be distinguished from Middle Chinese evidence alone; we reconstruct *K$^{w\varsigma}$a on the basis of graphic or word-family connections. For example, we reconstruct 孤 *k$^{w\varsigma}$a > *ku* > gū ‘orphan’ with a labialized initial because it is written with the phonetic 瓜 *k$^{w\varsigma}$ra > *kwae* > guā ‘melon, gourd’.

[2] In type-B syllables with grave initials, it is impossible to distinguish between *Ca and *Cra on the basis of Middle Chinese evidence alone: *Ka and *Kra both become *Kjo*, *Pa and *Pra both become *Pju*, and *K^{w}a and *K^{w}ra both become *Kju*. It is only when we have graphic or word-family evidence that we can reconstruct *-r- with confidence in such syllables; for example, 筥 jǔ < *kjoX* < *[k]raʔ ‘round basket’ is written with the phonetic 呂 *[r]aʔ > *ljoX* > lǚ ‘spine; pitch-pipe’.

[3] The rhymes *-a and *-ra become MC *-jo* after *K-, but *-ju* after *K^{w}- or *P-, merging with *K(r)o and *P(r)o, respectively. Most modern dialects have no distinction corresponding to MC *-jo* vs. *-ju*, but the distinction is preserved in Mǐn and Southern Wú dialects (Luó Chángpéi 1931; Dǒng Tónghé 1960:1041; Zhōu Zǔmó [1943] 1966, 1966; Mei 2001). For example, in Norman’s reconstruction, we generally have the Proto-Mǐn final *-y from OC *C(r)a, but pMǐn *-io from OC *K^{w}(r)a and *P(r)a, as shown in Table 5.28.

[4] In addition to MC *-jo* and *-ju*, there is a third Middle Chinese reflex *-jae* from OC *-a that we cannot yet fully explain. Thus there are contrasts like the following:

(890) 煮 zhǔ < *tsyoX* (= *tsy-* + *-joX*) ‘boil, cook’[35]
渚 zhǔ < *tsyoX* (= *tsy-* + *-joX*) ‘islet’
赭 zhě < *tsyaeX* (= *tsy-* + *-jaeX*) ‘red earth; red pigment’
者 zhě < *tsyaeX* (= *tsy-* + *-jaeX*) ‘(nominalizing particle)’

TABLE 5.28 Mǐn reflexes of *C(r)a, *K^{w}(r)a, and *P(r)a

	OC	MC	pMǐn	Xiàmén	Jiēyáng
	*C(r)a	*-jo* (魚)	*-y	-u, -i	-ɯ
鋸 jù ‘saw (n.)’	*k(r)a-s	*kjoH*	*ky C	ku 5	kɯ 5
箸 zhù ‘chopsticks’	*[d]<r>ak-s	*drjoH*	*dy C	ti 6	tɯ 6
書 shū ‘write’	*s-ta	*syo*	*tsy A ‘book’	tsu 1	tsɯ 1
	*K^{w}(r)a, *P(r)a	*-ju* (虞)	*-io	-ɔ	-ou
雨 yǔ ‘rain’	*C.ɢ^{w}(r)aʔ	*hjuX*	*ɣio B	hɔ 6	hou 4
芋 yù ‘taro’	*[ɢ]^{w}(r)a-s	*hjuH*	*io C	ɔ 6	ou 6
斧 fǔ ‘axe’	*p(r)aʔ	*pjuX*	*pio B	pɔ 3	pou 3

All four words are written with the same phonetic 者 zhě, so they should all have the same main vowel, and they all have initial *tsy-* in Middle Chinese, which normally represents OC *t-; it appears that all four should be reconstructed as *taʔ. Why then do we have two Middle Chinese reflexes, *tsyoX* and *tsyaeX*? For the present, we have no satisfactory explanation. The contrast is limited to syllables with Middle Chinese initials of the types *Tsy-* and *Ts-*. Given that syllable onsets in Old Chinese are more complex than in Middle Chinese, and our reconstruction of them is incomplete, it is likely that contrasts in the onset play a role in conditioning the Middle Chinese reflexes; for example, perhaps MC *tsyaeX* could reflect a form like *C.taʔ with some preinitial consonant that keeps the following vowel from developing to MC *-jo* as it normally would. But for the present we simply distinguish them by writing OC *-a as “*-A” when the Middle Chinese reflex is *-jae*. Our *A is *not* intended as a seventh Old Chinese vowel; it is an explicitly ad hoc notation that basically means “a case of OC *-a which for as yet unexplained reasons becomes MC *-jae* instead of MC *-jo*.”[36] There is no evidence that *-A rhymes any differently from ordinary *-a.[37]

Other common words with MC *-jae* < OC *-a (written *-A) include:

(891) 車 *[t.q^{h}](r)A > *tsyhae* > chē ‘chariot’;[38] cf.
車 *C.q(r)a > *kjo* > jū ‘chariot’
輿 *m-q(r)a > *ɢ(r)a > *yo* > yú ‘vehicle, carriage; carry on shoulders’

(892) 社 *m-t^{hʕ}Aʔ > *dzyaeX* > shè ‘sacrifice to the spirit of the soil’; cf.
土 *t^{hʕ}aʔ > *thuX* > tǔ ‘earth’[39]

(893) 奢 *s.t^{h}A > *syae* > shē ‘extravagant’ (cf. Xiàmén /ts^{h}ia 1/, Fúzhōu /ts^{h}ia 1/)

(894) 寫 *s-q^{h}Aʔ > *sjaeX* > xiě ‘depict’

(895) 遮 *tA > *tsyae* > zhē ‘to cover’[40]

5.4.1.2 *-ak(-s) (= traditional 鐸 Duó)

The Middle Chinese reflexes of *-ak under various onset conditions are summarized in Table 5.29. The reflexes of *-ak-s are the same as those for *-a-s: as in Table 5.27, but in qùshēng only.

TABLE 5.29 Middle Chinese reflexes of OC *-ak

OC	MC	notes	examples
*K$^{w\varsigma}$ak	*Kwak*		郭 *k$^{w\varsigma}$ak > *kwak* > guō ‘outer wall’
*C$^{\varsigma}$ak	*Cak*		惡 *ʔ$^{\varsigma}$ak > *'ak* > è ‘bad, ugly’ 度 *[d]$^{\varsigma}$ak > *dak* > duó ‘measure (v.)’
*K$^{w\varsigma}$rak	*Kwaek ~ Kweak*	[1]	擭 *q$^{w\varsigma}$rak > *'waek* > wò ‘catch (v.)’ 獲 *m-q$^{w\varsigma}$rak > *hweak* > huò ‘catch (v.)’
*C$^{\varsigma}$rak	*Caek*		客 *k$^{h\varsigma}$rak > *khaek* > kè ‘guest’ 百 *p$^{\varsigma}$rak > *paek* > bǎi ‘hundred’ 宅 *m-t$^{\varsigma}$<r>ak > *draek* > zhái ‘residence’
*K^{w}(r)ak	*Kjwak*	[2]	矍 *C.q^{w}(r)ak > *kjwak* > jué ‘anxious look’
*Cak	*Cjak*	[2] [3]	却 *[k]^{h}ak > *khjak* > què ‘decline, refuse’ 縛 *bak > *bjak* > fù ‘bind (v.)’ 若 *nak > *nyak* > ruò ‘agree’
*Prak	*Pjaek*		碧 *prak > *pjaek* > bì ‘light blue’
*Krak	*Kjaek*		逆 *ŋrak > *ngjaek* > nì ‘go against’
*Trak	*Trjak*	[3]	著 *t<r>ak > *trjak* > zhuó ‘to place’
*Tsrak	*Tsrjak ~ Tsraewk*	[3] [4]	斲 *[ts]rak > *tsrjak* > zhuó ‘to cut off’ 朔 *s-ŋrak > (*srjak* >) *sraewk* > shuò ‘first day of month’
*TAk	*Tsyek*	[5]	石 *dAk > *dzyek* > shí ‘stone’
*TsAk	*Tsjek*		昔 *[s]Ak > *sjek* > xī ‘in the past’

Notes on Table 5.29:

[1] From syllables like *K$^{w\varsigma}$rak we sometimes have MC *Kweak* instead of the expected *Kwaek*; probably the rhyme books do not distinguish these syllable types reliably:

(896) 擭 *q$^{w\varsigma}$rak > *'waek* > wò ‘catch (v.)’, but from the same root we have
獲 *m-q$^{w\varsigma}$rak > *hweak* > huò ‘catch (v.)’

[2] Although *-a and *-ra have the same reflexes after type-B grave initials, *-ak and *-rak have different reflexes: *-jak* and *-jaek,* respectively; for grave initials, *Crak is thus placed in the same *Qièyùn* rhyme as *C$^{\varsigma}$rak (> *Caek*). However, we have no clear examples of *K^{w}rak, which perhaps does merge with *K^{w}ak.

[3] Although prevocalic *-r- fronts a following vowel after grave initials, with acute initials, the *-r- makes the initial retroflex, but the final is *-jak*, not *-jaek*.

[4] Syllables of the form *Tsraewk* from the *-ak rhyme (traditional 鐸 Duó) have generally been regarded as irregular, but they are evidently the result of the change *Tsrj-* > *Tsr-* that was ongoing in the Middle Chinese period; apparent irregularities in syllables of this type are probably due to dialect mixture:

(897) 朔 *s-ŋrak > *srak > *srjak* > *sraewk* > shuò ‘first day of month’; the phonetic is
𠂒 = 逆 *ŋrak > *ngjaek* > nì ‘go against’

[5] As with the *-a rhyme, there are divergent developments of *-ak and *-ak-s (see below) after acute initials, which are still not well understood. We write *Cak for forms that become MC *Cjak*, and *CAk for forms that become MC *Cjek*. As with the *-A

notation in the previous section, the *A is not intended as a seventh vowel; *-Ak just means "a case of *-ak that, for unexplained reasons, becomes MC *-jek*," and similarly for *-Ak-s below. However, in this case we have evidence that dialect variation may be responsible: in the Mǐn dialects, words with *-Ak have pMǐn *-iok, just like those with *-ak. Evidently, the change of *-ak to MC *-jek* after dental and palatal initials was an innovation in the dialects represented in our Middle Chinese written sources, in which the Mǐn dialects did not share:

(898) 尺 *tʰAk > *tsyhek* > chǐ 'foot (measure)', pMǐn *tšhiok D: Xiàmén /tsʰioʔ 7/, Fúzhōu /tsʰuoʔ 7/

(899) 石 *dAk > *dzyek* > shí 'stone', pMǐn *džiok D: Xiàmén /tsioʔ 8/, Fúzhōu /suoʔ 8/

(900) 螫 *[l̥]Ak > *syek* > shì 'sting (v.)', pMǐn *tšhiok D: Xiàmén /tsʰioʔ 7/

(901) 炙 *tAk > *tsyek* > zhì 'roast, broil', pMǐn *tšiok D: Jiànyáng /tsio 7/ (Norman 1971:203)

(902) 釋 *l̥Ak > *syek* > shì 'wash rice', pMǐn *tšhiok D: Xiàmén /tsʰioʔ 7/ (Xiàmén dàxué 1982:712)

(903) 射 *Cə.lAk> *zyek* > shè 'hit with bow and arrow'; pMǐn *-džiok D, Fúzhōu /suoʔ 8/

(904) 借 *[ts]Ak > *tsjek* > jiè 'loan, borrow', pMǐn *tsiok D: Xiàmén /tsioʔ 7/, Fúzhōu /tsuoʔ 7/

(905) 席 *s-m-tAk> *zjek* > xí 'mat', pMǐn *dzhiok D: Xiàmén /tsʰioʔ 8/

We reconstruct *-ak-s (rather than *-a-s) in words that have clear etymological or graphic connections with words in *-ak, as in the following examples:

(906) 惡 *ʔˁak > *'ak* > è 'bad, ugly'
惡 *ʔˁak-s > *'uH* > wù 'hate (v.)'

(907) 度 *[d]ˁak > *dak* > duó 'measure (v.)'
度 *[d]ˁak-s > *duH* > dù 'measure (n.)'

(908) 莫 *mˁak > *mak* > mò 'there is no X such that X…'
墓 *C.mˁak-s > *muH* > mù 'grave (n.)'

(909) 射 *Cə.lAk > *zyek* > shè 'hit with bow and arrow'
射 *Cə.lAk-s > *zyaeH* > shè 'shoot; archer'

(910) 借 *[ts]Ak > *tsjek* > jiè 'loan, borrow'
借 *[ts]Ak-s > *tsjaeH* > jiè 'loan, borrow'

(911) 夕 *s-ɢAk > *zjek* > xī 'evening, night'
夜 *ɢAk-s > *yaeH* > yè 'night'

As examples (909) through (911) show, we write *-Ak-s for those cases of *-ak-s whose Middle Chinese reflex is *-jaeH* instead of *-joH*.

The merger of *-a-s and *-ak-s evidently occurred early enough to affect at least some *Shījīng* rhyming (see Ode 26.2 for an example).

5.4.1.3 *-aŋ (= traditional 陽 Yáng)

The Middle Chinese reflexes of *-aŋ are largely parallel to those of *-ak, except that we have no need to reconstruct "*-Aŋ"; see Table 5.30.

TABLE 5.30 Middle Chinese reflexes of *-aŋ

OC	MC		examples
*K$^{w\varsigma}$aŋ	*Kwang*		廣 *k$^{w\varsigma}$aŋʔ > *kwangX* > guǎng 'wide'
*C$^{\varsigma}$aŋ	*Cang*		剛 *k$^{\varsigma}$aŋ > *kang* > gāng 'strong; hard' 旁 *[b]$^{\varsigma}$aŋ > *bang* > páng 'side; broad' 湯 *l̥$^{\varsigma}$aŋ > *thang* > tāng 'hot liquid'
*K$^{\varsigma w}$raŋ	*Kwaeng*		觥 *[k]$^{w\varsigma}$raŋ > *kwaeng* > gōng 'drinking horn'
*C$^{\varsigma}$raŋ	*Caeng*		更 *k$^{\varsigma}$raŋ > *kaeng* > gēng 'change (v.)' 彭 *C.[b]$^{\varsigma}$raŋ > *baeng* > péng '(place name)' 瞠 *t$^{h\varsigma}$raŋ > *trhaeng* > chēng 'stare'
*K^{w}aŋ	*Kjwang*		王 *ɢ^{w}aŋ > *hjwang* > wáng 'king'
*Caŋ	*Cjang*		强 *N-kaŋ > *gjang* > qiáng 'strong' 方 *C-paŋ > *pjang* > fāng 'square' 上 *Cə-daŋʔ > *dzyangX* > shàng 'ascend'
*K^{w}raŋ	*Kjwaeng*		永 *[ɢ]^{w}raŋʔ > *hjwaengX* > yǒng 'long (time)'
*Praŋ	*Pjaeng*		丙 *praŋʔ > *pjaengX* > bǐng 'third heavenly stem'
*Kraŋ	*Kjaeng*		京 *[k]raŋ > *kjaeng* > jīng 'hill; capital city'
*Traŋ	*Trjang*	[1]	張 *C.traŋ > *trjang* > zhāng 'draw a bow'
*Tsraŋ	*Tsrjang*		牀 *k.dzraŋ > *dzrjang* > chuáng 'bed'

Notes on Table 5.30:

[1] Note that as with *-rak, prevocalic *-r- fronts the vowel in *-aŋ after grave initials (e.g., *Kraŋ > *Kjaeng*), but not after acute initials, where the reflex of the *-r- is simply the retroflexion in the initial: *Traŋ > *Trjang*, *Tsraŋ > *Tsrjang*.

There are a few alternations between *-a and *-aŋ in words of similar meaning. For example, we reconstruct

(912) 亡 *maŋ > *mjang* > wáng 'flee; disappear; die'.

But the character 亡 is also frequently used the oracle-bone inscriptions and other early documents where the sense suggests not 亡 wáng 'disappear' but rather 無 wú 'not have':

(913) 無 *ma > *mju* > wú 'not have',

suggesting that 亡 *maŋ 'disappear' and 無 *ma 'not have' are etymologically related. As Pulleyblank (1962–1963:232–233) pointed out, we have a similar alternation in these examples:

(914) 于 *ɢ^{w}(r)a > *hju* > yú 'go; at'
往 *ɢ^{w}aŋʔ > *hjwangX* > wǎng 'go to'

It seems doubtful that this *-ŋ was synchronically a productive suffix in Old Chinese, but it may reflect an older Sino-Tibetan morpheme. Garo, a Tibeto-Burman language spoken in Bangladesh and northeastern India, has a suffix *-ang* /aŋ/ 'away', added to verbs of motion to indicate motion away from the speaker, as in

(915) *mal-ang-a* 'crawl away from here', from *mal-a* 'crawl'
kat-ang-a 'run away', from *kat-a* 'run'
jro-ang-a 'swim away'
i·-ang-a 'go', cf. *i·-ba-a* 'come' (Burling 2004:144)

5.4.2 *ə WITH BACK CODAS

Table 5.31 compares our reconstruction of *-ə, *-ək(-s), and *-əŋ with earlier reconstructions.

The rhymes *-ə, *-ək(-s), and *-əŋ are characteristically subject to assimilatory rounding under the influence of a nonpharyngealized labial or labialized onset, but this assimilation was evidently blocked by prevocalic *-r-; it also does not occur after pharyngealized onsets. For example:

(916) 有 *[ɢ]^{w}əʔ > *hjuwX* > yǒu 'have, exist'
洧 *[ɢ]^{w}rəʔ > *hwijX* > wěi 'name of a river'

(917) 福 *pək > *pjuwk* > fú 'blessing'
逼 *prək > *pik* > bī 'urge, press'

(918) 伏 *[b]ək-s > *bjuwH* > fú 'hatch (v.)'
備 *[b]rək-s > *bijH* > bèi 'complete (adj.)'

(919) 弓 *k^{w}əŋ > *kjuwng* > gōng 'bow (n.)'

There seem to be no examples of the expected development *K^{w}rəŋ > *Kwing*.

TABLE 5.31 OC *ə with back codas (type-A syllables): reconstructions compared

Baxter-Sagart		*-ə	*-ək	*-ək-s	*-əŋ
rhyme group		= 之 Zhī	= 職 Zhí		= 蒸 Zhēng
Middle Chinese	*K-, *T(s)-	*-oj* 哈	*-ok* 德	*-ojH* 代	*-ong* 登
	*P-	*-woj* 灰	*-ok* 德	*-wojH* 隊	*-ong* 登
	*Kw-	*-woj* 灰	*-wok* 德	*-wojH* 隊	*-wong* 登
Karlgren (1957)		*-əg	*-ək	*-əg	*-əng
Dǒng Tónghé (1948)		*-ə̂g	*-ə̂k	*-ə̂g	*-ə̂ng
Wáng Lì (1958)		*-ə	*-ə̄k	*-ə̄k	*-əŋ
Li (1971)		*-əg	*-ək	*-əgh	*-əng
Pulleyblank (1977–1978)		*-ə́ɣ	*-ə́k	*-ə́ks	*-ə́ŋ
Starostin (1989)		*-ə̄	*-ə̄k	*-ə̄ks	*-ə̄ŋ
Baxter (1992)		*-ɨ	*-ɨk	*-ɨks	*-ɨng
Zhèngzhāng (2003)		*-əə	*-əəg	*-əəgs	*-əəŋ

Apart from syllable types like those in examples (916) through (918), the presence of *-r- in syllables with nonpharyngealized grave initials is undetectable from Middle Chinese evidence alone.

5.4.2.1 *-ə (= traditional 之 Zhī)

The Middle Chinese reflexes of *-ə are summarized in Table 5.32.

TABLE 5.32 Middle Chinese reflexes of *-ə

OC	MC	notes	examples
*K$^{w\varsigma}$ə	*Kwoj*	[1]	賄 *q$^{wh\varsigma}$əʔ > *xwojX* > huì ‘property, valuables’
*P$^{\varsigma}$ə	*Pwoj*		梅 *C.m$^{\varsigma}$ə > *mwoj* > méi ‘plum tree’
*C$^{\varsigma}$ə	*Coj*		改 *C.q$^{\varsigma}$əʔ > *kojX* > gǎi ‘change (v.)’ 乃 *n$^{\varsigma}$əʔ > *nojX* > nǎi ‘then’
*K$^{w\varsigma}$rə	*Kweaj*		怪 *[k]$^{w\varsigma}$rə-s > *kweajH* > guài ‘extraordinary’
*C$^{\varsigma}$rə	*Ceaj*		駭 *[g]$^{\varsigma}$rəʔ > *heajX* > hài ‘alarmed’ 霾 *m$^{\varsigma}$rə > *meaj* > mái ‘whirlwind’ 豺 *[dz]$^{\varsigma}$rə > *dzreaj* > chái ‘wolf’
*K^{w}ə	*Kjuw*	[2]	臼 *C.[g]^{w}əʔ > *gjuwX* > jiù ‘mortar’
*Pə	*Pjuw*		不 *pə > *pjuw* > bù ‘not’
*K^{w}rə	*Kwij*		龜 *[k]^{w}rə > *kwij* > guī ‘tortoise’
*Prə	*Pij*		鄙 *prəʔ > *pijX* > bǐ ‘border town’
*C(r)ə	*Ci*	[3]	基 *k(r)ə > *ki* > jī ‘base (n.)’ 止 *təʔ > *tsyiX* > zhǐ ‘foot; stop’ 治 *lrə-s > *driH* > zhì ‘regulate, arrange’ 緇 *[ts]rə > *tsri* > zī ‘black’

Notes on Table 5.32:

[1] MC *Koj* can also reflect *K$^{\varsigma}$əj; *Kwoj* can also reflect *K$^{w\varsigma}$əj or *K$^{\varsigma}$uj; and *Pwoj* can also reflect *P$^{\varsigma}$əj or *P$^{\varsigma}$uj. But since *-əj is fronted after acute initials, *Toj* and *Tsoj* can regularly reflect only *T$^{\varsigma}$ə and *Ts$^{\varsigma}$ə, respectively.

[2] After nonpharyngealized *K^{w}- and *P-, *ə is rounded by assimilation, and becomes MC *-juw*; but prevocalic *-r- blocks this assimilation: *K^{w}rə > *Kwij*, *Prə > *Pij*. Note that these reflexes are in the *Qièyùn*’s 脂 Zhī rhyme (*-ij*); there are no hékǒu or labial-initial syllables in the 之 Zhī rhyme (*-i*).

[3] As mentioned above, *Kə and *Krə (之 Zhī rhyme) cannot be distinguished from Middle Chinese evidence alone.

5.4.2.2 *-ək(-s) (= traditional 職 Zhí)

The Middle Chinese reflexes of *-ək are summarized in Table 5.33. The reflexes of *-ək-s are the same as those for *-ə-s: as in Table 5.32, but in qùshēng only.

TABLE 5.33 Middle Chinese reflexes of *-ək

OC	MC	notes	examples
*K$^{w\varsigma}$ək	*Kwok*		或 *[ɢ]$^{w\varsigma}$ək > *hwok* > huò ‘some; or’
*C$^{\varsigma}$ək	*Cok*		刻 *[k^{h}]$^{\varsigma}$ək > *khok* > kè ‘cut, engrave’ 北 *p$^{\varsigma}$ək > *pok* > běi ‘north’ 塞 *[s]$^{\varsigma}$ək > *sok* > sè ‘stop up, block (v.)’
*K$^{w\varsigma}$rək	*Kweak*		馘 *C.q$^{w\varsigma}$<r>ək > *kweak* > guó ‘severed left ears’
*C$^{\varsigma}$rək	*Ceak*		革 *k$^{\varsigma}$rək > *keak* > gé ‘hide, skin’ 麥 *m-r$^{\varsigma}$ək (dial. >) *mr$^{\varsigma}$ək > *meak* > mài ‘wheat’
*K^{w}ək	*Kjuwk*	[1]	囿 *[ɢ]^{w}ək > *hjuwk* > yòu ‘park, garden’
*Pək	*Pjuwk*		福 *pək > *pjuwk* > fú ‘blessing’
*K^{w}rək	*Kwik*		域 *[ɢ]^{w}rək > *hwik* > yù ‘territory’
*Prək	*Pik*		逼 *prək > *pik* > bī ‘urge, press’
*C(r)ək	*Cik*	[2]	憶 *ʔ(r)ək > *'ik* > yì ‘remember’ 棘 *krək > *kik* > jí ‘thorns’ 式 *l̥ək > *syik* > shì ‘pattern’ 直 *N-t<r>ək > *drik* > zhí ‘straight’

Notes on Table 5.33:

[1] As with the *-ə and *-əŋ rhymes, nonpharyngealized labial or labialized onsets cause a following *ə to become rounded, but this rounding is blocked by prevocalic *-r-, and does not affect type-A syllables.

[2] As with *Kə/*Krə and *Kəŋ/*Krəŋ (see Table 5.34 below), we cannot distinguish *Kək(-s) from *Krək(-s) on the basis of Middle Chinese alone. But we can reconstruct *-r- in some cases based on other evidence:

(920) 棘 *krək > *kik* > jí ‘thorns’; also written in the Hán *Shī*《韓詩》(*JDSW* 79) and in the Mǎwángduī *Lǎozǐ* (version A), as
枂 *krək > *kik* > jí ‘thorns’ (Gāo Míng 1996:381), where the phonetic is
力 *k.rək > *lik* > lì ‘strength’, pMǐn *lhət D: Xiàmén /lat 8/, Jiàn’ōu /sɛ 6/, Shíbēi /se 1/

We reconstruct *-ək-s (rather than *-ə-s) on the basis of etymological or graphic connections with *-ək, as in these examples:

(921) 北 *p$^{\varsigma}$ək > *pok* > běi ‘north’ (the direction to one’s back; the early graph depicts two persons back to back)
背 *p$^{\varsigma}$ək-s > *pwojH* > bèi ‘the back’

(922) 憶 *ʔ(r)ək > *'ik* > yì ‘remember’
意 *ʔ(r)ək-s > *'iH* > yì ‘thought (n.)’

(923) 食 *mə-lək > *zyik* > shí ‘eat’
食 ~ 飤 ~ 飼[41] *s-m-lək-s > *ziH* > sì ‘feed (v.)’

The common word 來 lái ‘come’ shows an irregular development, perhaps due to the loss of final *-k in an unstressed form that was later restressed:

(924) 來 *mə.r$^{\varsigma}$ək > mə.r$^{\varsigma}$ə > *r$^{\varsigma}$ə > *loj* > lái ‘come’

In the *Shījīng*, 來 lái rhymes as *-ək in Odes 168.1, 203.4, 242.2, and 263.6, but it rhymes as *-ə in Odes 30.2, 33.3, 66.1, and 91.2. The rhymes with *-ək are in sections generally regarded as older than those with *-ə. We suppose that the final *-k was lost in unstressed position, and the form without *-k was then restressed, replacing the original full form; see the discussion in Baxter (1992:325–332). (A similar process was responsible for the loss of the initial /h/ in the Middle English neuter pronoun *hit* > Modern English *it*.)

5.4.2.3 *-əŋ (= traditional 蒸 Zhēng)

The Middle Chinese reflexes of *-əŋ are summarized in Table 5.34.

TABLE 5.34 Middle Chinese reflexes of *-əŋ

OC	MC	notes	examples
*K^{wʕ}əŋ	*Kwong*		弘 *[ɢ]^{wʕ}əŋ > *hwong* > hóng ‘vast’
*C^{ʕ}əŋ	*Cong*		恆 *[g]^{ʕ}əŋ > *hong* > héng ‘constant’ 崩 *Cə.p^{ʕ}əŋ > *pong* > bēng ‘collapse’ 登 *t^{ʕ}əŋ > *tong* > dēng ‘ascend’ 增 *s-t^{ʕ}əŋ > *tsong* > zēng ‘increase’
*K^{wʕ}rəŋ	*Kweang*		宏 *[g]^{wʕ}<r>əŋ > *hweang* > hóng ‘resounding; great’
*C^{ʕ}rəŋ	*Ceang*		繃 *p^{ʕ}rəŋ > *peang* > bēng ‘to bind around’ 橙 *[d]^{ʕ}rəŋ > *dreang* > chéng ‘citrus tree’
*K^{w}əŋ	*Kjuwng*	[1]	弓 *k^{w}əŋ > *kjuwng* > gōng ‘bow (n.)’
*Pəŋ	*Pjuwng*		馮 *[Cə.b]əŋ > *bjuwng* > féng ‘Féng (surname)’
*K^{w}rəŋ	*Kwing?*		[no clear examples]
*Prəŋ	*Ping*		憑 *[b]rəŋ > *bing* > píng ‘lean on’
*C(r)əŋ	*Cing*	[2]	兢 *k(r)əŋ > *king* > jīng ‘cautious’ 升 *s-təŋ > *sying* > shēng ‘rise (v.)’ 澄 *[d]rəŋ > *dring* > chéng ‘limpid, clear’

Notes on Table 5.34:

[1] Parallel to the other rhymes in this section, the vowel is rounded in *K^{w}əŋ > *Kjuwng* and *Pəŋ > *Pjuwng*, but this rounding is blocked by prevocalic *-r- and does not occur in type-A syllables. There seem to be no clear examples of syllables like *Kwing* < *K^{w}rəŋ.

[2] As with the other rhymes in this section, we cannot distinguish *Kəŋ from *Krəŋ on Middle Chinese evidence alone.

5.4.3 *e WITH BACK CODAS

The development of the rhymes *-e, *-ek(-s), and *-eŋ is relatively straightforward. Certain division-III finals from these rhymes have been regarded as irregular in earlier reconstructions, but they are easily accounted for in six-vowel reconstructions by reconstructing prevocalic *-r-. Here are some examples:

(925) 卑 *pe > *pjie* > bēi ‘low, humble’ (division-IV chóngniǔ syllable)
碑 *pre > *pje* > bēi ‘pillar’ (division-III chóngniǔ syllable)

TABLE 5.35 OC *e with back codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-e	*-ek	*-ek-s	*-eŋ
rhyme group	= 支 Zhī	= 錫 Xī		= 耕 Gēng
Middle Chinese	*-ej* 齊	*-ek* 錫	*-ejH* 霽	*-eng* 青
Karlgren (1957)	*-ieg	*-iek	*-ieg	*-ieng
Dǒng Tónghé (1948)	*-ieg	*-iek	*-ieg	*-ieng
Wáng Lì (1958)	*-e	*-ĕk	*-ēk	*-eŋ
Li (1971)	*-ig	*-ik	*-igh	*-ing
Pulleyblank (1977–1978)	*-áj	*-ác	*-ács	*-áŋ
Starostin (1989)	*-ē	*-ēk	*-ēks	*-ēŋ
Baxter (1992)	*-e	*-ek	*-eks	*-eng
Zhèngzhāng (2003)	*-ee	*-eeg	*-eegs	*-eeŋ

(926) 名 *C.meŋ > *mjieng* > míng ‘name’ (division IV)
鳴 *m.reŋ (dial.) > *mjaeng* > míng ‘cry (of birds or animals)’ (division III)

(927) 屐 *Cə.[g]rek > *gjaek* > jī ‘wooden sandal’ (division III)

The *-r-, predicted on the basis of our hypotheses about the phonological system, is occasionally confirmed directly by other evidence: for example, Siamese has /kre:ŋ A1/ ‘to fear’, apparently borrowed from 驚 jīng (Manomaivibool 1975:168):

(928) 驚 *kreŋ > *kjaeng* > jīng ‘be afraid’

Table 5.35 compares our reconstruction with earlier ones.

5.4.3.1 *-e (⊂ traditional 支 Zhī)

The Middle Chinese reflexes of *-e[42] are summarized in Table 5.36.

TABLE 5.36 Middle Chinese reflexes of *-e

OC	MC	notes	examples
*K$^{w\varsigma}$e	*Kwej*		圭 *[k]$^{w\varsigma}$e > *kwej* > guī ‘jade scepter’
*C$^{\varsigma}$e	*Cej*		雞 *k$^{\varsigma}$e > *kej* > jī ‘fowl, chicken’ 髀 *m-p$^{\varsigma}$eʔ > *bejX* > bì ‘femur’ 嘶, 啼 *C.l$^{\varsigma}$e > *dej* > tí ‘cry; weep’
*K$^{w\varsigma}$re	*Kwea*		卦 *[k]$^{w\varsigma}$re-s > *kweaH* > guà ‘prognosticate with Achillea’
*C$^{\varsigma}$re	*Cea*		街 *[k]$^{\varsigma}$re > *kea* > jiē ‘road-crossing’ 稗 *C.[b]$^{\varsigma}$re-s > *beaH* > bài ‘weed resembling grain’
*Ke	*Tsye ~ Kjie*	[1]	支 *ke > *tsye* > zhī ‘branch (of tree), limb’
*Kre	*Kje*		技 *[g]reʔ > *gjeX* > jì ‘skill’
*K^{w}e	*Kjwie*		窺 *k^{wh}e > *khjwie* > kuī ‘pry, spy (v.)’
*K^{w}re	*Kjwe*		[no clear examples]
*Pe	*Pjie*		卑 *pe > *pjie* > bēi ‘low, humble’
*Pre	*Pje*		碑 *pre > *pje* > bēi ‘pillar’
*Tsre	*Tsrje ~ Tsrea*	[2]	纚 *sreʔ > *srjeX ~ sreaX* > xǐ ‘hair-band’
*C(r)e	*Cje*		是 *[d]eʔ > *dzyeX* > shì ‘this’ 知 *tre > *trje* > zhī ‘know’ 斯 *[s]e > *sje* > sī ‘split (v.)’

Notes on Table 5.36:

[1] As explained in section 4.1.2, nonpharyngealized velars tend to palatalize before front vowels *i and *e unless an *-r- intervenes, but the exact conditions for this palatalization are not fully understood.

[2] Original MC *Tsrje* became *Tsrea* in some dialects; both types of readings are preserved in the *Jīngdiǎn shìwén*. For example, commenting on the expression 緇 纚 zī xǐ 'black hair-band' (in "Yí lǐ: Shì guàn lǐ"《儀禮・士冠禮》), the *Jīngdiǎn shìwén* says:

(929) 緇纚:山買反、舊山綺反
zī xǐ: [pronounced] 山 買 反 [*sr(ean)* + (*m)eaX* = *sreaX*]; the older pronunciation is 山 綺 反 [*sr(ean)* + (*kh)jeX* = *srjeX*] (*JDSW* 143).

5.4.3.2 *-ek(-s) (⊂ traditional 錫 Xī)

The Middle Chinese reflexes of *-ek are summarized in Table 5.37; the reflexes of *-ek-s[43] are the same as those of *-e-s: as in Table 5.36, but in qùshēng only.

TABLE 5.37 Middle Chinese reflexes of *-ek

OC	MC	notes	examples
*K$^{w\varsigma}$ek	*Kwek*		鶪 *k$^{w\varsigma}$ek > *kwek* > jú 'shrike'
*C$^{\varsigma}$ek	*Cek*		鷁 *m-g$^{\varsigma}$ek > *ngek* > yì 'kind of aquatic bird' 壁 *C.p$^{\varsigma}$ek > *pek* > bì 'house wall' 剔 *l̥$^{\varsigma}$ek > *thek* > tī 'cut (v.)'
*K$^{w\varsigma}$rek	*Kweak*		畫 *g$^{w\varsigma}$rek > *hweak* > huà 'draw (v.)'
*C$^{\varsigma}$rek	*Ceak*		隔 *[k]$^{\varsigma}$rek > *keak* > gé 'obstruct, separate (v.)' 擘 *p$^{\varsigma}$rek > *peak* > bò 'cleave, split' 摘 *t$^{\varsigma}$rek > *treak* > zhāi 'pluck (v.)' 責 *s-t$^{\varsigma}$rek > *tsreak* > zé 'blame'
*Kek	*Kjiek*	[1]	益 (*q[i]k >) *qek > *'jiek* > yì 'increase'
*Krek	*Kjaek*		屐 *Cə.[g]rek > *gjaek* > jī 'wooden sandal'
*K^{w}ek	*Kjwiek*		[no clear examples]
*K^{w}rek	*Kjwaek*		[no clear examples]
*Pek	*Pjiek*		辟 *[N]-pek > *bjiek* > bì 'law, rule; lawful'
*Prek	*Pjaek*		[no clear examples]
*Tsrek	*Tsrjek ~ Tsreak?*	[2]	[no clear examples]
*C(r)ek	*Cjek*		易 *lek > *yek* > yì 'change; exchange' 刺 *[ts^{h}]ek > *tshjek* > cì 'pierce, stab' 躅 躅 *[d]rek-[d]rok > *drjek-drjowk* > zhízhú 'stamp the feet'

Notes on Table 5.37:

[1] We know of no cases of velar palatalization before *-ek (or *-eŋ).

[2] Because of the Middle Chinese change *Tsrj-* > *Tsr-*, it is difficult to distinguish pharyngealized *Ts$^{\varsigma}$rek(-s) from nonpharyngealized *Tsrek(-s) with confidence. From *Tsrjek we might expect *Tsrjaek* > *Tsraek*, by analogy to

(930) 生 *sreŋ > *srjaeng* > *sraeng* > shēng 'bear, be born; live'

(see the next section), but in fact, the syllables in the *Guǎngyùn* with either *-jaek* or *-aek* after *Tsr*-type initials are either from the *-ak rhyme or are not clearly attested in pre-Qín texts.

We reconstruct *-ek-s (rather than *-e-s) based on etymological or graphic connections with *-ek:

(931) 易 *lek > *yek* > yì ‘change; exchange’
易 *lek-s > *yeH* > yì ‘easy’
剔 *l̥ˤek-s > *thejH* > tì ‘shave’

(932) 畫 *gʷˤrek > *hweak* > huà ‘draw (v.)’, pMǐn *ɦuak D
畫 *C-gʷˤrek-s > *hweaH* > huà ‘drawing (n.)’, pMǐn *ɣua C

(933) 刺 *[tsʰ]ek > *tshjek* > cì ‘pierce, stab’
刺 *[tsʰ]ek-s > *tshjeH* > cì ‘sharp point, thorn’

(934) 責 *s-tˤrek > *tsreak* > zé ‘demand payment’
債 *s-tˤrek-s > *tsreaH* > zhài ‘debt’

5.4.3.3 *-eŋ (⊂ traditional 耕 Gēng)

The *-eŋ[44] rhyme is largely parallel to *-e and *-ek(-s). There are some contacts between *-eŋ and *-en that suggest that in some dialects, *-eŋ may have merged with *-en, just as *-iŋ merged with *-in and *-ik with *-it (see section 5.4.4 below). For example, we reconstruct *-eŋ in

(935) 平 *breŋ > *bjaeng* > píng ‘even (adj.)’

But an expression written 平 平 occurs in both the *Shàng shū:* “Hóng fàn” 《尚書・洪範》and in Ode 222.4, and in both cases the *Jīngdiǎn shìwén* says it is to be read *bjien-bjien*, implying OC *ben-ben (*JDSW* 47, 86).

Similarly, chapter 26 of the received text of the *Lǎozǐ* has the expression 榮觀 róngguàn, usually interpreted as ‘imperial palace’: based on this version of the text, we would reconstruct it as

(936) 榮觀 róngguàn < *hjwaeng-kwanH* < *[N-qʷ]reŋ-*C.qʷˤar-s

But in both Mǎwángduī versions of the text, the expression is written instead as

(937) 環官 huánguān < *hwaen-kwan* < *C.gʷˤ<r>en-*kʷˤa[n]

with *-en instead of *-eŋ (Gāo Míng 1996:356). It is difficult to be sure what happened to the text here, but at least it is evidence that 榮 róng < *hjwaeng* < *[N-qʷ]reŋ and 環 huán < *hwaen* < *C.gʷˤ<r>en had the same main vowel.

In traditional terms, the fact that 平 *breŋ has an alternative pronunciation *bjien* < *ben, and the fact that one version of the Lǎozǐ text has 榮 *[N-qʷ]reŋ while another has *C.gʷˤren, would be described as cases of “Gēng-Yuán pángzhuǎn 耕元旁轉,” that is, an alternation between the two traditional nasal-final groups 耕 Gēng (Li’s *-ing) and 元 Yuán (Li’s *-an). Notice, however, that “Gēng-Yuán pángzhuǎn” is a description of the phenomenon,

not an explanation of it; with a phonetic reconstruction we can propose reasons why such alternations might occur (that a dialect might have changed *-eŋ to *-en, or perhaps that in the *Lǎozǐ* text *-en was confused with *-eŋ before a following *k-). Secondly, the traditional terminology overgeneralizes the phenomenon: it is not the entire 元 Yuán rhyme group that shows connections with the 耕 Gēng group (= our *-eŋ), but only that subset of the 元 Yuán group that we reconstruct with *-en.

The Middle Chinese reflexes of *-eŋ are summarized in Table 5.38.

TABLE 5.38 Middle Chinese reflexes of *-eŋ

OC	MC	notes	examples
*K$^{w\varsigma}$eŋ	*Kweng*		坰 *k$^{w\varsigma}$eŋ > *kweng* > jiōng ‘region distant from capital’
*C$^{\varsigma}$eŋ	*Ceng*		經 *k-l$^{\varsigma}$eŋ > *keng* > jīng ‘regulate; norm’ 銘 *m$^{\varsigma}$eŋ > *meng* > míng ‘inscription’ 頂 *t$^{\varsigma}$eŋʔ > *tengX* > dǐng ‘top of the head’
*K$^{w\varsigma}$reŋ	*Kweang*		崢 嶸 *[dz]$^{\varsigma}$reŋ-[ɢ]$^{w\varsigma}$reŋ > *dzreang-hweang* > zhēngróng ‘high, precipitous’
*C$^{\varsigma}$reŋ	*Ceang*		耕 *k$^{\varsigma}$<r>eŋ > *keang* > gēng ‘plow (v.)’ 迸 *p$^{\varsigma}$reŋ-s > *peangH* > bèng ‘drive out’
*Keŋ	*Kjieng*	[1] [2]	輕 *[k^{h}]eŋ > *khjieng* > qīng ‘light (≠ heavy)’
*Kreŋ	*Kjaeng*	[2]	驚 *kreŋ > *kjaeng* > jīng ‘be afraid’
*K^{w}eŋ	*Kjwieng*		頃 *[k]^{wh}eŋʔ > *khjwiengX* > qǐng ‘interval, short while’
*K^{w}reŋ	*Kjwaeng*		榮 *[N-q^{w}]reŋ > *hjwaeng* > róng ‘glory, honor’
*Peŋ	*Pjieng*		名 *C.meŋ > *mjieng* > míng ‘name’
*Preŋ	*Pjaeng*		平 *breŋ > *bjaeng* > píng ‘even (adj.)’
*Tsreŋ	*Tsrjaeng* ~ *Tsraeng*	[3]	生 *sreŋ > *srjaeng* > *sraeng* > shēng ‘bear, be born; live’
*C(r)eŋ	*Cjeng*		正 *teŋ-s > *tsyengH* > zhèng ‘correct (adj., v.)’ 清 *ts^{h}eŋ > *tshjeng* > qīng ‘clear (adj.)’ 貞 *treŋ > *trjeng* > zhēn ‘divine (v.)’

Notes on Table 5.38:

[1] Note that nonpharyngealized velar initials do not appear to palatalize before *-eŋ; that is, we know of no cases of *Keŋ > “*Tsyeng.*”

[2] After nonpharyngealized grave initials there is a distinction between *-jieng* (in the *Guǎngyùn*’s 清 Qīng rhyme, placed in division IV of the rhyme tables) and *-jaeng* (in the *Guǎngyùn*’s 庚 Gēng rhyme, placed in division III of the rhyme tables). We account for this by reconstructing *-r- before the vowel in the latter. The result is that *-jaeng* has two origins: one from the *-aŋ rhyme and one from the *-eŋ rhyme, as in the following minimal pair:

(938) 京 *[k]raŋ > *kjaeng* > jīng ‘hill; capital city’; phonetic in 涼 *C.raŋ > *ljang* > liáng ‘cold’
驚 *kreŋ > *kjaeng* > jīng ‘be afraid’; cf. Siamese /kre:ŋ A1/ ‘to fear’ (Manovaibimool 1975:168).

In most earlier reconstructions, MC *-jaeng* from *-eŋ was unaccounted for and considered irregular.

[3] The word 生 shēng < *sraeng* has also generally been regarded as irregular, but the reading *sraeng* (from the *Guǎngyùn*: 所 更 切: i.e., *sr(joX)* + (*k)aeng* = *sraeng*) just reflects the change of *Tsrj-* to *Tsr-* that was ongoing in the Middle Chinese period. In fact, the earlier Wáng Rénxù *Qièyùn* gives the pronunciation as *srjaeng* (所 京 反: i.e., *sr(joX)* + (*k)jaeng* = *srjaeng*), where this change has not taken place.

5.4.4 *i WITH BACK CODAS

We have found no reason to reconstruct an Old Chinese rhyme "*-i" with zero coda in contrast with OC *-ij. An alternative analysis would be to reconstruct *-i instead of *-ij (as Zhèngzhāng does, 2003:159–168), but various developments are somewhat more conveniently described if we reconstruct *-ij.

However, we do reconstruct *-ik(-s) and *-iŋ. The predominant development is that *-ik(-s) and *-iŋ merged with either *-it(-s) and *-in or with *-ek(-s) and *-eŋ, respectively. The rhymes *-ik(-s) and *-iŋ can generally be identified by the fact that they appear to show connections both with *-it(s) or *-in and with *-ek(-s) or *-eŋ. Also, in type B we sometimes have *-ik > *-ik* and *-iŋ > *-ing*, suggesting a third type of dialect in which neither of these mergers took place.[45] In most earlier reconstructions, the words we reconstruct with *-ik(-s) and *-iŋ are either reconstructed as if they were *-it(-s) and *-in (the traditional 質 Zhì and 真 Zhēn rhyme groups) or as if they were *-ek(s) and *-eŋ (the traditional 錫 Xī and 耕 Gēng groups), according to their Middle Chinese readings, without explaining the connections between *-it(-s) and *-in on the one hand and *-ek(s) and *-eŋ on the other, and without explaining the anomalous forms with MC *-ik* and *-ing*. Our reconstruction is compared with earlier ones in Table 5.39.

We saw in section 5.2 that we could account for the overall pattern of Middle Chinese velar-final codas with only five vowels, without including *i, as in Table 5.8 (repeated here as Table 5.40).

TABLE 5.39 OC *i with back codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-ik	*-ik-s	*-iŋ
rhyme group	⊂ 質 Zhì ~ 錫 Xī		⊂ 真 Zhēn ~ ⊂ 耕 Gēng
Middle Chinese	*-et* 屑 ~ *-ek* 錫	*-ejH* 霽	*-en* 先 ~ *-eng* 青
Karlgren (1957)	*-iet ~ *-iek	*-ied ~ *-ieg	*-ien ~ *-ieng
Dǒng Tónghé (1948)	*-iet ~ *-iek	*-ied ~ *-ieg	*-ien ~ *-ieng
Wáng Lì (1958)	*-ĕt ~ *-ĕk	*-ēt ~ *-ēk	*-en ~ *-eŋ
Li (1971)	*-it ~ *-ik	*-idh ~ *-igh	*-in ~ *-ing
Pulleyblank (1977–1978)	*-ə́c ~ *-ác	*-ə́cs ~ *-ács	*-ə́ŋ ~ *-áŋ
Starostin (1989)	*-īk	*-īks	*-īŋ
Baxter (1992)	*-ik	*-iks	*-iŋ
Zhèngzhāng (2003)	*-iig	*-iigs	*-iiŋ?

TABLE 5.40 Old Chinese origins of MC division-I and division-IV syllables in final *-ng*

OC	traditional rhyme group	*P^{ʕ}-	*T^{ʕ}-	*Ts^{ʕ}-	*K^{ʕ}-	*K^{wʕ}-
*-aŋ	陽 Yáng	*Pang*	*Tang*	*Tsang*	*Kang*	*Kwang*
*-oŋ	東 Dōng	*Puwng*	*Tuwng*	*Tsuwng*	*Kuwng*	—
*-eŋ	耕 Gēng	*Peng*	*Teng*	*Tseng*	*Keng*	*Kweng*
*-əŋ	蒸 Zhēng	*Pong*	*Tong*	*Tsong*	*Kong*	*Kwong*
*-uŋ	冬 Dōng	*Powng*	*Towng*	*Tsowng*	*Kowng*	—

It was when we turned to syllables in MC *-n* that it became clear that a sixth vowel *i was also needed. The apparent absence of the rhymes *-iŋ and *-ik then seems to be a systematic gap.

However, there is considerable evidence that the rhymes *-iŋ and *-ik did exist. We reconstruct these in words that show connections with both *-in and *-it on the one hand and *-eŋ and *-ek on the other; some words of this type also have apparently irregular reflexes with MC *-ing* and *-ik* (which otherwise usually reflect OC *-əŋ and *-ək, respectively).

For example, Karlgren mentions three words that have Middle Chinese readings in final *-ng*, but which appear to rhyme as *-in in the *Shījīng*. In *GSR* (762a) he notes that 命 mìng < *mjaengH* 'command' rhymes several times in the *Shījīng* as if it were *-in;[46] he made similar remarks about 令 lìng 'command'(*GSR* 823a).[47] We reconstruct these words as follows and assume that the apparent irregularities in rhyming are due to dialect mixture, either in Old Chinese itself, or in the Middle Chinese reading tradition:

(939) 命 *m-riŋ-s[48] (dial.) > *mriŋ-s > *mreŋ-s > *mjaengH* > mìng 'command (n.)'; dialectally also *m-riŋ-s > *mrin-s (as shown by *Shījīng* rhymes, e.g., Odes 51.3, 116.3, 222.3)

(940) 令 *riŋ > *reŋ > *ljeng* > líng 'issue a command'; dialectally also *riŋ > *rin (as shown by *Shījīng* rhymes, e.g., Odes 100.2 and 126.1)

A slightly different situation obtains with 矜 jīn < *king* 'pity': it appears to rhyme as if it were *-in, but it has the final *-ing* in Middle Chinese. Our reconstruction is

(941) 矜 *k-riŋ > *king* > jīn 'pity (v.)'; a separate meaning is 'boastful'

Here, the Middle Chinese reading *king* appears to be anomalous: if *-iŋ had become *-in in this word we would expect MC *kin*;[49] or if *-iŋ had become *-eŋ, then we would expect MC *kjaeng*. In most reconstructions, the only regular source for MC *-ing* is OC *-əŋ. Our Middle Chinese sources seem to show at least three different treatments of *-iŋ in nonpharyngealized syllables:

(942)

*Ciŋ > *-in > *-in*	dialect where *-iŋ > *-in
*Ciŋ > *-eŋ > *-jeng*	dialect where *-iŋ > *-eŋ
*Ciŋ > *-ing*	conservative dialect that retains *-iŋ

In the case of 令 lìng, the *Guǎngyùn* has no trace of the conservative treatment of *-iŋ, but the *Jīngdiǎn shìwén* gives the reading *lingH* for the line 自 公 令 之 'from the court they order him' (Ode 100.2; *JDSW* 66).

Reconstructing *-iŋ in 矜 jīn 'pity (v.)' is also supported by paleographic evidence. The *Shuōwén* says:

(943) 矜：矛 柄 也。从 矛 、今 聲。
矜 jīn [means] the handle of a spear. It is composed of 矛 máo ['spear'], with 今 [jīn < *kim* < *[k]r[ə]m 'now'] as phonetic (*SWGL* 6395b)

But it is implausible that 今 jīn < *kim* < *[k]r[ə]m 'now' is phonetic, because the final *-m* does not match the final *-ng* of 矜 jīn < *king*. Duàn Yùcái pointed out that the original phonetic is not 今 jīn but 令 líng < *riŋ (Duàn Yùcái [1815] 1981:719–720), supporting both the vowel *i and the prevocalic *r in our reconstruction: 矜 jīn < *king* < *k-riŋ (see section 4.4.4.4 for the development *k-r- > *k-*). This has been confirmed from recently excavated documents. The following passage occurs in the received versions of *Lǎozǐ* 30:

(944) 果 而 勿 矜
guǒ ér wù jīn
'Accomplish it but do not be boastful'

Happily, this passage occurs in both Mǎwángduī versions of the text (early Western Hàn) and in the Guōdiàn bamboo strips version. Both Mǎwángduī versions have 矜 (with 令 lìng on the right instead of 今 jīn). In the Guōdiàn A version (*GD* 3, strip 7), the character is written this way:

(945) 

This graph is composed of 矛 máo on the left and 命 mìng on the right. So these three words, which rhyme as if they were *-in, but have velar codas in Middle Chinese, are written with the same phonetic element 令 *riŋ.

In fact, we consider it likely that the {矜} *k-riŋ meaning 'boastful' is from the same root as 命 *m-riŋ-s; perhaps the intended meaning is something like 'imperious' or 'inclined to order people around'. The {矜} *k-riŋ meaning 'pity', on the other hand, is probably related (though perhaps not synchronically) to

(946) 憐 *rˁiŋ > *rˁin > *len* > lián 'love; pity' (The character 憐 is rather late; the earliest form of this character in *Gǔwénzì gǔlín* (*GG* 8.1065) is from a Qín stone inscription.)

It is frequently difficult to decide with confidence whether to reconstruct *-in, *-it or *-iŋ, *-ik. Many words that develop as if they had the rhymes *-in or *-it may in fact have come from *-iŋ or *-ik, even if they themselves happen to have no Middle Chinese readings with velar codas. Consider the following example:

(947) 仁 *niŋ > *nyin* > rén 'kindness'
佞 *nˁiŋ-s > *nengH* > nìng 'clever'

We reconstruct {仁} *niŋ with a velar coda because the character 仁 is phonetic in 佞 *nˤiŋ-s ‘clever’. As for {仁} itself, it is found written in the Guōdiàn *Lǎozǐ* (version C, *GD* 9, strip 3) and elsewhere in the Guōdiàn texts as

(948) 

which consists of 心 xīn ‘heart’ below with 身 shēn ‘body’ above, as phonetic. Sometimes we have 千 qiān ‘thousand’ instead of 身 shēn (“Zhōng xìn zhī dào” 《忠信之道》, *GD* 45, strip 8):

(949) 

Because of these characters, we can now identify the initial consonant of 身 shēn < *syin* as *n̥-:[50]

(950) 身 *n̥i[ŋ] > *syin* > shēn ‘body; self’

The early character for {千} qiān < *tshen* ‘thousand’ itself is composed of the character 人 rén < *nyin* with an added stroke (Jì Xùshēng 2010:154); for ‘two thousand’, a second stroke is added, etc.:

(951) 

We reconstruct

(952) 千 *s.n̥ˤi[ŋ] > *tshen* > qiān ‘thousand’

(953) 人 *ni[ŋ] > *nyin* > rén ‘(other) person’

To go one step further, {年} nián < *nen* ‘harvest; year’ can be written with either 千 *s.n̥ˤi[ŋ] or 人 *ni[ŋ] as phonetic; we reconstruct it as

(954) 年 *C.nˤi[ŋ] > *nen* > nián ‘harvest; year’

Now although they are all connected, directly or indirectly, with {仁} rén ‘kindness’, which we have decided to reconstruct with *-iŋ, neither 身 shēn, 千 qiān, 人 rén, nor 年 nián themselves have Middle Chinese forms that preserve a velar coda; it is difficult to be sure how far to extend the reconstruction of *-iŋ. Forms like (948) and (949) might represent a dialect where *-iŋ had already merged with *-in; so the fact that 身 shēn is used as a phonetic to write {仁} *niŋ ‘kindness’ does not necessarily prove that 身 shēn itself originally had *-iŋ rather than *-in.

Similarly, there are forms that show a vacillation between the reflexes of *-it and those of *-ek, and occasional forms with MC *-ik*. Middle Chinese *-ik* usually reflects *-ək, in which case it will typically have xiéshēng contacts with MC *-ok*; but cases of *-ik* that instead show contacts with MC *-it* or *-et* can be reconstructed with *-ik:

(955) 即 *[ts]ik > *tsik* > jí ‘go to’
節 *tsˤik > *tsˤit > *tset* > jié ‘joint’
楖 *[ts]rik > *[ts]rit > *tsrit* > zhì ‘comb’
膝 *s-tsik > *s-tsit > *sit* > xī ‘knee’ (etymologically related to 節 *tsˤik ‘joint’)

(956) 蝨 *srik > *srit ~ srik* > shī ‘louse’; cf. Proto-Tibeto-Burman *s-r(y)ik ‘louse’ (Matisoff 2003:153). The MC reading *srik* is found in Xuányìng’s *Yīqiè jīng yīnyì* 《一切經音義》, juàn 17 (Zhōu Fǎgāo 1962, #791).[51]

(957) 抑 *[ʔ](r)ik > *'ik* > yì ‘rub, repress’
印 *[ʔ]iŋ-s > *[ʔ]in-s > *'jinH* > yìn ‘seal’
懿 *[ʔ]<r>ik-s > *'ijH* > yì ‘repress’; the phonetic element is also used to write words with MC *-it* and *-et*.

In (957), the alternation between *-k and *-ŋ in coda position is unexplained, but the words seem to be related semantically, and paleographers generally agree that both ‘repress’ and ‘seal’ were originally written the same, with a graph originally depicting a hand (爪 zhǎo or 又 yòu) over a kneeling person (Chén Jiàn, p.c.; Jì Xùshēng 2010:736):

(958) 

Such alternations between stops and nasals in coda position are a question for future research (see section 6.3, “Known issues”).

Sagart (1999a) also made the case for reconstructing *-ik in 血 xiě ~ xuè < *xwet* ‘blood’:

(959) 血 *m̥ˤik > *xwet* > xiě ~ xuè ‘blood’

This shows the cluster of apparent etymological and graphic connections to both *-it and *-ek, and with MC *-ik*, that lead us to reconstruct *-ik. Cf.

(960) 脈 *C.mˤ<r>[i]k > *meak* > mài ‘vein’

(961) 洫 ~ 淢 *m̥(r)ik > *xwik* > xù ‘channel; moat’. It is not clear which way of writing this word is older, but in either case the use of 洫 to write *xwik* is an argument for *-ik in 血 *m̥ˤik, even if not for *m̥ˤ-.
侐 *m̥(r)ik > *xwik* > xù ‘still, quiet’; also read 侐 *m̥ik-s > *m̥it-s > *xjwijH* > xù

A similar case is the common word 日 rì < *nyit* ‘sun; day’. There are two independent bits of evidence that this word should be reconstructed with *-ik rather than *-it. First, it appears to be phonetic in the character used to write 汨 mì < *mek*, the name of a river in Húnán. (The Mì 汨 joins with the Luó 羅 river to form the Mìluó 汨羅, the river in which the poet Qū Yuán 屈原 [c. 340–278 BCE] is said to have drowned himself.) The character 汨 is clearly composed of 水 shuǐ ‘water’ and 日 rì ‘sun; day’. The *Shuōwén* text as we have it today says that 日 rì is an abbreviated form of 冥 míng < *meng* and that this is the real phonetic element (*SWGL* 4864b), but this seems highly implausible; it is much more likely that 日 rì itself is the phonetic (*GG* 9:38). We can now account for this unusual phonetic by reconstructing 汨 mì < *mek* < *m.nˤik ‘Mì river’ (see section 4.4.2.4) and 日 *C.nik > *C.nit > *nyit* > rì ‘sun; day’ (with preinitial *C. to account for high-register tones in some Mǐn and Hakka dialects; see

Norman 1991:211 and section 4.4.5.4). Since *-ik > *-it is a well-supported dialect development, these reconstructions can account for the final *-t* in 日 nì < *nyit*; but if we reconstructed *-it in 日 nì < *nyit* there would be no way to account for the final *-k* in 汨 mì < *mek*.

The second argument for a final *-k in 日 rì < *nyit* 'sun; day' is its presence in the characters 暱 and 昵 used to write nì < *nrit* 'close, intimate' and as phonetic in the probably related word 衵 *nik > *nyit* > rì 'a lady's clothes nearest to the body'; we reconstruct these with a final *-k, as *n<r>ik and *nik, respectively. The *Jīngdiǎn shìwén* gives the reading *nrik* for an occurrence of 昵 nì in a commentary to *Lúnyǔ* 《論語》(*JDSW* 350). In 暱 nì < *nrit*, the phonetic 匿 nì < *nrik* 'conceal' also indicates a final *-k. In both 暱 and 昵, the element 日 rì probably originally served a phonetic function; attempts to explain it as a semantic element (*SWGL* 2938a) seem quite forced.

5.4.5 *o WITH BACK CODAS

Table 5.41 compares our reconstruction of *-o, *-ok(-s), and *-oŋ with earlier reconstructions.

One peculiarity of these finals is that, contrary to the usual pattern, *-r- in some cases leaves no trace on the Middle Chinese final: there are no division-II reflexes from the rhyme *-o as there are in others; and based on Middle Chinese evidence alone, we cannot distinguish *Kˢro from *Kˢo (both > *Kuw*) or *Kroŋ from *Koŋ (both > *Kjowng*). In type-A syllables, however, *o apparently diphthongized before velar codas, and *-r- does lead to different Middle Chinese reflexes: *Kˢok > *Kuwk*, *Kˢrok (> *Kˢrawk) > *Kaewk*. The rule seems to be that *-r- had no effect on the rhyme when the following vowel was rounded *at the time* *-r- *was lost*. If a diphthongization made the following vowel unrounded, then *-r- has its usual effects. This would also explain why (for example) *Pra and *Pa have the same reflexes (see section 5.4.1.1): by the time the *-r- was lost, the vowel in such syllables had probably already changed from *a to a rounded [ɔ], [o], or [u].

TABLE 5.41 OC *o with back codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-o	*-ok	*-ok-s	*-oŋ
rhyme group	= 侯 Hóu	= 屋 Wū		= 東 Dōng
Middle Chinese	*-uw* 侯	*-uwk* 屋	*-uwH* 候	*-uwng* 東
Karlgren (1957)	*-u	*-uk	*-ug	*-ung
Dǒng Tónghé (1948)	*-ûg	*-ûk	*-ûg	*-ûng
Wáng Lì (1958)	*-o	*-ōk	*-ōk	*-oŋ
Li (1971)	*-ug	*-uk	*-ugh	*-ung
Pulleyblank (1977–1978)	*-áw	*-ákʷ	*-ákʷs	*-áŋʷ
Starostin (1989)	*-ō	*-ōk	*-ōks	*-ōŋ
Baxter (1992)	*-o	*-ok	*-oks	*-ong
Zhèngzhāng (2003)	*-oo	*-oog	*-oogs	*-ooŋ

5.4.5.1 *-o (= traditional 侯 Hóu)

The Middle Chinese reflexes of *-o are summarized in Table 5.42.

TABLE 5.42 Middle Chinese reflexes of *-o

OC	MC	notes	examples
*K^{ʂ}(r)o	*Kuw*	[1]	口 *k^{hʂ}(r)oʔ > *khuwX* > kǒu ‘mouth’ 邂 逅 *[g]^{ʂ}re-s-[g]^{ʂ}ro-s > *heaH-huwH* > xièhòu ‘carefree’
*P^{ʂ}(r)o	*Puw*		剖 *p^{hʂ}(r)oʔ > *phuwX* > pōu ‘cleave, cut’
*C^{ʂ}o	*Cuw*		斗 *t^{ʂ}oʔ > *tuwX* > dǒu ‘bushel; ladle’ 走 *[ts]^{ʂ}oʔ > *tsuwX* > zǒu ‘run’
*T^{ʂ}ro	*Trjuw?*	[2]	[no clear examples]
*Ts^{ʂ}ro	*Tsrjuw*		縐 *[ts]^{ʂ}ro-s > *tsrjuwH* > zhòu ‘wrinkle’
*C(r)o	*Cju*	[1]	隅 *ŋ(r)o > *ngju* > yú ‘angle, corner’ 屨 *k-ro-s > *kjuH* > jù ‘sandal, shoe’ 毋 *mo > *mju* > wú ‘don’t’[a] 朱 *to > *tsyu* > zhū ‘red’ 誅 *tro > *trju* > zhū ‘punish; kill’ 取 *ts^{h}oʔ > *tshjuX* > qǔ ‘take’ 數 *s-roʔ > *srjuX* > shǔ ‘count (v.)’

[a] In received texts we also find 毋 wú < *mo ‘don’t’ written as 無 wú, which earlier represented only 無 wú < *mju* < *ma ‘not have’; this reflects the merger of *-a with *-o after nonpharyngealized labial initials in Hàn times; both became MC *-ju* in this environment.

Notes on Table 5.42:

[1] As noted above, in type-A syllables, *-r- seems to have had no effect on the Middle Chinese reflexes of the *-o rhyme (except in cases where it led to a retroflex initial); in many cases we can reconstruct *-r- only on the basis of other evidence. For example, in expressive binomes showing an alternation of *e and *o, both syllables are generally the same except for the vowel, so from the first syllable of this expression we can infer that the second syllable also had *-r-:

(962) 邂 逅 *[g]^{ʂ}re-s-[g]^{ʂ}ro-s > *heaH-huwH* > xièhòu ‘carefree’

Similarly, the phonetic element indicates *-r- in this example:

(963) 屨 ~ 鞮 *k-ro-s > *kjuH* > jù ‘sandal, shoe’; the phonetic is 婁 *[r]o > *lju* > lóu ‘drag, trail (v.)’

[2] In syllables like *Ts^{ʂ}ro (and possibly *T^{ʂ}ro also, although clear examples are lacking), it appears that the *-r- produced a retroflex initial in Middle Chinese, but *-o developed to MC *-uw* in type A as expected; in the *Qièyùn* system, the resulting syllables of the form “*Tsruw*” are treated as if they have merged with *Tsrjuw*. Examples:

(964) 縐 *[ts]^{ʂ}ro-s > *tsrjuwH* > zhòu ‘wrinkles’

(965) 驟 *N-ts^{ʂ}roʔ-s > *dzrjuwH* > zhòu ‘fast-running’

These are type A, contrasting with type-B

(966) 數 *s-roʔ > *srjuX* > shǔ ‘count (v.)’

(967) 芻 *[ts^{h}]ro > *tsrhju* > chú ‘grass for fuel or fodder’

Previous reconstructions have been unable to account for examples like (964) and (965), and simply treat them as irregular.

5.4.5.2 *-ok(-s) (= traditional 屋 Wū)

The Middle Chinese reflexes of *-ok are summarized in Table 5.43. The reflexes of *-ok-s are the same as those for *-o-s: as in Table 5.42, but in qùshēng only.

TABLE 5.43 Middle Chinese reflexes of *-ok

OC	MC	notes	examples
*Cˢok	*Cuwk*		穀 *[k]ˢok > *kuwk* > gǔ ‘grain’ 卜 *pˢok > *puwk* > bǔ ‘divine (v.)’ 鹿 *mə-rˢok > *luwk* > lù ‘deer’ 族 *[dz]ˢok > *dzuwk* > zú ‘clan’
*Cˢrok	*Caewk*	[1]	角 *C.[k]ˢrok > *kaewk* > jiǎo ‘horn, corner’ 剝 *[p]ˢrok > *paewk* > bō ‘flay, peel’ 啄 *mə-tˢ<r>ok > *traewk* > zhuó ‘to peck’
*Tsrok	*Tsrjowk* ~ *Tsraewk*	[2]	數 *s-rok > *sraewk* > shuò ‘frequently’
*C(r)ok	*Cjowk*	[3]	曲 *kʰ(r)ok > *khjowk* > qū ‘to bend, bent’ 幞 *[b](r)ok > *bjowk* > fú ‘kerchief (*Shuōwén*)’ 屬 *N-tok > *dzyowk* > shǔ ‘be attached to’ 躅 蹋 *[d]rek-[d]rok > *drjek-drjowk* > zhízhú ‘stamp the feet’ 足 *[ts]ok > *tsjowk* > zú ‘foot’

Notes on Table 5.43:

[1] In contrast to the *-o rhyme, in type-A syllables, an *-r- before the *-ok rhyme (and before *-oŋ as well; see below) produces a distinct Middle Chinese reflex, probably through a process of diphthongization:

(968) 剝 *[p]ˢrok > *pˢrawk > *paewk* > bō ‘flay, peel’; compare, with the same phonetic:
祿 *(p.)rˢok > *luwk* > lù ‘blessing’

[2] Because of the Middle Chinese change *Tsrj-* > *Tsr-*, we cannot reliably distinguish *Tsˢrok from *Tsrok. The following are clearly related etymologically, but we cannot explain the morphology of 數 shuò < *sraewk* at present:

(969) 數 *s-roʔ > *srjuX* > shǔ ‘count (v.)’
數 *s-roʔ-s > *srjuH* > shù ‘number (n.)’
數 *s-rok > *sraewk* > shuò ‘frequently’

[3] However, in type-B syllables, *Krok and *Prok are still indistinguishable from *Kok and *Pok on the basis of Middle Chinese evidence alone, and we frequently write *K(r)ok and *P(r)ok. In some cases direct evidence for an *-r- is available:

(970) 獄 *[ŋ]rok > *ngjowk* > yù ‘lawsuit; prison’; cf. Khmu /grɔːk/ ‘sty, pen; jail’.[52]

We reconstruct *-ok-s (rather than *-o-s) on the basis of etymological or graphic connections to *-ok:

(971) 殼 *[kʰ]ˤrok > *khaewk* > què ‘hollow shell, hollow’
穀 *[k]ˤok > *kuwk* > gǔ ‘grain’
彀 *[k]ˤ(r)ok-s > *[k]ˤ(r)o-s > *kuwH* > gòu ‘draw a bow to the full’

(972) 卜 *pˤok > *puwk* > bǔ ‘divine (v.)’
仆 *pʰˤ(r)ok-s > *pʰˤ(r)o-s > *phuwH* > pū ‘fall prostrate’

(973) 足 *[ts]ok > *tsjowk* > zú ‘sufficient’
足 *[ts]ok-s > *tsjuH* > jù ‘replenish’

(974) 脰 *kə.dˤok-s > *duwH* > dòu ‘neck’; cf. Rục /kadɔ́k/ ‘nape’ (Nguyễn Phú Phong et al. 1988); cf. VN *dọc* [zawk D2] ‘fleshy stalk of the leaves of certain plants; stem of a pipe’: Proto-Vietic *k-dɔ:k ‘nape (of the neck)’ (Ferlus 2009a:293). In this case, either *-k-s was borrowed as [k], or else the source was a form without the *-s suffix.

(975) 啄 *mə-tˤ<r>ok > *traewk* > zhuó ‘to peck’; pHM *ɳʈʃɔk ‘to peck’ (Wáng Fǔshì and Máo Zōngwǔ 1995)
咮 *tˤ<r>ok-s > *trjuwH* > zhòu ‘beak’

5.4.5.3 *-oŋ (= traditional 東 Dōng)

The Middle Chinese reflexes of *-oŋ are summarized in Table 5.44.

TABLE 5.44 Middle Chinese reflexes of *-oŋ

OC	MC	notes	examples
*Cˤoŋ	*Cuwng*		工 *kˤoŋ > *kuwng* > gōng ‘work’ 琫 *pˤoŋʔ > *puwngX* > běng ‘scabbard ornament’ 東 *tˤoŋʔ > *tˤoŋ > *tuwng* > dōng ‘east’[a] 聰 *s-l̥ˤoŋ > *tshuwng* > cōng ‘hear well; intelligent’
*Cˤroŋ	*Caewng*	[1]	江 *kˤroŋ > *kaewng* > jiāng ‘(Yángzǐ) river’ 邦 *pˤroŋ > *paewng* > bāng ‘country’ 幢 *[d]ˤroŋ > *draewng* > chuáng ‘a kind of flag’
*Tsroŋ	(*?Tsrjowng* >) *Tsraewng*		雙 *[s]roŋ > *sraewng* > shuāng ‘a pair’ [indistinguishable from *Tsˤroŋ > *Tsraewng*?]
*C(r)oŋ	*Cjowng*	[2]	恐 *kʰ(r)oŋʔ > *khjowngX* > kǒng ‘fear’ 龔, 恭 *k<r>oŋ > *kjowng* > gōng ‘respectful’ 蜂 *pʰ(r)oŋ > *phjowng* > fēng ‘bee’ 鐘 *toŋ > *tsyowng* > zhōng ‘bell’ 重 *[m]-troŋ > *drjowng* > chóng ‘repeat; double’ 從 *[dz]oŋ > *dzjowng* > cóng ‘to follow’

[a] For the replacement of original *tˤoŋʔ (root: ‘move’) by *tˤoŋ ‘east’, see Sagart (2004:74–76).

Notes on Table 5.44:

[1] As with *-ok, *-oŋ and *-roŋ have different Middle Chinese reflexes after pharyngealized onsets, probably due to a diphthongization process:

(976) 工 *kˤoŋ > *kuwng* > gōng ‘work’
江 *kˤroŋ > *kˤrawŋ > *kaewng* > jiāng ‘(Yángzǐ) river’

[2] But after nonpharyngealized grave initials, *-roŋ and *-oŋ cannot be distinguished on the basis of Middle Chinese alone:

(977) 恭 ~ 龔 ~ 龔 *k<r>oŋ > *kjowng* > gōng ‘respectful’; reconstructed with *-r- because often written in early documents with the phonetic:
龍 *[mə]-roŋ > *ljowng* > lóng ‘dragon’

In the early script, the element 共, present in the various forms of {恭}, originally depicts two hands offering a vessel of some kind (Jì Xùshēng 2010:176):

(978) 

We reconstruct

(979) 共 *N-k(r)oŋʔ-s > *gjowngH* > gòng ‘together, all’

5.4.6 *u WITH BACK CODAS

Table 5.45 compares our reconstruction of *-u, *-uk(-s), and *-uŋ with previous reconstructions.

In type-A syllables, *-u, *-uk(-s), and probably *-uŋ diphthongized through the lowering influence of the pharyngealized initial, and no longer rhymed with their type-B counterparts in Middle Chinese. In type-B syllables of this group, prevocalic *-r- after grave initials cannot be detected from Middle Chinese evidence alone; we can account for this if we assume that *-r- did not affect the Middle Chinese final when the following vowel was rounded at the time *-r- was dropped.

The distinction between syllables like *C^{ʂ}(r)u and *C^{ʂ}(r)aw (which merge as MC *Caw* or *Caew*) seems to have survived long enough to be reflected in early loans into Hmong-Mien and Bái, in which we find the correspondences in (980). The Bái forms are from the Jiànchuān 劍川 dialect.

(980)

OC	Proto-Hmong-Mien	Bái	Middle Chinese
*C^{ʂ}u	*-əu	/-u/	*-aw*
*C^{ʂ}aw	*-æw	/-a/	*-aw*

TABLE 5.45: OC *u with back codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-u	*-uk	*-uk-s	*-uŋ
rhyme group	⊂ 幽 Yōu	⊂ 覺 Jué		= 冬 Dōng
Middle Chinese	*-aw* 豪	*-owk* 沃	*-awH* 号	*-owng* 冬
Karlgren (1957)	*-ôg	*-ôk	*-ôg	*-ông
Dǒng Tónghé (1948)	*-ôg	*-ôk	*-ôg	*-ông
Wáng Lì (1958)	*-əu	*-ə̄uk	*-ə̄uk	*-əuŋ
Li (1971)	*-əgw	*-əkw	*-əgwh	*-əngw
Pulleyblank (1977–1978)	*-əw	*-əkʷ	*-əkʷs	*-əŋʷ
Starostin (1989)	*-ū	*-ūk	*-ūks	*-ūŋ
Baxter (1992)	*-u	*-uk	*-uks	*-ung
Zhèngzhāng (2003)	*-uu	*-uug	*-uugs	*-uuŋ

Examples (from Ratliff 2010 and Starostin 1995):

(981) OC *C^{ʂ}u:
道 *[kə.l]^{ʂ}uʔ > *dawX* > dào ‘way’, Proto-Hmong-Mien *kləuX, Bái /thu 1/
稻 *[l]^{ʂ}uʔ > *dawX* > dào ‘rice, paddy’, Proto-Hmong-Mien *mbləu
媼 *ʔ^{ʂ}uʔ > *'awX* > ǎo ‘old woman’, Proto-Hmong-Mien *ʔəuX ‘elder sister/wife’
草 *[ts^{h}]^{ʂ}uʔ > *tshawX* > cǎo ‘grass, plants’, Bái /chu 1/
好 *q^{h}^{ʂ}uʔ > *xawX* > hǎo ‘good’, Bái /xu 1/

(982) OC *C^{ʂ}aw:
桃 *C.l^{ʂ}aw > *daw* > táo ‘peach’, Proto-Hmong-Mien *ɢlæw A, Bái /ta 7/
號 *[C.g]^{ʂ}aw > *haw* > háo ‘call out’, Proto-Hmong-Mien *Gæw A ‘cry out/sing’
繰 *mə-ts^{ʂ}awʔ > *tsawX* > zǎo ‘bleach; wash’, Proto-Hmong-Mien *ntsæwX ‘wash’
毛 *C.m^{ʂ}aw > *maw* > máo ‘hair’, Bái /ma 7/
刀 *C.t^{ʂ}aw > *taw* > dāo ‘knife’, Bái /tã 4/

The fact that OC *C^{ʂ}u and *C^{ʂ}aw have separate reflexes in Hmong-Mien and Bái suggests an estimate of the time these words were borrowed: according to Ting’s study of rhymes in poetry (1975:238), OC *C^{ʂ}u and *C^{ʂ}aw still rhymed separately in Eastern Hàn (25–220 CE) but began to rhyme together in the Wèi-Jìn period (220–420 CE); so we can estimate that these words were borrowed into Hmong-Mien and Bái before about the middle of the third century CE. Of course, this date is based on overall patterns in poetic rhyming; the situation must have differed from dialect to dialect, so it is only a rough estimate.

The Middle Chinese sources are inconsistent in representing the reflexes of *mu, *muk(-s), and *muŋ: sometimes we find *mjuw*, *mjuwk*, and *mjuwng* (as expected), and sometimes we find *muw*, *muwk*, and *muwng*. Normally we would expect *muw, muwk, muwng* to reflect *m^{ʂ}o, *m^{ʂ}ok, and *m^{ʂ}oŋ, respectively, but there was evidently a common but not universal change by which (in terms of our notation) MC *-j-* was lost in the syllables *mjuw*, *mjuwk*, and *mjuwng*. The situation is similar to the vacillation between *Tsrj-* and *Tsr-*.

For example, the following are both *mjuw* in the *Guǎngyùn*:

(983) 矛 *m(r)u > *mjuw* > máo ‘a kind of lance’

(984) 謀 *mə > *mjuw* > móu ‘plan (v.)’

The *Jīngdiǎn shìwén*, however, appears to be inconsistent: it has several glosses for 矛 máo, some of which say “pronounced like 謀 [móu < *mjuw*]” (*JDSW* 62) and some of which say “亡 侯 反 [*m(jang)* + (*h)uw* = *muw*]” (*JDSW* 64). The word 矛 máo clearly

rhymes in the *Shījīng* as *-u (Odes 133.1, 191.8). Evidently we have *m(r)u > *mjuw* as expected, but in some varieties of Middle Chinese there was a further change to *muw*. Similarly, MC *muwk* and *muwng* sometimes reflect OC *muk and *muŋ instead of *mᶜok and *mᶜoŋ.

5.4.6.1 *-u (⊂ traditional 幽 Yōu)

The Middle Chinese reflexes of *-u[53] are summarized in Table 5.46.

TABLE 5.46 Middle Chinese reflexes of *-u

OC	MC	notes	Examples
*Cᶜu	*Caw*	[1]	藁 *[k]ᶜu > *kaw* > gāo ‘big drum’ 寶 *pᶜuʔ > *pawX* > bǎo ‘precious thing’ 道 *[kə.l]ᶜuʔ > *dawX* > dào ‘way’ 早 *Nə.tsᶜuʔ > *tsawX* > zǎo ‘early’
*Cᶜru	*Caew*		巧 *[kʰ]ᶜruʔ > *khaewX* > qiǎo ‘artful’ 包 *pᶜ<r>u > *paew* > bāo ‘wrap, bundle’ 爪 *[ts]ᶜ<r>uʔ > *tsraewX* > zhǎo ‘claw’
*Kʷu	*Kjuw?*	[2]	九 *[k]uʔ > *kjuwX* > jiǔ ‘nine’
*Kʷru	*Kwij*		軌 *kʷruʔ > *kʷrəʔ > *kwijX* > guǐ ‘wheel ruts’ 頍 *[g]ʷru > *gʷrə > *gwij* > kuí ‘cheek bone, bones of the face’ 簋 *kʷruʔ > *kʷrəʔ > *kwijX* > guǐ ‘guǐ ritual vessel’
*m(r)u	*mjuw ~ muw*	[3]	矛 *m(r)u > *mjuw* > máo ‘a kind of lance’ 貿 *mru-s > *mjuwH* > *muwH* > mào ‘to barter’
*Tsru	*Tsrjuw ~ Tsuw*	[4]	搜 *sru > *srjuw* > sōu ‘search’ 瘦 *sru-s > *srjuwH* > shòu ‘lean (adj.)’ 叟, 傻, 傻 *s-ruʔ > *suwX* > sǒu ‘old man’
*C(r)u	*Cjuw*	[5]	韭 *s.[k](r)uʔ > *kjuwX* > jiǔ ‘Allium’ 阜 *[b](r)uʔ > *bjuwX* > fù ‘big mound’ 酒 *tsuʔ > *tsjuwX* > jiǔ ‘wine’ 肘 *t-[k]<r>uʔ > *trjuwX* > zhǒu ‘elbow’

Notes on Table 5.46:

[1] In type-A syllables, the lowering influence of the pharyngealized initial leads to a diphthongization that causes the reflexes of *-u and *-ru to merge with those of *-aw and *-raw, respectively, in Middle Chinese: e.g., *Kᶜu > *Kaw*, merging with original *Kᶜaw, and *Tsᶜru > *Tsᶜraw > *Tsraew*, merging with original *Tsraw.

[2] The contrast in this rhyme group between MC *-juw* and *-wij* has long been a puzzle. Our solution, adapted from Li (1971:31–32), is to assume a dissimilation of the rounded vowel in the syllable types *Kʷu and *Kʷru under the influence of the labialized initial:

(985) *Kʷu > *Kʷə (merging with original *Kʷə)
*Kʷru > *Kʷrə (merging with original *Kʷrə)

TABLE 5.47 Development of MC *Kjuw* and *Kwij* from *-u and *-ə

OC rhyme	traditional rhyme group	example	OC	dissimilation *K^{w}(r)u > K^{w}(r)ə	assimilation K^{w}ə >Ku	MC
*-u	幽 Yōu	(九 jiǔ ‘nine’?)	*k^{w}uʔ	> *k^{w}əʔ	> *kuʔ	*kjuwX*
		軌 guǐ ‘wheel ruts’	*k^{w}ruʔ	> *k^{w}rəʔ	—	*kwijX*
*-ə	之 Zhī	久 jiǔ ‘long time’	*[k]^{w}əʔ	—	> *kuʔ	*kjuwX*
		龜 guī ‘tortoise’	*[k]^{w}rə	—	—	*kwij*

The resulting syllable types develop like *K^{w}ə and *K^{w}rə (see Table 5.32 and the discussion in section 5.4.2.1): a later assimilation rounds the vowel in *K^{w}ə < *K^{w}u, giving MC *Kjuw* (the same as if it had originally been *Ku), but this assimilation is blocked by *-r-, so that *K^{w}rə < *K^{w}ru becomes MC *Kwij*, like original *K^{w}rə.[54]

(986) 九 *[k]uʔ[55] > *kjuwX* > jiǔ ‘nine’

(987) 軌 *k^{w}ruʔ >*k^{w}rəʔ > *kwijX* > guǐ ‘wheel ruts’

(988) 頯 *[g]^{w}ru > *g^{w}rə > *gwij* > kuí ‘cheek bone, bones of the face’

(989) 簋 *k^{w}ruʔ > *kwijX* > guǐ ‘guǐ ritual vessel’

The scenario for the development of MC *Kjuw* and *Kwij* from the two rhymes *-u and *-ə is summarized in Table 5.47.

[3] As noted above, from *m(r)u we often have MC *muw* instead of the expected *mjuw*:

(990) 貿 *mru-s > *mjuwH* > *muwH* > mào ‘barter (v.)’

(991) 牡 *m(r)uʔ > *mjuwX* > *muwX* > mǔ ‘male’ (there is no syllable “*mjuwX*” in the *Guǎngyùn*)

[4] Reflexes like 叟 MC *suw* result from two changes observed in Middle Chinese sources: *Tsrj-* > *Tsr-* and an early merger of initials of type *Tsr-* with *Ts-*; see the discussion at example (581) above.

[5] After nonpharyngealized *K- and *P-, we cannot distinguish *-u from *-ru on the basis of Middle Chinese reflexes alone, but we sometimes can reconstruct *-ru in such syllables from etymological or graphic evidence:

(992) 貿 *mru-s > *mjuwH* > *muwH* > mào ‘to barter’; cf., with the same phonetic element:
卯 *m^{ɕ}ruʔ > *maewX* > mǎo ‘fourth earthly branch’
劉 *mə-ru > *ljuw* > liú ‘kill (also a surname)’

5.4.6.2 *-uk(-s) (⊂ traditional 覺 Jué)

The Middle Chinese reflexes of *-uk are summarized in Table 5.48. The reflexes of *-uk-s[56] are the same as those of *-u-s: as in Table 5.46, but in qùshēng only.

TABLE 5.48 Middle Chinese reflexes of *-uk

OC	MC	notes	examples
*C^{s}uk	*Cowk*		告 *k^{s}uk > *kowk* > gào ‘announce, inform’ 毒 *[d]^{s}uk > *dowk* > dú ‘poison (n.)’ 褎 *[t]^{s}uk > *towk* > dú ‘seam in the back of coat’ (also *[s]^{s}uk > *sowk*)
*C^{s}ruk	*Caewk*		覺 *k^{s}ruk > *kaewk* > jué ‘be aware’ 雹 *C.[b]^{s}ruk > *baewk* > báo ‘hail’
*C(r)uk	*Cjuwk*	[1]	畜 *q^{h}uk > *xjuwk* > xù ‘nourish’ 畜 *q^{h}<r>uk > *trhjuwk* > chù ‘store (v.)’[a] 復 *m-p(r)uk > *bjuwk* > fù ‘return’ 睦 *mr[uk] > *mjuwk* > mù ‘concord’ (? late character) 祝 *[t]uk > *tsyuwk* > zhù ‘pray, recite’ 宿 *[s]uk > *sjuwk* > sù ‘spend the night’ 縮 *[s]ruk > *srjuwk* > suō ‘shrink’

[a] For the initial development *q^{h}r- > *trh-*, see section 4.3.2 above.

Notes on Table 5.48:

[1] We normally cannot distinguish *-ruk from *-uk after (nonpharyngealized) *K- and *P-. A possible candidate for the syllable shape *Pruk would be

(993) 睦 “?*mruk” > *mjuwk* > mù ‘concord’; cf., with the same phonetic:
陸 *[r]uk > *ljuwk* > lù ‘land (as opposed to water)’

The phonetic element supports the reconstruction of medial *-r- in 睦 mù. However, it appears that 睦 mù is a rather late character; there are no pre-Qín examples in *Gǔwénzì gǔlín* (*GG* 3.815). Instead, we believe that 睦 mù may have been the same word as 穆 mù ‘harmonious’, which is attested early and which we reconstruct with *-iwk; the character 睦 mù probably reflects the merger of *-iwk and *-uk in this environment (both eventually becoming MC *-juwk*):

(994) 穆 *mriwk > *mjuwk* > mù ‘harmonious’

We reconstruct 穆 mù with *-iwk because it rhymes in Ode 282.1 with:

(995) 肅 *siwk > *sjuwk* > sù ‘solemn, severe’

We reconstruct *-uk-s (rather than *-u-s) on the basis of etymological or graphic connections to *-uk:

(996) 復 *m-p(r)uk > *bjuwk* > fù ‘return’
復 *[N]-pruk-s > *bjuwH* > fù ‘again’

(997) 祝 *[t]uk > *tsyuwk* > zhù ‘pray, recite’
祝 *[t]uk-s > *tsyuwH* > zhòu ‘to curse’

(998) 宿 *[s]uk > *sjuwk* > sù ‘spend the night’
宿 *[s]uk-s > *sjuwH* > xiù ‘“mansion” of the zodiac (where the moon is found on successive nights)’

(999) 覺 *k^{s}ruk > *kaewk* > jué ‘be aware’
覺 *k^{s}ruk-s > *kaewH* > jiào ‘awaken’

(1000) 畜 *q^{h}uk > *xjuwk* > xù ‘nourish’
畜 *q^{h}uk-s > *xjuwH* > xù ‘domestic animal’
蓄, 畜 *q^{h}<r>uk > *trhjuwk* > chù ‘store (v.)’
畜 *q^{h}<r>uk-s > *trhjuwH* > chù ‘domesticated animals’

5.4.6.3 *-uŋ (= traditional 冬 Dōng)

The Middle Chinese reflexes of *-uŋ are summarized in Table 5.49. Clear examples of *-uŋ are rather few, and it is sometimes difficult to distinguish between *-uŋ and *-um.

TABLE 5.49 Middle Chinese reflexes of *-uŋ

OC	MC	notes	examples
*C^{ʂ}uŋ	*Cowng*	[1]	冬 *t^{ʂ}uŋ > *towng* > dōng ‘winter’ 宗 *[ts]^{ʂ}uŋ > *tsowng* > zōng ‘ancestral temple’
*C^{ʂ}ruŋ	*Caewng*	[2]	降 *m-k^{ʂ}ru[ŋ] > *haewng* > xiáng ‘submit’
*C(r)uŋ	*Cjuwng*		宮 *k(r)uŋ > *kjuwng* > gōng ‘dwelling’ 終 *tuŋ > *tsyuwng* > zhōng ‘end’ 中 *truŋ > *trjuwng* > zhōng ‘center’ 嵩 *[s]uŋ > *sjuwng* > sōng ‘high’ 崇 *[dz]<r>uŋ > *dzrjuwng* > chóng ‘exalt, honor’

Notes on Table 5.49:

[1] It is difficult to find convincing examples of *-uŋ or *-ruŋ with pharyngealized grave onsets. We generally expect MC *-owng* as the reflex of *C^{ʂ}uŋ, but some examples of MC *-owng* clearly have other origins. The *Guǎngyùn* gives both *kuwng* and *kowng* as readings for 攻 gōng ‘attack’ (as does the Wáng Rénxù *Qièyùn* manuscript), but the phonetic 工 gōng ‘work’ clearly has *-oŋ, and 攻 gōng itself rhymes as *-oŋ in the *Shījīng* (179.1):

(1001) 攻 *k^{ʂ}oŋ > *kuwng* > gōng ‘attack’
工 *k^{ʂ}oŋ > *kuwng* > gōng ‘work’

[2] Some cases that look like *-uŋ may come by dissimilation from earlier *-um. For example,

(1002) 降 ~ 夅 *m-k^{ʂ}ru[ŋ] > *haewng* > ‘submit’

Example (1002) rhymes as *-uŋ in Odes 14.1, 168.5, 239.2, and 248.4, but words with the phonetic 夅 xiáng have connections with final *-m; for example, 夅 xiáng is the phonetic element in

(1003) 贛 *[k]^{h}omʔ > *khomX* > kǎn ‘(booming sound?)’[57]

For a discussion of this and related words, see Chén Jiàn (2007).

In fact, Wáng Lì treats 冬 Dōng (our *-uŋ) and 侵 Qīn (our *-əm, *-im, and *-um) as a single rhyme group for the *Shījīng* period and before, believing that the distinction between them arose later. We do not follow him on this; based on our six-vowel reconstruction, our default assumption would be that

all six vowels would have occurred before all codas, and there is no reason not to expect that there was a rhyme *-uŋ. There could indeed have been cases where *-um dissimilated to *-uŋ (see section 5.7 below), but assimilations *-uŋ > *-um are also possible, and would be one explanation for the scarcity of clear examples of *-uŋ.

5.5 Rhymes with acute codas (*-j, *-t, *-n, and *-r)

The rhymes with acute codas share many common features: for example, there was a diphthongization of rounded vowels in this environment, probably starting some time in the late Warring States period, judging from rhymes in texts of that time. The diphthongizations are summarized in Table 5.50.

A second change was that some time after these diphthongizations, *-w- became nondistinctive after labial initials; we cannot be sure of the phonetic details, but we assume that the developments were more or less as shown in Table 5.51 (using "*-T" as a cover symbol for any acute coda).

In the *Shījīng* and *Lǎozǐ*, the distinctions between rounded and unrounded vowels are generally maintained quite strictly in rhyming; there is no sign of the diphthongization. We have, for example, these sequences with rounded vowels before acute codas:

(1004) Ode 258.5:

川 chuān < *tsyhwen* 'stream, river'	< *t.l̥u[n]
焚 fén < *bjun* 'burn (v.)'	< *[b]u[n]
熏 xūn < *xjun* 'smoke (v.); vapor, odor'	< *qʰu[n]
聞 wén < *mjun* 'hear (v.)'	< *mu[n]
遯 dùn < *dwonH* 'withdraw'	< *lˤu[n]ʔ-s

TABLE 5.50 Diphthongization of rounded vowels before acute codas

	*u	*o
*-j	*-uj > *-wəj	*-oj > *-waj
*-t	*-ut > *-wət	*-ot > *-wat
*-n	*-un > *-wən	*-on > *-wan
*-r	*-ur > *-wər	*-or > *-war

TABLE 5.51 Neutralization of *-w- after labial onsets

Old Chinese	Middle Chinese
*PˤuT > *PˤwəT *PˤəT > *PˤwəT	> *PwoT*
*PuT > *PwəT *PəT > *PwəT	> *PjuT*
*PˤoT > *PˤwaT > *PˤaT *PˤaT	> *PaT*
*PoT > *PwaT > *PaT *PaT	> *PjoT*

(1005) *Lǎozǐ* 29:

隨 suí < *zjwe* ‘follow’	< *sə.loj
吹 chuī < *tsyhwe* ‘blow (v.)’	< *tʰo[r]
羸 léi < *ljwe* ‘emaciated; weak’	< *[r]o[j]
嘘 huī < *xjwie* ‘destroy’	< *l̥oj

But in somewhat later literature, rhymes do occur between original *-oT and *-aT, and between original *-uT and *-əT, suggesting that the diphthongizations have taken place. For example, in the “Jiǔ zhāng” 《九章》poems of the *Chǔ cí* 《楚辭》, we find the following rhymes where original rounded vowels rhyme with unrounded vowels:

(1006)	惜誦 Xī sòng:	變 biàn < *pjenH* ‘change’	*pr(w)an-s < *pro[n]-s
		遠 yuǎn < *hjwonX* ‘far’	*C.ɢʷanʔ
	懷沙 Huái shā:	類 lèi < *lwijH* ‘category’	*rwət-s < *[r]u[t]-s
		愛 ài < *ʔojH* ‘to love; to grudge’	*qˤət-s <*[q]ˤəp-s
	橘頌: Jú sòng	摶 tuán < *dwan* ‘round; make round’	*dˤwan < *[d]ˤon
		爛 làn < *lanH* ‘cooked until soft’	*[r]ˤan-s

More precise location of this diphthongization in space and time awaits further research.

5.5.1 THE CODA *-r

In syllables where Baxter (1992) had a two-way contrast between codas *-j and *-n, our present system follows Starostin (1989) in reconstructing a third coda *-r, so that there is a three-way contrast in Old Chinese among these codas: *-j ≠ *-n ≠ *-r. With Starostin, we assume that the coda *-r was treated differently in different dialects: OC *-r usually became MC *-n*, but in some cases, *-r became MC *-j* (or final zero -∅ from earlier *-j, in the case of MC *-a* < *-aj < *-ar and MC *-wa* < *-waj < *-war < *-or). Some examples indicate that Proto-Vietic may have had *-l corresponding to OC *-r in early loanwords; and as we remarked in section 5.1, it would also be possible to reconstruct the third coda as *-l instead of *-r.

5.5.1.1 The rhymes *-ən, *-əj, and *-ər

In explaining the *r-coda hypothesis, it will be convenient to begin with words traditionally assigned to the 文 Wén and 微 Wēi rhyme groups. Words of the 文 Wén rhyme group have the coda *-n* in Middle Chinese, and have generally been reconstructed with *-n in Old Chinese also. There has been less agreement on how to reconstruct the words of the 微 Wēi group. Reconstructions for the basic type-A finals are summarized in

TABLE 5.52 Earlier reconstructions of MC *-on* < 文 Wén and *-oj* < 微 Wēi

	⊂ 文 Wén	⊂ 微 Wēi
MC	*-on* 痕	*-oj* 咍
Karlgren (1957)	*-ən	*-ər
Dǒng Tónghé (1948)	*-ən	*-əd
Wáng Lì (1958)	*-ən	*-əi
Pulleyblank (1962–1963)	*-ən	*-əð (= [əð])
Li (1971)	*-ən	*-əd
Pulleyblank (1977–1978)	*-ə́n	*-ə́l
Baxter (1992)	*-in	*-ij
Zhèngzhāng (2003)	*-ɯɯn	*-ɯɯl

Table 5.52, for the main vowel *ə. (The 文 Wén and 微 Wēi groups also include words we reconstruct with *u, as discussed in section 5.5.7; we leave these aside for the moment.)

Given the variety of codas that have been reconstructed for the 微 Wēi group (*-r, *-d, *-ð [= ð], *-l, as well as *-i and *-j), it may seem surprising that neither Middle Chinese nor modern Chinese dialects show any reflex other than [i] for the coda in these syllables. Karlgren's original reason for reconstructing *-r was the presence of various kinds of contacts between words of the traditional 微 Wēi and 文 Wén rhyme groups. For example, there are rhymes between the two groups, as in this sequence from Ode 183.1–183.2:
And also this rhyme sequence:

(1007) Ode 183.1–183.2:
水 shuǐ 'water' < *sywijX* (微 Wēi)
隼 sǔn 'hawk' < *swinX* (文 Wén)

Furthermore, there are many cases where the same phonetic element was used

(1008) Ode 182.3:
晨 chén 'morning' < *zyin*[58] (文 Wén)
煇 huī 'brilliant' < *xjw+j* (微 Wēi)
旂 qí 'banner' < *gj+j* (微 Wēi)

to write words from both the traditional 微 Wēi group and the traditional 文 Wén group:

(1009) 軍 jūn 'army; camp' < *kjun* (文 Wén), phonetic in
煇 huī 'brilliant' < *xjw+j* (微 Wēi)

(1010) 斤 jīn 'axe; catty' < *kj+n* (文 Wén), phonetic in
旂 qí 'banner' < *gj+j* (微 Wēi)

Contacts of this kind were noticed by the Qīng philologists; the traditional term for such contacts between vocalic-final and nasal-final syllables is *yīn-yáng duìzhuǎn* 陰陽對轉, perhaps to be translated as 'crossover alternations between vocalic-coda and nasal-coda

rhymes'. The rhyme groups 微 Wēi and 文 Wén were seen as occupying corresponding positions among the yīnshēng 陰 聲 (vocalic-final) and yángshēng 陽 聲 (nasal-final) categories, respectively; *duìzhuǎn* refers to alternations between such corresponding rhymes. This is of course a descriptive term for such phenomena, not an explanation of them.

Karlgren's explanation for such contacts was that the words of the 微 Wēi group must have ended with "some dental consonant" that was "acoustically more similar to *-n*" than were the *-t and *-d he had already reconstructed in other rhymes, "so as to allow occasional rimes with *-n* words in the [xiéshēng]," and he reconstructed the coda in question as *-r on this basis, even though there is no direct evidence for the *-r in modern dialects or Middle Chinese sources (1954:300–301). Other scholars have reconstructed *-d, *-ð, or *-l instead of *-r, but the reasoning is basically the same.

Starostin's proposal is that this move of Karlgren's was an overgeneralization: it is not *all* 微 Wēi-group words that have contacts with the 文 Wén group, nor *all* 文 Wén-group words that have contacts with the 微 Wēi group. Rather, the examples showing such contacts represent a third Old Chinese category, to be reconstructed as *-ər. Generally, the rhymes and xiéshēng connections cited above were not irregular in Old Chinese; rather, it is the varying reflexes in Middle Chinese and modern dialects that are irregular, reflecting dialect mixture. The most usual reflex of *-r is [n], but already in the pre-Qín period we have evidence for a dialect where *-r became [j].

We are convinced that Starostin's proposal is correct; moreover, it is now possible to locate a geographic region where *-r became *-j, at least for Hàn times: it is the region in and near the Shāndōng peninsula (see section 5.5.1.4 below). Table 5.53 summarizes the treatment of relevant words in several reconstructions: while most reconstructions assume only two codas, we now agree with Starostin in reconstructing three.

TABLE 5.53 Examples of OC *-ən, *-ər, and *-əj in various reconstructions

	1 巾 jīn 'kerchief'	2 斤 jīn 'axe'	3 旂 qí 'flag'	4 幾 jǐ 'how many?'
MC	*kin*	*kj+n*	*gj+j*	*kj+jX*
traditional group	文 Wén	[文 Wén?]	[微 Wēi?]	微 Wēi
Karlgren	*kɨɛn	*kɨən	*gʼɨər	*kɨər
Li	*kjiən	*kjən	*gjəd	*kjədx
Baxter (1992)	*krjin	*kjin	*gjɨj	*kjɨjʔ
Zhèngzhāng (2003)	*krun	*kun	*gul	*kulʔ
Starostin (1989)	*krən	*kər	*gər	*kəjʔ
Baxter-Sagart	*krən	*[k]ər	*C.[ɢ]ər	*kəjʔ

Words with *-ər form a newly discovered rhyme group, not recognized in the traditional analysis; *-ər can be reconstructed with confidence in words written (at a sufficiently early period) with the following phonetics:

(1011) 辰 *[d]ər > *dzyin* > chén ‘fifth earthly branch’

(1012) 斤 *[k]ər > *kj+n* > jīn ‘axe; catty’

(1013) 軍 *[k]^{w}ər > *kjun* > jūn ‘army; camp’

(1014) 先 *s^{ʕ}ər > *sen* > xiān ‘first’

(1015) 西 *s-n^{ʕ}ər > *sej* > xī ‘west’

As for rhyme evidence, in addition to Ode 182.3 cited above, we have these rhyme sequences limited to *-ər:

(1016) Odes 222.2 and 299.1:
芹 *C.[ɢ]ər > *gj+n* > qín ‘cress’
旂 *C.[ɢ]ər > *gj+j* > qí ‘banner; flag’

(1017) Ode 5.1:
詵 *srər > *srin* > shēn ‘numerous’
振 *tər > *tsyin* > zhēn ‘numerous; majestic’

That the tendency of *-ər words to rhyme separately from *-əj and *-ən is not a random effect of the *Shījīng* sample is suggested by the long rhyme sequence in the following passage from the *Zuǒ zhuàn* (Duke 僖 Xī, year 5). The text is apparently late enough that original *-ur has already diphthongized to *-wər, but the reconstruction of *-r in these words is secure:

(1018) *Zuǒ zhuàn*, Duke 僖 Xī, year 5:
辰 *[d]ər > *dzyin* > chén ‘fifth earthly branch’
振 *tər > *tsyin* > zhēn ‘numerous; majestic’
旂 *C.[ɢ]ər > *gj+j* > qí ‘banner; flag’
賁 *p^{ʕ}ur > *p^{ʕ}wər > *pwon* > bēn ‘ardent, brave’ (other readings of this character: *bjun*, *pj+j, pjeH*)
焞 *t^{hʕ}ur > *t^{hʕ}wər > *thwon* > tūn ‘ample’ (also read *thwoj, dzywin*)
軍 *[k]^{w}ər > *kjun* > jūn ‘army; camp’
奔 *p^{ʕ}ur > *p^{ʕ}wər > *pwon* > bēn ‘run (v.)’

Words with OC *-r that were borrowed early into other languages sometimes lack the final *-n* that we find in Middle Chinese, suggesting either that the donor variety of Chinese was one that had changed *-r to *-j, or else that the borrowing language had no [r]. For example, for the cyclical sign 辰 chén < *[d]ər ‘fifth earthly branch’, Li (1945:336) cites these forms from Tai languages: Ahom shi, Lü si^{1}, Dioi chi^{2}.[59] Khmu (a minority Mon-Khmer language spoken primarily in Laos) has /síi/ (Damrong and Lindell 1994:104). If the original coda had been [n], there is no reason it could not have been borrowed with [n].

5.5.1.2 The rhymes *-an, *-aj, and *-ar

There is a corresponding situation with the traditional rhyme groups 元 Yuán and 歌 Gē: here, too, we find rhymes and xiéshēng contacts between words of the two groups, and while most reconstructions have followed the traditional analysis by reconstructing two rhymes, we follow Starostin in reconstructing three: *-an, *-ar, and *-aj. Table 5.54 shows relevant examples, with reconstructions in several systems.

Karlgren treated these groups slightly differently from 文 Wén and 微 Wēi: in that case, he reconstructed only two types of rhymes, *-ən for 文 Wén and *-ər for 微 Wēi; but with 元 Yuán and 歌 Gē he departed from the traditional analysis and reconstructed three types of rhymes, *-ân, *-âr, and *-â. If a word in the traditional 元 Yuán group had *-n* in Middle Chinese, he always reconstructed the *-ân type, but he reconstructed *-âr for words in the traditional 歌 Gē group that showed contacts with *-n*, and *-â for those that showed no such contacts. In other words, roughly speaking, in terms of our reconstruction, Karlgren's *-ân (etc.) corresponds to our *-an, and to those cases of our *-ar that have Middle Chinese reflexes like *-an; his *-âr corresponds to those cases of our *-ar that have Middle Chinese reflexes like *-aj; and his *-â corresponds to our *-aj.

It will be convenient here to comment on the reconstruction of *-aj: although sometimes reconstructed with *-r or *-l (as in Table 5.54), there is a significant group of words where modern dialects and loanwords have [ai] or the like, but that have no particular connection with final *-n*; so the logical reconstruction for them is *-aj. The Middle Chinese reflex of *-aj in pharyngealized syllables is *-a*, with no trace of the final *-j; this probably resulted from a monophthongization *-aj > [æ] > [a] in the dialects reflected in the Middle Chinese written sources, and in most modern dialects.[60] However, a number of modern dialects evidently escaped this change, and still have a coda [i] in syllables from OC *-aj; the same is true of early loanwords from Chinese in other languages.

(1019) 我 *ŋˤajʔ > *ngaX* > wǒ 'we, I', Xiàmén /gua 3/, Fúzhōu /ŋuai 3/, pMǐn *ŋuɑi B (the upper-register tone in these dialects is unexplained; see Norman 1973:232)

TABLE 5.54 Examples of *-an, *-ar, and *-aj in various reconstructions

	1 反 fǎn 'reverse'	2 燔 fán 'burn'	3 番 番 bōbō 'martial'	4 歌 gē 'sing'
MC	*pjonX*	*bjon*	*pa*	*ka*
traditional group	元 Yuán	[元 Yuán?]	[歌 Gē?]	歌 Gē
Karlgren (1957)	*pi̯wăn	*b'i̯wăn	*pwâr	*kâ
Li (1971)	*pjanx	*pjan	*par	*kar
Baxter (1992)	*pjanʔ	*bjan	*paj	*kaj
Zhèngzhāng (2003)	*panʔ	*ban	*paal	*kaal
Starostin (1989)	*panʔ	*bar	*pār	*kāj
Baxter-Sagart	*Cə.panʔ	*[b]ar	*pˤar	*[k]ˤaj

(1020) 籮 *C.rˤaj > *la* > luó ‘hamper, basket (n.)’, Xiàmén /lua 2/, Fúzhōu /lai 2/, Jiànyáng /sue 2/, pMǐn *lhɑi A (Luó Jiéruì [Norman] 2005:3)

(1021) 破 *pʰˤaj-s > *phaH* > pò ‘break (v.)’, Xiàmén /pʰua 5/, Fúzhōu /pʰuai 5/, pMǐn *phuɑi C; cf. VN *phải* [fɑi C1] ‘to touch or fall upon something by misfortune’, *phải tàu* [fɑi C1 tau A2] ‘to be shipwrecked’ (Rhodes 1651: *tàu* = ‘boat’[61]).

(1022) 餓 *ŋˤaj-s > *ngaH* > è ‘hungry’, Wēnzhōu /ŋai 6/

(1023) 磨 *mˤaj > *ma* > mó ‘rub, grind’, Xiàmén /bua 2/, Fúzhōu /muai 2/, Shàowǔ /mai 2/, pMǐn *muɑi A; cf. VN *mài* [mɑi A2] ‘to file, sharpen, whet’, Korean *may* ‘grindstone’

(1024) 麻 *C.mˤraj > *mae* > má ‘hemp’, Xiàmén /mua 2/, Fúzhōu /muai 2/, Shàowǔ /mai 7/, pMǐn *mhuɑi A

(1025) 寄 *C.[k](r)aj-s > *kjeH* > jì ‘entrust to’, Xiàmén /kia 5/, Fúzhōu /kie 5/, pMǐn *kiɑi C; cf. VN *gửi* [ɣɯi C1] ~ *gởi* [ɣʌi C1] ‘entrust, send’

(1026) 蛇 *Cə.lAj > *zyae* > shé ‘snake’, Xiàmén /tsua 2/, Fúzhōu /sie 2/, pMǐn *-dʒiɑi A

However, along with words of the traditional 歌 Gē rhyme group that are unproblematically reconstructed with *-aj, there are a number of words that show a vacillation between the traditional 元 Yuán and 歌 Gē rhyme groups, parallel to that discussed above between 文 Wén and 微 Wēi; it is these words that we reconstruct with *-ar. Contacts in rhyming include the following, listed with their traditional rhyme groups:

(1027) Ode 215.3:

翰 hàn ‘support’ < *hanH* ~ *han*	(元 Yuán)
憲 xiàn ‘model’ < *xjonH*	(元 Yuán)
難 nán ‘difficult’ < *nan*	(元 Yuán)
那 nuó ‘ample’ < *na*	(歌 Gē)

(1028) Ode 259.7:

番 番 bōbō ‘martial’ < *pa*[62]	(歌 Gē)
嘽 嘽 tāntān ‘numerous’ < *than*	(元 Yuán)
翰 hàn ‘support’ < *hanH* ~ *han*	(元 Yuán)
憲 xiàn ‘model’ < *xjonH*	(元 Yuán)

Contacts between the 元 Yuán and 歌 Gē groups among words written with the same phonetic element are generally a sign that the words should be reconstructed with *-ar:

(1029) 番 番 *pˤar-pˤar > *pˤaj-pˤaj > *pa-pa* > bōbō ‘martial’
燔 *[b]ar > *ban > *bjon* > fán ‘burn, roast’
藩, 蕃 *par > *pan > *pjon* > fān ‘hedge, screen, fence’

(1030) 單 *Cə.tˁar > *Cə.tˁan > *tan* > dān ‘single, simple’, Xiàmén /tuã 1/, Shíbēi /duaiŋ 2/, pMǐn *-tuɑn A
鼉 *[d]ˁar > *dˁaj > *da* > tuó, ‘alligator’; also read *[d]ˁar > *dˁan > *dan*
觶 *tar > *taj > *tsye* > zhī ‘ritual vessel’

(1031) 難 *nˁar > *nˁan > *nan* > nán ‘difficult’
儺 *nˁar > *nˁaj > *na* > nuó ‘expel demons’

(1032) 宣 *s-qʷar > *s-qʷan > *sjwen* > xuān ‘spread (v.)’
烜、晅 *qʰʷarʔ > *qʰʷanʔ > *xjwonX* > xuǎn ‘to dry in the sun’; also read
烜 *qʰʷarʔ > *qʰʷajʔ > *xjweX* > huǐ ‘sunlight’
垣 *[ɢ]ʷar > *[ɢ]ʷan > *hjwon* > yuán ‘wall’
桓 *[ɢ]ʷˁar > *[ɢ]ˁʷan > *hwan* > huán ‘pillar; martial-looking’

The phonetic element 亘 xuān < *sjwen* < *swar < *s-[q]ʷar is used by Zhī Lóujiāchèn 支婁迦讖 (“?Lokakṣema the Yuèzhī 月支”; see Zürcher 2007:35), a Buddhist translator active in Luòyáng in the late second century CE, to represent the Indic syllable *svar* in (Sanskrit) *ābhāsvara* ‘shining; a class of deities’ (Coblin 1983:244, #68):

(1033) 阿會亘 *'a-hwajH-sjwen* < Hàn *ʔˁa-ɦˁwajs-swar[63] ‘ābhāsvara’

Words in *-ar have a strong tendency to rhyme as a separate group, as illustrated by Odes 215.3 and 259.7, quoted above, and by the following sequences:

(1034) Ode 197.8:
山 *s-ŋrar > *srean* > shān ‘mountain, hill’[64]
泉 *s-N-ɢʷar > *dzjwen* > quán ‘spring, source’
垣 *[ɢ]ʷar > *hjwon* > yuán ‘wall’

(1035) Ode 250.2:
原 *N-ɢʷar > *ngjwon* > yuán ‘spring, source; origin’
繁 *[b]ar > *bjon* > fán ‘abundant, numerous’
宣 *s-qʷar > *sjwen* > xuān ‘spread (v.)’
歎 *ŋˁar > *than* > tān ‘to sigh’
巘 *ŋ(r)ar(ʔ) > *ngjonX* ~ *ngjenX* > yǎn ‘hilltop’
原 *N-ɢʷar > *ngjwon* > yuán ‘spring, source; origin’

(1036) Ode 254.7:
藩 *par > *pjon* > fān ‘hedge, screen, fence’
垣 *[ɢ]ʷar > *hjwon* > yuán ‘wall’
翰 *m-kˁar-s > *hanH* > *hàn* ‘prop up, support’

(1037) Ode 259.1:
翰 *m-kˁar-s > *hanH* > *hàn* ‘prop up, support’
蕃 *par > *pjon* > fān ‘hedge, screen, fence’
宣 *s-qʷar > *sjwen* > xuān ‘spread (v.)’

The early script distinguishes *-ar from *-an: for example, the phonetic 番 fān represents syllables of the type *P(ˢ)ar, contrasting with 反, which represents *P(ˢ)an; similarly, 單 dān represents *T(ˢ)ar, contrasting with 旦 dàn, which represents *T(ˢ)an. The later standard script no longer maintains these distinctions clearly, probably because of the change of *-r to *-n—and more generally, because sound changes gradually made the criteria for a phonetic match less strict. So in received texts there are cases where words of the shape *T(ˢ)an are written with 單. For example, Ode 254.1 has this rhyme sequence:

(1038) Ode 254.1:
板 *pˢranʔ > *paenX* > bǎn ‘perverse’
癉 *tˢanʔ > *tanX* > dǎn ‘illness; toil’
然 *[n]a[n] > *nyen* > rán ‘so, thus; (adv. suffix)’
遠 *C.gʷanʔ > *ɦjwonX* > yuǎn ‘far’
瘖, 管 *kʷˢa[n]ʔ > *kwanX* > guǎn ‘exhausted, helpless’
亶 *tˢanʔ > *tanX* > dǎn ‘sincere, truly’
遠 *C.gʷanʔ > *ɦjwonX* > yuǎn ‘far’
諫 *kˢranʔ(-s) > *kaenH* > jiàn ‘admonish’[65]

While most of the words can reasonably be reconstructed with *-an, the phonetic 單 dān in 癉 dǎn ‘illness, toil’ would seem to indicate *-arʔ. But the earliest attested version of the text is the passage quoted in the bamboo strip version of the *Lǐ jì* 《禮記》 chapter “Zī yī” 《緇衣》from Guōdiàn (strip 7); there, the character corresponding to the Máo version’s 癉 MC *tanX* > dǎn is written as

(1039) 

— that is, as “担,” with 手 shǒu ‘hand’ on the left and 旦 dàn ‘dawn’ on the right, which is consistent with *-anʔ (*GD* 17, 129). In the received version of the “Zī yī,” the character is written as 亶, with the phonetic 亶 dǎn ‘sincere’, which itself contains 旦 dàn ‘dawn’ as phonetic. The *Jīngdiǎn shìwén* glosses on Ode 254.1 also cite a version of the *Shījīng* in which the character is written as 亶 (*JDSW* 95). As often, the received version of the text of the *Shījīng*, written in the standard script, probably reflects late sound changes that are irrelevant to reconstructing Old Chinese.

The reconstruction of *-r is also supported by rhyme sequences from texts other than the *Shījīng*; for example, in the *Zhōu Yì* 《周易》 (hexagram 賁 Bì), we have this rhyme sequence:

(1040) 皤 *[b]ˢar > *ba* > pó ‘white, white-haired’
翰 *[g]ˢar > *hanH* > hàn ‘white (of a horse)’

And in the "Jiǔ biàn"《九辨》, a portion of the *Chǔ cí*《楚辭》attributed to Sòng Yù 宋玉 (third century BCE), we have this rhyme sequence:

(1041) 漼 *[k]ˤar > *kan* > gān 'dry'
歎 *ŋˤar > *than* > tān 'to sigh'

There are also relatively clear examples of *-r after *o and *u (see sections 5.5.4.4 and 5.5.7.4 below).

5.5.1.3 Transcription evidence for *-r

The reconstruction of *-r is also supported by Chinese transcriptions of foreign words and names where Chinese characters with the coda *-r appear to be used to represent a foreign [r]. Here are some examples:

單于 **chányú < *dzyen-hju* < (Hàn) *dar-ɦwa 'Xiōngnú ruler' (< *[d]ar + *ɢʷ(r)a)**

The word for the Xiōngnú ruler is given in the *Shǐ jì* as

(1042) 單于 chányú[66] < MC *dzyen-hju* 'Xiōngnú ruler'

The two syllables individually would be reconstructed for Old Chinese as follows:

(1043) 單 chán < *dzyen* < *[d]ar

(1044) 于 yú < *hju* < *ɢʷ(r)a 'go; at'

There is no particular reason to assume an *-r- in 于 yú, and by Hàn times, *ɢʷ- had probably become [ɦw], so the Hàn time pronunciation of 單于 chányú can reasonably be reconstructed as

(1045) 單于 chányú < MC *dzyen-hju* < Hàn *dar-ɦwa

which is a close match to Written Mongolian *daruɣa* 'governor' (also borrowed into Persian as *dārūġa* 'governor', see Doerfer 1963–1975, 1.319–1.323). This does not necessarily mean that the Xiōngnú themselves were Proto-Mongols, of course, since the word could have been borrowed, either by the Xiōngnú or by the Mongols, one from the other, or both from some third source.

驩潛 **Huānqián < *xwan-dzjem* < *xˤwar-dz[e]m 'Khwārazm' (< *qʷʰˤar + dz[o]m)**

Khwārazm (also known as Chorasmia) is an oasis region in the lower Amu Darya valley, in parts of what are now Turkmenistan and Uzbekistan, near the former Aral Sea (now largely desiccated). Chinese representations of this name are discussed by Pelliot (1938). The earliest known mention of it in Chinese texts is in the "Dàyuān lièzhuàn"《大宛列傳》of the *Shǐ jì*《史記》(1982:3173): it is described as a small country to the west of Dàyuān 大宛 (Ferghana), and its name is written as

(1046) 驩潛 Huānqián < *xwan-dzjem*

The region is mentioned already around 500 BCE in records of the Old Persian empire; it appears in Old Persian as *Huwārazmiš* (Mackenzie 1983).

The phonetic of the first character 驩 huān indicates an *-r coda:

(1047) 驩 (= 歡 = 懽) *q^{wh}^{ʕ}ar (> *x^{ʕ}war) > *xwan* > huān ‘rejoice; joyous’

The phonetic is 雚 (=鸛) *C.q^{wʕ}ar-s > *kwanH* > guàn ‘heron’, whose phonetic in turn is said to be

(1048) 皿 *q^{wh}ar > *xjwon* > xuān ‘clamor, shout’.

This same word is written as 讙, 諠, or 喧; note that these last two have the phonetic

(1049) 宣 *s-q^{w}ar > *sjwen* > xuān ‘spread (v.)’

which we identified above as a clear case of *-ar. By Western Hàn, *q^{wh}^{ʕ}ar would probably already have changed to *x^{ʕ}war. The second character by itself is

(1050) 潛 *[dz][o]m > *dzjem* > qián ‘go under water’.

MC *dzjem* could represent OC *[dz]am, *[dz]em, or *[dz]om; we generally reconstruct MC *-jem* as *[o]m when the phonetic series includes MC *-om*, as here (see section 5.7). But by Western Hàn this had probably become *dzem. So at that time 驩 潛 Huānqián was probably *x^{ʕ}war-dzem.

韓 **Hán < *han* < *[g]^{ʕ}ar (state in the Korean peninsula) = Japanese *Kara***

The name 韓 Hán < *han* < *[g]^{ʕ}ar, apart from being the name of a Chinese state of the Warring States period, was also applied to a state in the Korean peninsula in the *Sān guó zhì* 《三國志》, completed in 297 CE.[67] In Old Japanese, the corresponding name is Kara. The character 韓 hán and graphically related words are among the best-supported examples of *-ar. The *Shuōwén* gives an earlier form of the character as 韓, and says that the phonetic element is 倝. The *Shuōwén*’s text is:

(1051) 韓，井垣、从韋、取其帀也、倝聲
“韓 [*[g]^{ʕ}ar] means ‘wall [垣 *[ɢ]^{w}ar] of a well’. It is composed of 韋 [wéi = 圍 wéi ‘surround’], taking [as a basis] its circumference, with 倝 [gàn < *kanH* < *[k]^{ʕ}ar-s ‘sunrise’] as phonetic” (*SWGL* 2347b)

The gloss ‘wall of a well’ probably refers to the word usually written 幹 gàn < *kanH* < *[k]^{ʕ}ar-s, which does have this meaning. The word 垣 yuán ‘wall’ is also reconstructed with *-ar, and is probably used as a sound gloss here. There is ample evidence that words with the phonetic 倝 gàn are to be reconstructed with *-ar.[68]

鮮卑 **Xiānbēi < *sjen.pjie* < *s[a]r.pe ‘*Särbi**’

In early Western Hàn, the Dōng Hú 東胡 were a non-Chinese group occupying a territory to the east of the Xiōngnú; by the late first century BCE, two subgroups of the Dōng

Hú were recognized under the names Xiānbēi 鮮卑 and Wūhuán 烏桓.[69] According to Pulleyblank (1983:452–454), these names can be interpreted as "*Särbi" and "Avar," respectively. We discuss the 鮮卑 Xiānbēi first.

Although the name "*Särbi" is not independently attested, what is apparently the same name is also found written later as 室韋 Shìwéi < MC *syit.hjw+j*. Pelliot reasoned that since foreign -r can be represented by MC *-n* in Hàn times, and is often represented by MC *-t* in later times, the coda of the first syllable of the foreign name was *-r in this case; he reconstructed the name as *Serbi, *Širbi, or *Širvi (1934:35, n. 3).

There are several additional reasons for reconstructing 鮮 with *-r. First, it rhymes in the *Shījīng* in the following rhyme sequence:

(1052) Ode 43.1:
泚 *[ts^{h}]e(j)ʔ > *tshjeX* > cǐ 'clear (adj.)'
瀰 *m.nerʔ > *mjieX* > mǐ 'richly flowing stream'
鮮 *[s][a]r > *sjen* > xiān 'fresh; good'

There are many phonological difficulties with this rhyme sequence, but the mixture of forms with and without the MC *-n* suggests that the MC *-n* in 鮮 *sjen* is from *-r.[70]

The *Shuōwén* (*SWGL* 5188a) also includes the following character with 鮮 *sjen* as phonetic element, which has two Middle Chinese pronunciations according to the *Guǎngyùn*:

(1053) 霽 *s[e]r > *s[e]j > *sje* > sī 'light rain'
霽 *s^{ʂ}[e]r-s > *s^{ʂ}en-s > *senH* > xiàn 'sleet' (usually written as 霰)

We will see below (section 5.5.1.4) that the Eastern Hàn commentator Zhèng Xuán 鄭玄 reported that 鮮 xiān < *sjen* was pronounced like 斯 sī < *sje* < *[s]e 'this' in the Qí 齊 and Lǔ 魯 areas (in the region where we believe *-r had changed early to *-j).

烏桓 (~ 烏丸) Wūhuán ~ Wūwán < *'u-hwan* < Western Hàn *ʔ^{ʂ}a-ɦi^{ʂ}war 'Avars' (< 烏 *q^{ʂ}a + 桓 *[ɢ]$^{w ʂ}$ar)

The Wūhuán 烏桓 are the other, more southerly branch of the Dōng Hú mentioned above. Pulleyblank notes that this would be a possible transcription of a foreign pronunciation like *Awar, and argues that they are the same group who appear in the fourth and fifth century in the Hephthalite kingdom, in modern Afghanistan, and move west into Europe when displaced from that region by the Turks. In Byzantine and European texts they are referred to as Avares or Ἄβαροι (the Greek beta being pronounced like [v] at the time).[71] The identification is made more plausible by the fact that both Chinese and Western sources mention the unusual gold- and jewel-encrusted headwear worn by the group's married women (Pulleyblank 1983:452–454).

敦煌 **Dūnhuáng < *twon-hwang* < **tˤur-ɦˤwaŋ (< *tˤur + *[ɢ]ʷˤaŋ)**

The Chinese name of this famous outpost on the old Silk Road is evidently based on its name in Sogdian, an important Iranian language long used in the region. In Sogdian, written in a consonantal script derived from the Aramaic alphabet, the name is *drw''n* (the apostrophe stands for the letter aleph, representing an [a] vowel); in Greek the name is represented as Θροανα (Pulleyblank 1962–1963:228). Here too we have ample evidence for reconstructing *-r in the pronunciation of 敦 dūn, because it shows the characteristic alternation of MC *-n* and *-j* that we attribute to the *-r coda:

(1054) 敦 **tˤur* > *twon* > dūn 'solid, thick'
敦 **tˤur* > *twoj* > duī 'manage, direct'

Previously, the use of words with MC *-n* to describe foreign [r] was explained by saying that the Chinese of the time had no final [r], and that OC *-n was felt to be the closest equivalent, perhaps having a special [r]-like pronunciation that would make this more plausible (Pelliot 1934, Pulleyblank 1962–1963). But it is striking how many of the words involved are among those that should be reconstructed with *-r under Starostin's hypothesis, for independent reasons. In the examples cited so far, the case for *-r seems very strong because of the overlapping of several kinds of evidence.

It must be admitted, however, that it is sometimes difficult to know precisely how wide to throw the net when reconstructing final *-r. A number of words in MC *-n* have only one or two rhyme or xiéshēng connections with *-r words, and these might reflect simple irregularities, or dialects where *-r and *-n had merged. For example, it is tempting to reconstruct *-r in 安 ān < *'an* 'peace' because of the name 安息 Ānxī, attested as early as the "Dàyuān lièzhuàn" 《大宛列傳》 of the *Shǐ jì* 《史記》 as the name of an Iranian country in the western regions:

(1055) 安息 Ānxī < *'an-sik* < **[ʔ]ˤa[n]-sək

The name is evidently based on the name Aršaka = Arsaces (Parthian *'ršk*), the founder of the Arsacid dynasty of Parthia, which began in about 247 BCE (Bivar 2000:98). To reconstruct *-r here would entail extending the *-r to a large number of other common words for which we have little direct evidence for *-r (including the adverbials 焉 yān < *hjen* and 然 rán < *nyen*).

Moreover, the same character is used later to write [n] in the name of the Roman emperor Marcus Aurelius Antoninus (121–180 CE) in the chapter "Xī yù zhuàn" 《西域傳》 (Account of the western regions) in the *Hòu Hàn shū* 《後漢書》:

(1056) 安敦 Āndūn < *'an-twon*

Admittedly, this transcription is several centuries later than the others, and probably reflects a period or dialect where *-r had already become *-n, as strongly implied by the fact that the second character 敦 **tˤur* > **tˤun* > *twon* > dūn 'solid, thick', with an

*-r coda, is also used to write *-ton-* in the Latin word. But Pelliot notes that the name 安息 Ānxī might have come to Chinese by way of Sogdian, and that there is some indication of a tendency within Sogdian to replace -rš- with -nš- (Pelliot 1938:146, n. 1, citing Émile Benveniste), so perhaps 安 ān had *-n in Chinese all along. For this reason, we have followed a somewhat conservative path, reconstructing *-r only when it is supported by several examples or kinds of evidence; for 安 ān < *'an* we write *[ʔ]ˤa[n], meaning that we are unsure whether the coda is *-n or *-r.[72]

5.5.1.4 OC *-r > *-j in and near the Shāndōng peninsula

Starostin proposed that the normal development of *-r was to MC *-n*, and that the development of *-r to *-j was limited to certain dialects, but as far as we know, he did not specify which dialects these might be. Attributing apparent irregularities to dialect mixture is a move that should be taken with caution, since it can provide an apparent solution to a problem and take it off the table before it has really been solved. But it turns out that Starostin's *-r hypothesis helps to make sense of a number of explicit comments about dialect differences by early Chinese commentators.

Zhèng Xuán's comments on the dialect of Qí 齊

The following sentence occurs in the "Zhōng yōng" 《中庸》, a text from the *Lǐ jì* 《禮記》that was eventually chosen by Zhū Xī 朱熹 (1130–1200) as one of the 'Four Books' (*Sì shū* 《四書》); it relates how King Wǔ 武 of Zhōu 周, who overthrew the Shāng dynasty (also referred to by the name of its last capital, Yīn 殷), became ruler of "all under heaven":

(1057) 壹戎衣而有天下。
yī róng yī ér yǒu tiānxià (?)
'He united military force against Yī 衣 (?) and took possession of all under heaven.'

The meaning of the sentence is debated. The expression 戎衣 róngyī usually means 'armor', so it is commonly understood as James Legge translated it: "He once buckled on his armor, and got possession of the kingdom." But Zhèng Xuán (127–200 CE), who wrote commentaries on the *Zhōu lǐ* 《周禮》, the *Yí lǐ* 《儀禮》, and the *Lǐ jì* 《禮記》, took 衣 yī 'clothing' as an error for 殷 Yīn, referring to the Shāng dynasty. His comment is:

(1058) 衣讀如殷、聲之誤也、齊人言殷、聲如衣
"'衣 Yī" [*ʔ(r)əj] should be read as "殷 Yīn" [*ʔər]; it is an error in pronunciation. When the people of Qí 齊 pronounce "殷," the sound is like "衣 yī."'

In other words, Zhèng Xuán says that the substitution of 衣 yī for 殷 Yīn is the kind of error a person from Qí would be likely to make, because of their local pronunciation. Whether Zhèng Xuán's interpretation of the text is correct or not, we can probably trust him when he says that in Qí, 殷 Yīn was pronounced like 衣 yī, especially since this is confirmed by Gāo Yòu 高 誘, another Eastern Hàn commentator (see below). But it is not immediately clear what conclusions to draw from what Zhèng Xuán says. Did the people of Qí make this mistake in just this one word, or was it something more systematic? In traditional terminology, 衣 yī < *ʹj+j* is in the 微 Wēi rhyme group, while 殷 yīn < *ʹj+n* is in the 文 Wén rhyme group. Does this mean that in the dialect of Qí, the 微 Wēi and 文 Wén rhyme groups were not distinguished?

With an improved phonological reconstruction, we believe that we can understand Zhèng Xuán's comment more precisely. We reconstruct the two words involved as follows:

(1059) 衣 *ʔ(r)əj > *ʹj+j* > yī 'clothes' (In the *Guǎngyùn*, there is no syllable *ʹij* contrasting with *ʹj+j*, so we cannot be sure that there was no *-r-.)
殷 *ʔər > *ʹj+n* > yīn '(dynastic name)'

The characteristic of the Qí dialect that Zhèng Xuán refers to is the fact that in the speech of that region, the Old Chinese coda *-r had changed to *-j. There are a number of such remarks in the commentarial literature about the "errors" of the speech of Qí and nearby regions, and in each case, there appears to be independent evidence for reconstructing the words involved with the coda *-r.

The rhyme evidence for reconstructing *-r in 殷 *ʔər, and in words with 殷 as phonetic element (Odes 40.1, 192.12, and 257.4), is open to more than one interpretation; some of the other words involved could be reconstructed with either *-ər or *-ən. Although *-ər clearly rhymes separately in parts of the *Shījīng*, it may be that some poems already reflect the change *-r > *-n, so some words are difficult to reconstruct on the basis of rhyme evidence alone. But on the hypothesis that it is *-r and not *-n that came to be pronounced as *-j in the Shāndōng area, Zhèng Xuán's comment clearly indicates that 殷 Yīn should be *-ər.

Gāo Yòu 高 誘 on 殷 Yīn < *ʔər

Similarly, in his commentary on *Lǚ shì Chūnqiū*《呂氏春秋》, the late Hàn commentator Gāo Yòu 高 誘 (fl. 205–212) says:

(1060) 今兗州人謂殷氏皆曰衣。
'Nowadays the people of Yǎnzhōu 兗州 all pronounce the family name 殷 Yīn [*ʔər] as 衣 Yī [*ʔ(r)əj].' (Xǔ Wéiyù 2009:356)

In Hàn times, Yǎnzhōu 兗州 was the name of one of thirteen administrative regions; it was located in what is now southwestern Shāndōng and eastern Hénán.

Rú Chún 如淳 on 桓 huán < *[ɢ]ʷˁar 'pillar'

In the *Hàn shū*《漢書》biography of Yǐn Shǎng 尹賞 (*Hàn shū*: Kù lì zhuàn: Yǐn Shǎng 漢書・酷吏傳・尹賞), the word 桓 huán < *hwan* < *[ɢ]ʷˁar 'pillar' is used, referring to a *huánbiǎo* 桓表, a kind of tall pillar marking the location of a post station. Concerning this word, the Táng-dynasty commentator Yán Shīgǔ 顏師古 (581–645) (grandson of Yán Zhītuī 顏之推 (531–591), one of the *Qièyùn* authors) quotes a comment by the third-century scholar Rú Chún 如淳:

(1061) 舊亭傳於四角面百步築土四方，上有屋，屋上有柱出，高丈餘，有大板貫柱四出，名曰桓表。……陳宋之俗言桓聲如和，今猶謂之和表。
'At the four corners of old post stations, at a distance of 100 paces on the four sides, pounded earth was built up; there was a building on top, and on top of the building a pillar came out that was one zhàng 丈 tall or more; there were large boards passing through the pillar and coming out on four sides. This is called a *huánbiǎo* 桓表… In Chén 陳 and Sòng 宋, "桓 huán" [*hwan* < *ɦˁwar < *[ɢ]ʷˁar] is vulgarly pronounced like "和" [hé < *hwa* < *ɦˁwaj < *[ɢ]ˁoj]; today they are still called *hébiǎo* 和表.'

The word 桓 huán < *[ɢ]ʷˁar is a clear case of *-ar, as shown by its xiéshēng connections (see (1032) above). Originally, 和 hé had the rhyme *-oj (it rhymes with 吹 *tʰo[r] > *tsyhwe* > chuī 'blow (v.)' in Ode 85.1), but by Hàn times this would have diphthongized to *-waj. By Hàn times the initial voiced uvular stop *ɢˁ- had also probably become a fricative like [ɦˁ]. The point of Rú Chún's remark is that people in Chén and Sòng pronounced 桓 *ɦˁwar (or *ɦˁwan from earlier *ɦˁwar) like 和 *ɦˁwaj.

Chén 陳 and Sòng 宋 were ancient states slightly south and west of modern Shāndōng. Additional evidence that the change of *-r to *-j affected the Chén area is this rhyme sequence from the "Chén fēng"《陳風》section of the *Shījīng*, traditionally regarded as containing songs collected from this region:

(1062) from Ode 137.2:
"Chén fēng: Dōng mén zhī fén"《陳風・東門之枌》
差 *[tsʰ]raj > *tsrhea* > chāi 'distinction; select'
原 *N-ɢʷar > *ngjwon* > yuán 'high plain (n.)' (here, a proper name)
麻 *C.mˁraj > *mae* > má 'hemp'
婆 娑 *[b]ˁa[j].[s]ˁa[j] > *ba.sa* > pósuō 'saunter, dance'

Although we have good evidence that 原 yuán had the rhyme *-ar, this is not true of the other rhyme words above, which we reconstruct with *-aj: it appears that the rhymes reflect a dialect in which *-ar has changed to *-aj.

The Shì míng《釋名》on 癬 *[s]arʔ > *sjenX* > xuǎn 'ringworm'

The *Shì míng*《釋名》of Liú Xī 劉熙, dated at 200 CE, is an etymological work in which the meanings of words are explained by glossing them with other words of similar pronunciation and meaning. Glosses like this are called sound glosses, and they are found in many other early texts as well. Many of these explanations are quite fanciful, and probably have nothing to do with the actual etymology of the words involved. But Liú Xī sometimes makes explicit comments about pronunciation that give us very useful information. For example, in the section on names of diseases and illnesses, he says:

(1063) 癬，徙也，浸淫移徙處日廣也，故青徐謂癬如徙也。
'癬 xuǎn "ringworm" [*[s]arʔ] is 徙 xǐ "move" [*[s]ajʔ]; the stain moves over a broader area each day; so in Qīng 青 and Xú 徐, they pronounce 癬 [*[s]arʔ] "ringworm" like 徙 [*[s]ajʔ] "move."' (Hǎo Yìxíng et al. 1989:1101)

We reconstruct the words involved this way:

(1064) 癬 *[s]arʔ > *sjenX* > xuǎn 'ringworm'

(1065) 徙 *[s]ajʔ > *sjeX* > xǐ 'move (to)'

The idea of the sound gloss is that 癬 *[s]arʔ 'ringworm' and 徙 *[s]ajʔ 'move' sound similar because ringworm "moves" on the skin.

What interests us is Liú Xī's comment that in Qīng 青 and Xú 徐, 癬 *[s]arʔ 'ringworm' is pronounced like 徙 *[s]ajʔ 'move', indicating that in those areas *-r had become *-j. Qīng 青 was an administrative region in northern Shāndōng; Xú 徐 was to its south along the coast, extending as far as the Yángzǐ.

The map in Figure 5.1 gives the approximate positions of the regions for which we have explicit indications that final *-r became *-j. It includes the Shāndōng peninsula and adjacent areas, slightly to the west and south.

Finally, we have at least one example of a geographical name in Shāndōng that shows the change of *-r to *-j, probably reflecting a local pronunciation. It is 沂 Yí < *ngj+j*, the name of a mountain and river in Shāndōng; as we saw earlier (section 5.5.1.1), the phonetic element 斤 clearly indicates *-ər. Our reconstruction is:

(1066) 沂 *[ŋ]ər > *[ŋ]əj > *ngj+j* > Yí '(mountain and river in Shāndōng)'

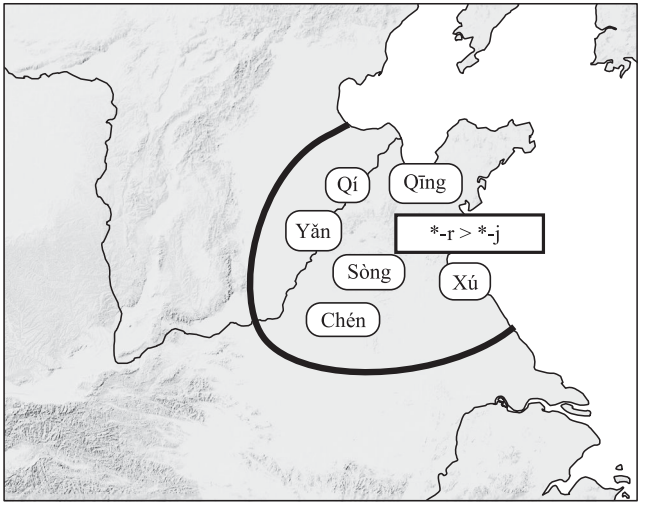


FIGURE 5.1 *Geographic range of the dialect change *-r > *-j*

5.5.2 *a WITH ACUTE CODAS

Table 5.55 compares our reconstructions of *-aj, *-at(-s), *-an, and *-ar with earlier reconstructions.

As noted above, Middle Chinese and most modern dialects reflect an innovation by which *-aj lost its [j] coda, perhaps *C^{s}aj > *Cæ > MC *Ca*, *Caj > *Ce > MC *Cje*. The *-j is preserved, however, in Proto-Mǐn, and sporadically in some other southeastern dialects. The *-j coda was also lost in *-waj from original *-oj.

TABLE 5.55 OC *a with acute codas (type-A syllables): reconstructions compared

Baxter-Sagart		*-aj	*-at	*-at-s	*-an	*-ar
rhyme group		⊂ 歌 Gē	⊂ 月 Yuè		⊂ 元 Yuán	⊂ 元 Yuán ~ ⊂ 歌 Gē
Middle Chinese	*K-, *T(s)-	*-a* 歌	*-at* 曷	*-ajH* 泰	*-an* 寒	*-an* 寒 ~ *-a* 歌
	*P-	*-a* 戈	*-at* 末	*-ajH* 泰	*-an* 桓	*-an* 桓 ~ *-a* 戈
	*K^{w}-	*-wa* 戈	*-wat* 末	*-wajH* 泰	*-wan* 桓	*-wan* 桓 ~ *-wa* 戈
Karlgren (1957)		*-â	*-ât	*-âd	*-ân	(*-ân ~ *-âr)
Dǒng Tónghé (1948)		*-â	*-ât	*âd	*-ân	—
Wáng Lì (1958)		*-a	*-ăt	*-āt	*-an	—
Li (1971)		*-ar	*-at	*-adh	*-an	—
Pulleyblank (1977–1978)		*-ál	*-át	*-áts	*-án	—
Starostin (1989)		*-āj	*-āt	*-āts	*-ān	*-ār
Baxter (1992)		*-aj	*-at	*-ats	*-an	—
Zhèngzhāng (2003)		*-aal	*-aad	*-aads	*-aan	—

5.5.2.1 *-aj (⊂ traditional 歌 Gē)

The Middle Chinese reflexes of *-aj[73] are summarized in Table 5.56.

TABLE 5.56 Middle Chinese reflexes of *-aj

OC	MC	notes	examples
*K$^{w\varsigma}$aj	*Kwa*		訛 *m-q$^{wh\varsigma}$aj > *ngwa* > é ‘move; change’
*C$^{\varsigma}$aj	*Ca*		歌 *[k]$^{\varsigma}$aj > *ka* > gē ‘sing, song’ 波 *p$^{\varsigma}$aj > *pa* > bō ‘wave (n.)’ 他 *l̥$^{\varsigma}$aj > *tha* > tā ‘another’
*K$^{w\varsigma}$raj	*Kwae*		化 *q$^{wh\varsigma}$<r>aj-s > *xwaeH* > huà ‘transform’
*P$^{\varsigma}$raj	*Pae ~ Pea*	[1]	麻 *C.m$^{\varsigma}$raj > *mae* > má ‘hemp’ 買 *m$^{\varsigma}$raj-ʔ > *meaX* > mǎi ‘buy’
*C$^{\varsigma}$raj	*Cae*	[2]	加 *k$^{\varsigma}$raj > *kae* > jiā ‘add’ 差 *ts^{h}raj > *tsrhae* > chā ‘distinction; to select’
*K(r)aj	*Kje*	[3]	奇 *N-k(r)aj > *gje* > qí ‘strange’
*P(r)aj	*Pje*		皮 *m-[p](r)aj > *bje* > pí ‘skin’
*K^{w}(r)aj	*Kjwe*		為 *ɢ^{w}(r)aj > *hjwe* > wéi ‘make, do’
*Taj	*Tsye*		施 *l̥aj > *sye* > shī ‘give, bestow’
*TAj	*Tsyae*	[4]	蛇 *Cə.lAj > *zyae* > shé ‘snake’ 也 *lAjʔ > *yaeX* > yě ‘(final particle)’
*Tsaj	*Tsje*		徙 *[s]ajʔ > *sjeX* > xǐ ‘move (to)’
*TsAj	*Tsjae*	[4]	嗟 *tsAj > *tsjae* > jiē ‘sigh; alas!’
*Traj	*Trje*		馳 *[l]raj > *drje* > chí ‘gallop’
*Tsraj	*Tsrje* > *Trea*	[2]	參 差 *[ts^{h}r][u]m- ts^{h}raj > *tsrhim-tsrhje* > cēncī ‘uneven’

Notes on Table 5.56:

[1] Although in píngshēng and qùshēng we have *P$^{\varsigma}$raj > *Pae*, we have no good examples of this development in shǎngshēng, and it appears that the regular development in shǎngshēng was *P$^{\varsigma}$rajʔ > *PeaX*, as in these examples (see point [3] below for further discussion):

(1067) 罷 *[b]$^{\varsigma}$rajʔ > *beaX* > bà ‘stop, cease’

(1068) 買 *m$^{\varsigma}$rajʔ > *meaX* > mǎi ‘buy’

In both (1067) and (1068), the graphic element on top is 网, depicting a net. The *Shuōwén* interprets both characters as semantic compounds, with rather forced explanations in both cases (*SWGL* 3392b, 2769a). We suspect that the graphic element 网 on top is actually a phonetic element, standing in these cases not for {網} wǎng < *mjangX* < *maŋʔ ‘net’ but rather for {羅} luó < *la* < *r$^{\varsigma}$aj ‘a kind of net (on a handle?)’. For this reason, although syllables with MC *-eaX* would usually be reconstructed as *C$^{\varsigma}$reʔ, we reconstruct these words with *-*aj*. This reconstruction is further supported by the fact that 罷 *[b]$^{\varsigma}$rajʔ > *beaX* > bà is the phonetic element in

(1069) 羆 *praj > *pje* > pí ‘brown-and-white bear’

which rhymes as *-aj in Odes 189.6, 189.7, and 261.6. (The same reasoning leads us to reconstruct *praj in example (1069) rather than *paj, which is also a possible source of MC *-je*; see below.)

[2] It is difficult to distinguish with confidence between *Tsˁraj and *Tsraj: based on the general pattern, we would expect *Tsˁraj > *Tsrae* and *Tsraj > *Tsrje* > *Tsrea*. But there is probably a good deal of dialect mixture in our sources: for 差 chā, the *Guǎngyùn* has four readings: *tsrhje, tsrhae, tsrhea, and tsrheaj*.[74]

[3] After nonpharyngealized grave initials (types *K-, *Kʷ-, and *P-), *-aj and *-raj have the same Middle Chinese reflexes and cannot be distinguished without additional evidence. But we reconstruct *-r- in

(1070) 羈 *kraj > *kje* > jī 'bridle, halter'

because we suspect that as in examples (1067) through (1069) above, the element 网 on top stands not for {網} wǎng < *mjangX* < *maŋʔ 'net', but rather for {羅} luó < *la* < *rˁaj 'a kind of net (on a handle?)', which we take to be the phonetic element:

(1071) 羅 *rˁaj > *la* > luó 'a kind of net (on a handle?), bird net'

[4] Similar to the case with *-a and *-ak, we find both *-je* and *-jae* as reflexes of *-aj after nonpharyngealized acute initials. We conjecture that a dialect feature is involved, and we write *-Aj to represent "a case of *-aj that for as yet unexplained reasons becomes MC *-jae* instead of MC *-je*":

(1072) 哆 *[t-l̥]ajʔ > *tsyheX* > chǐ 'large'; also read 哆 *[t-l̥]Ajʔ > *tsyhaeX* > chǐ 'large'

(1073) 蛇 *Cə.lAj > *zyae* > shé 'snake'; also read *ye* in 委 蛇 *q(r)oj.laj > *'jwe.ye* > wēiyí 'compliant, complaisant'

(1074) 嗟 *tsAj > *tsjae* > jiē 'sigh; alas!'

The traditional rhyme analysis puts both *-aj and *-oj in a single rhyme group, 歌 Gē, but the rounded-vowel hypothesis predicts that the two rhymes should be separate. Certain syllable types in this group, like MC *Ka*, *Kje*, *Ta*, or *Tsye*, can come only from *-aj; while a syllable of the form *Twa* or *Tsywe*, for example, can come only from *-oj:

(1075) 拖 *l̥ˁaj > *tha* > tuō 'draw, pull'; pMĭn *thɑi A
橢 *l̥ˁojʔ > *thwaX* > tuǒ 'oval'

Some Middle Chinese syllable types are ambiguous:

(1076) *Kwa* could come from either *Kʷˁaj or *Kˁoj
Kjwe could come from either *Kʷ(r)aj or *K(r)oj

To resolve such cases, we rely on rhyme evidence and graphic or etymological connections. For example, we can confidently reconstruct *-oj in 和 hé < *hwa*, and *-aj in 過 guō < *kwa*, on the basis of rhyme evidence:

(1077) 和 *[ɢ]ˤoj > *hwa* > hé ‘harmonious’: rhymes in Ode 85.1 with
吹 *tʰo[r] > *tsyhwe* > chuī ‘blow (v.)’; and in *Lǎozǐ* 2 with
隨 *sə.loj > *zjwe* > suí ‘follow’

(1078) 過 *kʷˤaj > *kwa* > guō ‘to pass’; rhymes in Ode 22.3 with:
沱 *lˤaj > *da* > tuó ‘flow (v.)’ and
歌 *[k]ˤaj > *ka* > gē ‘sing, song’; and in Ode 56.2 with:
阿 *qˤa[j] > *ʼa* > ē ‘slope, river bank’
蘙 *kʷʰˤaj > *khwa* > kē ‘great’
歌 *[k]ˤaj > *ka* > gē ‘sing, song’

Other potential ambiguities can be resolved by etymological or graphic evidence; we will cite examples in the following sections. But apart from the addition of the coda *-r, the reconstruction of rhymes is little changed from Baxter (1992:367–564); detailed arguments for the distinction between *-aj and *-oj are given there and will not be repeated here.

5.5.2.2 *-at(-s) (⊂ traditional 月 Yuè)

The Middle Chinese reflexes of *-at are summarized in Table 5.57; those of *-at-s[75] are summarized in Table 5.58.

TABLE 5.57 Middle Chinese reflexes of *-at

OC	MC	notes	examples
*Kʷˤat	*Kwat*		活 *[g]ʷˤat > *hwat* > huó ‘to live’
*Cˤat	*Cat*		割 *Cə-kˤat > *kat* > gē ‘cut (v.); harm (v.)’ 撥 *pˤat > *pat* > bō ‘spread out’ 達 *[l]ˤat > *dat* > dá ‘arrive at’
*Kʷˤrat	*Kwaet*		刖 *[ŋ]ʷˤ<r>at > *ngwaet* > yuè ‘amputate a foot’ 獺 *[m-r̥]ˤat > *tʰrat > *trhaet* > tǎ ‘otter’
*Cˤrat	*Caet*		鞗 *[g]ˤrat > *haet* > xiá ‘wheel-axle cap’
*Kat	*Kjot*		歇 *qʰat > *xjot* > xiē ‘cease, rest (v.)’
*Krat	*Kjet*		傑 *N-[k]<r>at > *gjet* > jié ‘remarkable; hero’
*Kʷat	*Kjwot*		月 *[ŋ]ʷat > *ngjwot* > yuè ‘moon, month’
*Kʷrat	*Kjwet*		[no clear examples]
*Pat	*Pjot*		發 *Cə.pat > *pjot* > fā ‘fly forth’
*Prat	*Pjet*		[no clear examples]
*Tat	*Tsyet*		舌 *mə.lat > *zyet* > shé ‘tongue’
*Trat	*Trjet*		[no clear examples]
*Tsat	*Tsjet*		泄 *s-lat > *sat > *sjet* > xiè ‘leak, ooze’
*Tsrat	*Tsrjet* > *Tsreat*	[1]	殺 *s<r>at > *srjet* > *sreat* > shā ‘kill’

Notes on Table 5.57:

[1] 殺 is originally type B, having undergone the change *Tsrj-* > *Tsr-*; see section 4.1.1.

TABLE 5.58 Middle Chinese reflexes of OC *-at-s

OC	MC		examples
*K$^{w\varsigma}$at-s	*KwajH*		外 *[ŋ]$^{w\varsigma}$a[t]-s > *ngwajH* > wài ‘outside’
*C$^{\varsigma}$at-s	*CajH*		害 *N-k$^{\varsigma}$at-s > *hajH* > hài ‘be hurt (v.i.); injury (n.)’
*K$^{w\varsigma}$rat-s	*KwaejH*		話 *[g]$^{w\varsigma}$rat-s > *hwaejH* > huà ‘speak; words’
*C$^{\varsigma}$rat-s	*CaejH*		犗 *[k]$^{\varsigma}$<r>at-s > *kaejH* > jiè ‘castrate’
*Kat-s	*KjojH*		刈 *ŋa[t]-s > *ngjojH* > yì ‘mow, cut’
*Krat-s	*KjejH*		劓 *ŋ<r>[a][t]-s > *ngjejH* > yì ‘cut off the nose’
*K^{w}at-s	*KjwojH*		穢 *q^{w}at-s > *'jwojH* > huì ‘bad weeds; filth’
*K^{w}rat-s	*KjwejH*		[no clear examples]
*Pat-s	*PjojH*	[1]	廢 *pat-s > *pjojH* > fèi ‘great’
*Prat-s	*PjejH*		[no clear examples]
*Tat-s	*TsyejH*		泄 *lat-s > *yejH* > xiè ‘leak, ooze’
*Trat-s	*TrjejH*		滯 *[d]r[a][t]-s > *drjejH* > zhì ‘obstruct’
*Tsat-s	*TsjejH*		[no clear examples]
*Tsrat-s	*TsrjejH* > *TsreajH*	[2]	殺 *s<r>at-s > *srjejH* > *sreajH* > shài ‘diminish’

Notes on Table 5.58:

[1] The character 廢 fèi is usually used to represent {廢} fèi < *pjojH* ‘abandon’, but in early documents this word is written by 灋 = 法 *[p.k]ap > *pjop* > fǎ ‘model, law’, which shows that it was originally *[p]ap-s and not *pat-s, even though it later came to be written with the phonetic 發 *Cə.pat > *pjot* > fā, reflecting the change from *-p-s to *-t-s. But for 廢 fèi in the meaning ‘great’, we reconstruct *pat-s, because it occurs in this meaning in Ode 204.4, and the *Jīngdiǎn shìwén* gives it the pronunciations *pjojH* and *pjot* (*JDSW* 83).

[2] The Middle Chinese reading of 殺 shài < *sreajH* < *srjejH*, like shā < *sreat* < *srjet*, reflects the change *Tsrj-* > *Tsr-*.

Normally, the reflexes of *-t-s merge with the reflexes of original *-j-s. However, because of the loss of the coda in *-aj, the reflexes of *-at-s remain separate from those of *-aj-s; evidently the change of *-at-s to *-aj-s happened *after* the coda *-j was lost in original *-aj, as shown by these examples:

(1079) 賀 *m-k$^{\varsigma}$aj-s > *haH* > hè ‘congratulate’
害 *N-k$^{\varsigma}$at-s > *hajH* > hài ‘be hurt (v.i.); injury (n.)’

(1080) 餓 *ŋ$^{\varsigma}$aj-s > *ngaH* > è ‘hungry’
艾 *C.ŋ$^{\varsigma}$a[t]-s > *ngajH* > ài ‘Artemisia; moxa’; pMǐn *ŋh-.

It is because of this change that the finals *-ajH*, *-aejH*, *-jejH*, and *-jojH* occur only in qùshēng in the *Qièyùn*: there were no other finals in *-jH* for them to merge with.

In the Mǐn dialects, however, *-aj did not lose its coda, so *-aj and *-at-s did merge as pMǐn *-ɑi:

(1081) 帶 *C.t$^{\varsigma}$a[t]-s > *tajH* > dài ‘girdle, strap’; pMǐn *tɑi C ‘belt’: Fúzhōu /tai 5/, Xiàmén /tua 5/

籮 *C.rˤaj > *la* > luó ‘hamper, basket (n)’; pMǐn *lhɑi A ‘hamper’, Fúzhōu /lai 2/, Xiàmén /lua 2/.

The traditional analysis combines our *-at(-s), *-ot(-s), and *-et(-s) in the rhyme group 月 Yuè, but the rhyming distinction among them is established in Baxter (1992). Certain Middle Chinese syllable types, such as *Kat*, *Tat*, and *Kjot*, can only reflect *-at(-s), but others are ambiguous: MC *pjot*, for example, can reflect either *pat or *pot. In fact we have a near-minimal pair:

(1082) 發 *Cə.pat > *pjot* > fā ‘fly forth, send forth’
髮 *pot > *pjot* > fà ‘root; hair (of head)’

Originally it appears that we have two distinct phonetic elements in the writing system: 發 for syllables like *Pat, and 犮 for syllables like *Pot; in received texts the two have become confused to a degree,[76] but the distinction is well supported by rhyme evidence. The word 發 fā < *Cə.pat ‘fly forth’ rhymes consistently with unambiguous *-at words, in Odes 99.2, 149.1, 154.1, 202.5, 204.3, 260.3, and 304.2.[77] The word 髮 *pot ‘root; hair (of head)’ and other words with the phonetic 犮 repeatedly rhyme as *-ot:

(1083) 髮 *pot > *pjot* > fà ‘root;[78] hair (of head)’ (rhymes with unambiguous *-ot words in Ode 225.2)
拔 *bˤ<r>ot > *beat* > bá ‘uproot’ (rhymes with unambiguous *-ot words in *Lǎozǐ* 54)
拔 *bˤot-s > *bajH* > bèi ‘thinned out (forest)’ (rhymes with unambiguous *-ot-s in Odes 237.8 and 241.3)

For examples of how we distinguish *-et(-s) from *-at(-s), see section 5.5.3.2 below.

5.5.2.3 *-an (⊂ traditional 元 Yuán)

The Middle Chinese reflexes of *-an[79] are summarized in Table 5.59.

Although we sometimes have clear evidence that a MC *-n* comes from *-r, it is often difficult to find positive evidence that MC *-n* comes from *-n; so we often write *-[n]. If a word does not rhyme, it is also sometimes difficult to be confident of the main vowel, in which case we write it as *[a]. However, the existence of the distinctions among *-an, *-on, and *-en is well supported by rhyme and xiéshēng evidence: see Baxter (1992:370–389).

5.5.2.4 *-ar > *-an (⊂ traditional 元 Yuán) or *-aj (⊂ traditional 歌 Gē) according to dialect

As we said in section 5.5.1, *-ar normally merged with original *-an, but in certain dialects (apparently, those located in and near the Shāndōng peninsula) it merged with *-aj; so its Middle Chinese reflexes are sometimes like those of Table 5.56 and sometimes like those of Table 5.59. See section 5.5.1.2 for examples of *-ar.

TABLE 5.59 Middle Chinese reflexes of *-an

OC	MC	examples
*K$^{w\breve{s}}$an	*Kwan*	官 *k$^{w\breve{s}}$a[n] > *kwan* > guān ‘official (n.)’
*C$^{\breve{s}}$an	*Can*	寒 *Cə.[g]$^{\breve{s}}$a[n] > *han* > hán ‘cold’ 半 *p$^{\breve{s}}$an-s > *panH* > bàn ‘half’ 旦 *t$^{\breve{s}}$an-s > *tanH* > dàn ‘dawn’
*K$^{w\breve{s}}$ran	*Kwaen*	倌 *k$^{w\breve{s}}$ra[n]-s > *kwaenH* > guān ‘servant, groom’
*C$^{\breve{s}}$ran	*Caen*	姦 *[k]$^{\breve{s}}$ran > *kaen* > jiān ‘wicked(ness)’ 板 *C.p$^{\breve{s}}$ran? > *paenX* > bǎn ‘plank, board’ 潸 *[s]$^{\breve{s}}$ra[n] > *sraen* > shān ‘tears flowing’
*Kan	*Kjon*	建 *[k]a[n]-s > *kjonH* > jiàn ‘set up, establish’
*Kran	*Kjen*	件 *[g]r[a][n]? > *gjenX* > jiàn ‘item’
*K^{w}an	*Kjwon*	園 *C.ɢ^{w}a[n] > *hjwon* > yuán ‘garden’
*K^{w}ran	*Kjwen*	院 *ɢ^{w}ra[n]-s > *hjwenH* > yuàn ‘wall round a courtyard’
*Pan	*Pjon*	反 *Cə.pan? > *pjonX* > fǎn ‘reverse (v.)’
*Pran	*Pjen*	俛 *mr[a][n]? > *mjenX* > miǎn ‘bend the head’
*Tan	*Tsyen*	羶 ~ 羴 *s.tan > *syen* > shān ‘smell of sheep’
*Tran	*Trjen*	禪 *tra[n]? > *trjenX* > zhàn ‘to bare’
*Tsan	*Tsjen*	濺 *[ts][a][n]-s > *tsjenH* > jiàn ‘splatter with water’
*Tsran	*Tsrjen* > *Tsrean*	孱 *[dz]r[a][n] > *dzrjen* > *dzrean* > chán ‘timid’

5.5.3 *e WITH ACUTE CODAS

Our reconstructions of *e before acute codas are compared with previous reconstructions in Table 5.60.

Syllables of the form *-eT are largely parallel to each other in their development, following the assumptions of the front-vowel hypothesis. However, the status of the rhyme *-ej is somewhat unclear.

TABLE 5.60 OC *e with acute codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-ej	*-et	*-et-s	*-en	*-er
rhyme group	⊂ 支 Zhī?	⊂ 月 Yuè		⊂ 元 Yuán	⊂ 元 Yuán ~ ⊂ 支 Zhī?
Middle Chinese	*-ej* 齊	*-et* 屑	*-ejH* 霽	*-en* 先	*-en* 先 ~ *ej* 齊
Karlgren (1957)	—	*-iat	*-iad	*-ian	—
Dǒng Tónghé (1948)	—	*-iät	*-iäd	*-iän	
Wáng Lì (1958)	—	*-iăt	*-iāt	*-ian	—
Li (1971)	—	*-iat	*-iadh	*-ian	—
Pulleyblank (1977–1978)	—	*-ʲát	*-ʲáts	*-ʲán	
Starostin (1989)	—	*-ēt	*-ēts	*-ēn	—
Baxter (1992)	*-ej	*-et	*-ets	*-en	—
Zhèngzhāng (2003)	—	*-eed	*-eeds	*-een	—

5.5.3.1 *-ej: > *-e (⊂ traditional 支 Zhī)?

We tentatively reconstruct *-ej in words that show some properties of *-ij and some properties of *-e. Here are some possible examples:

(1084) 米 *(C).mˢ[e]jʔ > *mejX* > mǐ 'millet or rice grains, dehusked and polished', phonetic in
敉 *me[j]ʔ > *mjieX* > mǐ 'achieve' (as if from *meʔ)
迷 *mˢij > *mej* > mí 'go astray' (appears to rhyme with *-ij in Odes 191.3 and 254.5)

There are other ways of writing {敉} mǐ < *mjieX* 'achieve', however, so the matter may be more complicated than this.

5.5.3.2 *-et(-s) (⊂ traditional 月 Yuè)

The Middle Chinese reflexes of *-et are summarized in Table 5.61; those of *-et-s[80] are summarized in Table 5.62.

TABLE 5.61 Middle Chinese reflexes of *-et

OC	MC	notes	examples
*K^{wˢ}et	*Kwet*		缺 *Nə-[k]^{whˢ}et > *khwet* > quē 'break; defective'
*K^{wˢ}ret	*Kwaet?*	[1]	[no clear examples]
*C^{ˢ}et	*Cet*		鍥 *k^{hˢ}et > *khet* > qiè 'cut; a sickle' 竊 *[ts^{h}]^{ˢ}et > *tshet* > qiè 'steal'
*C^{ˢ}ret	*Ceat*		八 *p^{ˢ}r[e]t > *peat* > bā 'eight' 察 *[ts^{h}]^{ˢ}ret > *tsrheat* > chá 'examine'
*Ket	*Tsyet (~ Kjiet?)*	[2]	設 *l̥et > *xet > *syet* > shè 'set up'
*Kret	*Kjet*		闌 *ŋr[e]t > *ngjet* > niè 'vertical post'
*K^{w}et	*Kjwiet*		戚 *m̥et > *xwet > *xjwiet* > xuè 'extinguish, destroy'
*K^{w}ret	*Kjwet*		[no clear examples]
*Pet	*Pjiet*		滅 *[m]et > *mjiet* > miè 'destroy'
*Pret	*Pjet*		別 *N-pret > *bjet* > bié 'be separated (intr.)'
*Tet	*Tsyet*		折 *N-tet > *dzyet* > shé 'bend (v.i.)'
*Tret	*Trjet*		撤 *t^{h}ret > *trhjet* > chè 'remove, take away'
*Tset	*Tsjet*		褻 *s-ŋet > *set > *sjet* > xiè 'garment next to the body'
*Tsret	*Tsrjet* > *Tsreat*		[not clearly distinguishable from *Ts^{ˢ}ret]

Notes on Table 5.61:

[1] Although *r followed by *e after a pharyngealized initial usually produces MC *-ea-*, we will see below that the regular reflex of *K^{wˢ}ren is *Kwaen*, not *Kwean*. We might expect the development of *K^{wˢ}ret to be parallel, but we know of no good examples. OC *K^{wˢ}ret-s becomes *KwaejH*, not *KweajH* (see Table 5.62).

[2] On the reconstruction 設 *l̥et > *xet > *syet* > shè 'set up', see Bái Yīpíng [Baxter] (2010); this is the verb from which the noun 勢 *l̥et-s > *xet-s > *syejH* > shì 'circumstances, setting' is derived by *s-suffixation. The conditions for palatalization of velars in syllables like *Ket are not well understood.

TABLE 5.62 Middle Chinese reflexes of *-et-s

OC	MC	notes	examples
*K$^{w\varsigma}$et-s	*KwejH*		慧 *[ɢ]$^{w\varsigma}$e[t]-s > *hwejH* > huì ‘intelligent’
*K$^{w\varsigma}$ret-s	*KwaejH*	[1]	夬 *[k]$^{w\varsigma}$ret-s > *kwaejH* > guài ‘divide, make a breach’
*C$^{\varsigma}$et-s	*CejH*		契 *[k^{h}]$^{\varsigma}$et-s > *khejH* > qì ‘script notches’ 折, 枖 *[d]$^{\varsigma}$et-s > *dejH* > dì ‘solitary standing (sc. tree)’[a]
*C$^{\varsigma}$ret-s	*CeajH*		界 *k$^{\varsigma}$r[e][t]-s > *keajH* > jiè ‘boundary’
*Ket-s	*TsyejH* ~ *KjiejH*	[2]	瘈 *ke[t]-s > *tsyejH* > zhì ‘mad (dog)’ 藝 *ŋet-s > *ngjiejH* > yì ‘cultivation, art, skill’ 勢 *ɳ̊et-s > *xet-s > *syejH* > shì ‘circumstances, setting’
*Kret-s	*KjejH*		[no clear examples]
*K^{w}et-s	*KjwiejH*		[no clear examples]
*K^{w}ret-s	*KjwejH*		[no clear examples]
*Pet-s	*PjiejH*		蔽 *pe[t]-s > *pjiejH* > bì ‘cover (v.)’
*Pret-s	*PjejH*		[no clear examples]
*Tet-s	*TsyejH*		噬 *[d]e[t]-s > *dzyejH* > shì ‘bite (v.)’
*Tret-s	*TrjejH*		[no clear examples]
*Tset-s	*TsjejH*		祭 *[ts]et-s > *tsjejH* > jì ‘sacrifice’
*Tsret-s	*TsrjejH* > *TsreajH*	[3]	瘵 *[ts]($^{\varsigma}$)re[t]-s > *tsreajH* > zhài ‘suffer; distress’

[a] We suspect that the character 枖 dì < MC *dejH* is of late origin. Early characters with xiéshēng connections normally have the same main vowel; but while {枖} must have had a front vowel *e because of its Middle Chinese final *-ejH*, its phonetic element 大 *l$^{\varsigma}$a[t]-s > *dajH* > dà ‘big’ had *a. Also, the expression 枖 杜 dì dù < *dejH-duX* ‘solitary Pyrus tree’ (Karlgren) looks like an alliterative binome: it is the name of two poems in the *Shījīng* (Odes 119 and 169); a third (Ode 123) is called “有 枖 之 杜 Yǒu dì zhī dù”; and the line 有 枖 之 杜 yǒu dì zhī dù ‘There is a solitary Pyrus tree’ is repeated twice in each of these three poems. But the phonetic 大 *l$^{\varsigma}$a[t]-s implies a lateral initial, while the phonetic 土 *t$^{\varsigma}$aʔ implies an alveolar; so the phonetic 大 *l$^{\varsigma}$a[t]-s appears to be a mismatch in both initial and vowel. On strips 18 and 20 of the Shànghǎi Museum text “Kǒngzǐ *Shī* lùn,” however, the expression {枖 杜} is written as “折 杜” (*SB* 1.30, 1.32, 1.147–149) and 折 *tet > *tsyet* > zhé ‘bend; break (v.t.)’ is a perfectly appropriate phonetic for {枖} *[d]$^{\varsigma}$et-s, consistent with Old Chinese phonology.

Notes on Table 5.62:

[1] Since the Middle Chinese reflex of *K$^{\varsigma}$ren is *Kean* (see section 5.5.3.3 below), by analogy we might expect *K$^{w\varsigma}$ren > “*Kwean*,” *K$^{w\varsigma}$ret > “*Kweat*,” and *K$^{w\varsigma}$ret-s > “*KweajH*.” But instead, we have *K$^{w\varsigma}$ren > *Kwaen* and *K$^{w\varsigma}$ret-s > *KwaejH*. (We know of no examples of *K$^{w\varsigma}$ret.) For example:

(1085) 夬 *[k]$^{w\varsigma}$ret-s > kwaejH > guài ‘divide, make a breach’

This is a phonetic element in several words with MC *-wet* that must be reconstructed with *-et:

缺 *Nə-[k]$^{wh\varsigma}$et > *khwet* > quē ‘break; defective’

决 *[k]$^{w\varsigma}$et > *kwet* > jué ‘open; decide’

訣 *[k]$^{w\varsigma}$et > *kwet* > jué ‘farewell words’

[2] The conditions for palatalization of velars in syllables like *Ket-s are not well understood: we might expect 藝 *ŋet-s > yì ‘cultivation, art, skill’ to palatalize to MC “*nyejH*,” for example, but instead we have *ngjiejH*. (In fact there is no such syllable as “*nyejH*” in the *Guǎngyùn*.) But we do have palatalization in 勢 *ɳ̊et-s > *xet-s > *syejH* > shì ‘circumstances, setting’.

[3] MC *TsreajH* could reflect either *Ts^{ɾ}ret-s or *Tsret-s.

The Middle Chinese finals *-jiej*, *-jej*, and *-jwej* occur only in qùshēng, because they come from *-t-s only; if there was indeed a rhyme *-ej, it probably lost its coda and merged with *-e before *-et-s changed to *-ej-s (just as *-at-s did not merge with original *-aj-s).

Some Middle Chinese finals point unambiguously to *-et(-s): in words traditionally assigned to the 月 Yuè group, we must reconstruct *-et(-s) to account for the division-IV finals *-et*, *-wet*, *-ejH*, and *-wejH,* and for the division-IV chóngniǔ finals *-jiet*, *-jwiet*, *-jiejH*, and *-jwiejH* (the last not actually observed). When the Middle Chinese finals are ambiguous, we can often reconstruct *-et on the basis of rhyming and xiéshēng connections. For example, a word from the 月 Yuè group that rhymes with *-it(-s) can be reconstructed with *-et(-s), because the two front vowels sometimes rhyme with each other, but *i and *a do not. The arguments for separating out *-et(-s) as a distinct rhyme are given in Baxter (1992:394–413). Here is an additional example of an early rhyme sequence in *-et(-s) that was not included in Baxter (1992) because it is not from the *Shījīng*:

(1086) *Guó yǔ* 8: Yuè yǔ 7《 國 語 8: 越 語 7》
蔽 *pe[t]-s > *pjiejH* > bì ‘cover (v.)’
察 *[ts^{h}]^{ɾ}ret > *tsrheat* > chá ‘examine’
藝 *ŋet-s > *ngjiejH* > yì ‘cultivation, art, skill’

5.5.3.3 *-en (⊂ traditional 元 Yuán)

The Middle Chinese reflexes of *-en[81] are summarized in Table 5.63.

TABLE 5.63 Middle Chinese reflexes of *-en

OC	MC	notes	examples
*K^{wɾ}en	*Kwen*		犬 *[k]^{whɾ}[e][n]ʔ > *khwenX* > quǎn ‘dog’
*K^{wɾ}ren	*Kwaen*	[1]	環 *C.ɢ^{wɾ}<r>en > *hwaen* > huán ‘ring (n.)’
*C^{ɾ}en	*Cen*		肩 *[k]^{ɾ}e[n] > *ken* > jiān ‘shoulder (n.)’ 邊 *p^{ɾ}e[n] > *pen* > biān ‘side’ 前 *dz^{ɾ}en ~ *m-dz^{ɾ}en > *dzen* > qián ‘before’
*C^{ɾ}ren	*Cean*		間 *k^{ɾ}re[n] > *kean* > jiān ‘interval’ 辦 *[b]^{ɾ}ren-s > *beanH* > bàn ‘manage, deal with’
*Ken	*Tsyen ~ Kjien*		善 *[g]e[n]ʔ > *dzyenX* > shàn ‘good’ 遣 *[k]^{h}e[n]ʔ > *khjienX* > qiǎn ‘send’
*Kren	*Kjen*		[no clear examples]
*K^{w}en	*Kjwien*		絹 *[k]^{w}en-s > *kjwienH* > juàn ‘a kind of silk stuff’
*K^{w}ren	*Kjwen*		圜 *ɢ^{w}<r>en > *hjwen* > yuán ‘round’
*Pen	*Pjien*		鞭 *pe[n] > *pjien* > biān ‘whip (n.)’
*Pren	*Pjen*		辨 *[b]renʔ > *bjenX* > biàn ‘distinguish’
*Ten	*Tsyen*		[no clear examples]
*Tren	*Trjen*		展 *trenʔ > *trjenX* > zhǎn ‘roll over; unfold’
*Tsen	*Tsjen*		箭 *[ts]en-s > *tsjenH* > jiàn ‘arrow’
*Tsren	*Tsrjen > Tsrean?*		[no clear examples]

Notes on Table 5.63:

[1] As noted in section 5.5.3.2, *K^{wʕ}ren becomes MC *Kwaen*, not "*Kwean*" as we might expect by analogy to *K^{ʕ}ren > *Kean*.

As we noted in section 5.4.3.3 above, just as *-iŋ usually merges with *-in, we have occasional examples of *-eŋ merging with, or at least being confused with, *-en, as in *Lǎozǐ* 26, where received versions have the expression

(1087) 榮 觀 *[N-q^{w}]reŋ *C.q^{wʕ}ar-s > *hjwaeng kwanH* > róng guàn; variously translated as 'imperial palace', 'walls and watch-towers', etc.

while both Mǎwángduī versions have instead:

(1088) 環 官 *C.g^{wʕ}<r>en *k^{wʕ}a[n] > *hwaen kwan* > huán guān (interpretation unclear; Gāo Míng 1996:356)

Whatever the original state of the text, *-eŋ and *-en have become confused, perhaps by assimilation to the initial consonant of the following syllable (MC *k-* < *k^{ʕ}; *C.q^{wʕ} had probably become *k^{wʕ}- by Hàn times).

5.5.3.4 *-er > *-en (⊂ traditional 元 Yuán) or *-ej (> *-e, ⊂ traditional 支 Zhī?)

Depending on the dialect represented, the Middle Chinese reflexes of *-er are either the same as those of *-en (as in Table 5.63) or the same as those of *-ej, which probably coincided largely with those of *-e (as in Table 5.36). Starostin believed that the coda *-r did not occur after front vowels in Old Chinese; he argued that pre-Chinese *-er had already become *-en (1989:341). But based on the same criteria we use for identifying *-r elsewhere (alternation between the reflexes of OC *-j and *-n), the following seem likely candidates for reconstruction with *-er:

(1089) 枅 *[k]^{ʕ}er > *ken* ~ *kej* > jiān 'crosspiece of wood on top of pillar'

(1090) 扁 *p^{ʕ}e[r]ʔ > *penX* > biǎn 'flat and thin'

Starostin compared 扁 biǎn with Mizo (Lushai) pēr 'flat and thin' and assumed that *-r had already changed to *-n after front vowels at the Old Chinese stage. But there is a phrase 善 諞 言 shàn pián yàn 'good at glib talking' that occurs in *Shàng shū*: Qín shì 《尚書・秦誓》, but also occurs on strip 8 of the recenty discovered document "Kǒngzǐ *Shī lùn*" 《孔子詩論》 (*SB* 1.20, 1.136), written as "善 諀 言," where 諞 pián has been replaced by 諀 pǐ. The Middle Chinese readings are as follows:

(1091) 諞 pián < *bjien* 'insincere words', also biàn < *bjienX* (in the *Guǎngyùn*); *Jīngdiǎn shìwén* gives MC *beanX*, *phjien*, *pjienX*, *phjienH* (*JDSW* 52); all as if from some labial stop plus *-en < *-er?
諀 pǐ 'slander', MC *phjieX*, as if from *p^{h}eʔ (? < *p^{h}ejʔ < *p^{h}erʔ)

So for 扁 biǎn 'flat and thin', the correct reconstruction may be as *p^{ʕ}erʔ after all.

We have another possible *-er word written with 扁 biǎn in the expression

(1092) 蹁躚 *b^{ʕ}e[r]-s^{ʕ}e[r] > *ben-sen* > piánxiān 'walk with difficulty (*Shuōwén*)'

TABLE 5.64 OC *o with acute codas (type-A syllables): reconstructions compared

Baxter-Sagart		*-oj	*-ot	*-ot-s	*-on	*-or
rhyme group		⊂ 歌 Gē	⊂ 月 Yuè		⊂ 元 Yuán	⊂ 元 Yuán ~ ⊂ 歌 Gē
Middle Chinese	*K-, *T(s)-	*-wa* 戈	*-wat* 末	*-wajH* 泰	*-wan* 桓	*-wan* 桓 ~ *wa* 戈
	*P-	*-a* 戈	*-at* 末	*-ajH* 泰	*-an* 桓	*-an* 桓 ~ *a* 戈
Karlgren (1957)		*-wâ	*-wât	*-wâd	*-wân	(*-wân ~ *-wâr)?
Dǒng Tónghé (1948)		*-wâ	*-wât	*-wâd	*-wân	—
Wáng Lì (1958)		*-ua	*-uăt	*-uāt	*-uan	—
Li (1971)		*-uar	*-uat	*-uadh	*-uan	—
Pulleyblank (1977–1978)		*-ʷál	*-ʷát	*-ʷáts	*-ʷán	—
Starostin (1989)		*-ōj	*-ōt	*-ōts	*-ōn	*-ōr
Baxter (1992)		*-oj	*-ot	*-ots	*-on	—
Zhèngzhāng (2003)		*-ool	*-ood	*-oods	*-oon	—

The phonetic 睘 qiān < *tshjen* may indicate *-r.[82] Finally,

(1093) 臡 *nˢer > *nej* > ní ‘pickled meat with bones in it’

would appear to have the vowel *e, but it has 難 nán as phonetic, which indicates *-r:

(1094) 難 *nˢar > *nan* > nán ‘difficult’

5.5.4 *o WITH ACUTE CODAS

Before acute codas, *o diphthongizes to *wa, probably at some time in the late Warring States period, to judge from rhyme evidence. In the dialects represented in the Middle Chinese sources, the *-waj from original *-oj then loses its coda *-j. Our reconstruction of *o before acute codas is compared with earlier reconstructions in Table 5.64.

5.5.4.1 *-oj (⊂ traditional 歌 Gē)

The Middle Chinese reflexes of *-oj[83] are summarized in Table 5.65.

TABLE 5.65 Middle Chinese reflexes of *-oj

OC	MC	notes	examples
*Pˢoj > *Pˢwaj	*Pa*	[1]	[no clear examples]
*Pˢroj > *Pˢrwaj	*Pae*		[no clear examples]
*Cˢoj > *Cˢwaj	*Cwa*	[2]	禾 *[ɢ]ˢoj > *hwa* > hé ‘growing grain’ 螺 *k.rˢoj > *lwa* > luó ‘spiral, snail’ (pMĭn *lhoi A) 橢 *l̥ˢojʔ > *thwaX* > tuǒ ‘oval’ 坐 *[dz]ˢo[j]ʔ > *dzwaX* > zuò ‘sit’
*Cˢroj > *Cˢrwaj	*Cwae*		蝸 *k.rˢoj (dial. > *kˢroj) > *kwae* > wō ‘snail’ 髽 *[ts]ˢroj > *tsrwae* > zhuā ‘hair knot for mourning’
*K(r)oj	*Kjwe*	[3]	詭 *[k](r)ojʔ > *kjweX* > guǐ ‘perverse’
*P(r)oj	*Pje*		[no clear examples]
*Toj	*Tsywe*		吹 *tʰo[r] > *tʰoj > *tsyhwe* > chuī ‘blow (v.)’
*Troj	*Trjwe*		錘 *m-t<r>oj > *drjwe* > chuí ‘sledgehammer’
*Tsoj	*Tsjwe*		髓 *s-lojʔ > *sojʔ > *sjweX* > suǐ ‘marrow’
*Tsroj	*Tsrjwe*		衰 *[tsʰ]roj > *tsrhjwe* > cuī ‘reduce’

Notes on Table 5.65:

[1] By analogy to *-on and *-ot, we would expect that *-oj would occur after labial initials: the *-oj would diphthongize to *-waj, and at some point *-w- ceases to be distinctive after labial initials. Thus, *P^{ʕ}oj > *P^{ʕ}waj > *P^{ʕ}aj > *Pa*, merging with original *P^{ʕ}aj, but we have no clear examples of such syllables.

[2] With 螺 *k.r^{ʕ}oj > *lwa* > luó and 蝸 *k.r^{ʕ}oj (dialect: > *k^{ʕ}roj) > *kwae* > wō 'snail', we presumably have two different dialect treatments of the same etymon: Usually *k.r^{ʕ}- loses its preinitial and becomes MC *l-*, but in some dialects *k.r^{ʕ}- merged with *k^{ʕ}r- (see section 4.4.4.4).

[3] In the western dialects where *l̥- > *x-, we have a special development: even though the original vowel is back and rounded, *l̥oj is treated in the Middle Chinese sources as a division-IV chóngniǔ syllable:

(1095) 墮 *l̥oj > *xjwie* > huī 'destroy'
隋 *l̥oj-s > *xjwieH* > huì 'shred sacrificial meat'

The status of *-oj as a rhyme separate from *-aj was established in Baxter (1992:413–422). Here is an example from outside the *Shījīng*, not included there:

(1096) from *Shàng shū:* Yì Jì 《尚書・益稷》:
元首叢脞哉， yuán shǒu cóng CUǑ zāi,
股肱惰哉， gǔ gōng DUÒ zāi,
萬事墮哉。 wàn shì HUĪ zāi.
'When the head is FRIVOLOUS,
the members are LAZY;
all affairs will go to RUIN.'

The rhyme words are:

(1097) 脞 *ts^{hʕ}ojʔ > *tshwaX* > cuǒ 'frivolous, trifling'
惰 *l^{ʕ}ojʔ > *dwaX* > duò 'lazy'
墮 *l̥oj > *xjwie* > huī 'destroy'

5.5.4.2 *-ot(-s) (⊂ traditional 月 Yuè)

The Middle Chinese reflexes of *-ot are summarized in Table 5.66; those of *-ot-s[84] are summarized in Table 5.67.

TABLE 5.66 Middle Chinese reflexes of *-ot

OC	MC	examples
*P^{ʕ}ot > *P^{ʕ}wat	*Pat*	胈 *p^{ʕ}ot > *pat* > bá 'small hairs on body; roots of grass'
*P^{ʕ}rot > *P^{ʕ}rwat	*Peat*	拔 *b^{ʕ}<r>ot > *beat* > bá 'uproot'
*C^{ʕ}ot	*Cwat*	契闊 *k^{hʕ}et-k^{hʕ}ot > *khet-khwat* > qìèkuò 'hard-working' 脫 *mə-l̥^{ʕ}ot > *thwat* > tuō 'peel off' 撮 *[ts^{h}]^{ʕ}ot > *tshwat* > cuō 'pinch; a pinch'

(Continued)

TABLE 5.66 (*Continued*)

OC	MC	examples
*C^{ʳ}rot	*Cwaet*	錣 *t^{ʳ}rot > *trwaet* > chuò ‘iron point at end of whip’
*Kot	*Kjwot*	蕨 *Cə.kot > *kjwot* > jué ‘bracken (a kind of edible fern)’
*Krot	*Kjwet*	[no clear examples]
*Pot	*Pjot*	髮 *pot > *pjot* > fà ‘hair (of head)’
*Prot	*Pjet*	[no clear examples]
*Tot	*Tywet*	說 *l̥ot > *sywet* > shuō ‘speak, explain’
*Trot	*Trjwet*	綴 *trot > *trjwet* > chuò ‘stitch’
*Tsot	*Tsjwet*	絕 *[dz]ot > *dzjwet* > jué ‘cut off’
*Tsrot	*Tsrjwet* > *Tsrweat*	茁 *s-[k]rot > *tsrot > *tsrjwet* > *tsrweat* > zhuó ‘sprout (v.)’

TABLE 5.67 Middle Chinese reflexes of *-ot-s

OC	MC	notes	examples
*P^{ʳ}ot-s > *P^{ʳ}wat-s	*PajH*		拔 *b^{ʳ}ot-s > *bajH* > bèi ‘thinned out (forest)’
*P^{ʳ}rot-s > *P^{ʳ}rwat-s	*PeajH*		拜 *C.p^{ʳ}ro[t]-s > *peajH* > bài ‘bow, bend (v.)’
*C^{ʳ}ot-s	*CwajH*		蛻 *l̥^{ʳ}ot-s > *thwajH* > tuì ‘exuviae of insects or reptiles’ 最 *[ts]^{ʳ}ot-s > *tswajH* > zuì ‘collect; most’
*C^{ʳ}rot-s	*CwaejH*	[1]	噬 *[ts^{h}](^{ʳ})ro[t]-s > *tsrhwaejH* > chuài ‘bite, eat’
*Kot-s	*KjwojH*		[no clear examples]
*Krot-s	*KjwejH*		撅 *k(r)[o][t]-s > *kjwejH* > guì ‘lift (the dress)’
*Pot-s	*PjojH*		吠 *Cə.bo[t]-s > *bjojH* > fèi ‘bark (v.)’
*Prot-s	*PjejH*		[no clear examples]
*Tot-s	*TsywejH*		說 *l̥ot-s > *sywejH* > shuì ‘exhort’
*Trot-s	*TrjwejH*		裰 *trot-s > *trjwejH* > zhuó ‘stitch (n.?)’
*Tsot-s	*TsjwejH*		脆 *[ts^{h}]o[t]-s > *tshjwejH* > cuì ‘brittle’
*Tsrot-s	*TsrjwejH* > *TsrweajH*	[1]	噬 *[ts^{h}](^{ʳ})ro[t]-s > *tsrhweajH* > chuài ‘bite, eat’

Notes on Tables 5.66 and 5.67:

[1] The general pattern would suggest that MC *TsrwaejH* should come from pharyngealized *Ts^{ʳ}rot-s and *TsrweajH* from earlier *TsrjwejH* < *Tsrot-s without pharyngealization, but in fact we probably cannot assume that the rhyme books reliably distinguish the finals *-waejH* and *-weajH*.

The rhyme *-ot(-s) behaves as expected. As an example of an *-ot(-s) rhyme sequence not listed in Baxter (1992), consider this rhyme sequence from *Lǎozǐ* 54:

(1098) *Lǎozǐ* 54:
拔 *b^{ʳ}<r>ot > *beat* > bá ‘uproot’
脫 *mə-l̥^{ʳ}ot > *thwat* > tuō ‘peel off’
輟 *trot > *trjwet* > chuò ‘stop, cease’

5.5.4.3 *-on (⊂ traditional 元 Yuán)

The Middle Chinese reflexes of *-on[85] are summarized in Table 5.68.

TABLE 5.68 Middle Chinese reflexes of *-on

OC	MC	notes	examples
*P^{ʕ}on > *P^{ʕ}wan	*Pan*		滿 *m^{ʕ}[o][n]ʔ > *manX* > măn ‘full’
*P^{ʕ}ron > *P^{ʕ}rwan	*Paen*		蠻 *m^{ʕ}ro[n] > *maen* > mán ‘southern foreigner’
*C^{ʕ}on	*Cwan*		筦, 管 *[k]^{ʕ}o[n]ʔ > *kwanX* > guǎn ‘tube; flute’ 斷 *N-t^{ʕ}o[n]ʔ > *dwanX* > duàn ‘be cut in two’ 竄 *[ts^{h}]^{ʕ}o[n]-s > *tshwanH* > cuàn ‘hide; flee’
*C^{ʕ}ron	*Cwaen*		患 *[g]^{ʕ}ro[n]-s > *hwaenH* > huàn ‘calamity; distress’
*Kon	*Kjwon*		壎 *q^{h}o[n] > *xjwon* > xūn ‘ocarina’
*Kron	*Kjwen*		卷 *[k](r)o[n]ʔ > *kjwenX* > juǎn ‘roll (v.)’[a]
*Pon > *Pwan	*Pjon*		飯 *bo[n]ʔ-s > *bjonH* > fàn ‘cooked rice or millet’
*Pron	*Pjen*		變 *pro[n]-s > *pjenH* > biàn ‘change (v.)’
*Ton	*Tsywen*		專 *ton > *tsywen* > zhuān ‘exclusively’
*Tron	*Trjwen*		傳 *m-tron > *drjwen* > chuán ‘transmit’; also *N-tron-s > *drjwenH* > zhuàn ‘what has been transmitted’
*Tson	*Tsjwen*		全 *[dz]o[n] > *dzjwen* > quán ‘complete (adj.)’
*Tsron	*Tsrjwen* > *Tsrwaen*	[1]	孿 *[s.r]on-s > *srwenH* > *srwaenH* > luán ‘twins’

[a] However, 卷 juǎn < *kjwenX* ‘roll (v.)’ could be from *-orʔ, this would account for Shàowǔ /kuai 3/ ‘to roll up’.

Notes on Table 5.68:

[1] The reading *srwaenH* for 孿 ‘twins’ is probably the result of the change *Tsrj-* > *Tsr-* applied to 孿 *[s.r]on-s > *srjwenH* ‘twins’. (The Mandarin reading “luán” is probably based on other forms with the same phonetic element, such as 鑾 *[m]ə.r^{ʕ}on > *lwan* > luán ‘harness bells’.)

Recall from section 5.2.2 that recognizing *-on as a separate rhyme group makes it possible to resolve a textual problem in Ode 106.3 (see Table 5.19).

5.5.4.4 *-or > *-on (⊂ traditional 元 Yuán) or *-oj (⊂ traditional 歌 Gē), according to dialect

Depending on dialect, the reflexes of *-or are either like those of *-on (Table 5.68) or like those of *-oj (Table 5.65). Thus we reconstruct *-or in cases where we appear to have the reflexes of both *-n and *-j in the same lexical item, or in words written with the same phonetic element. Here are some examples:

(1099) 果 *[k]^{ʕ}o[r]ʔ > *k^{ʕ}warʔ > *k^{ʕ}wajʔ > *kwaX* > guǒ ‘fruit; result’
裸 *[k]^{ʕ}or(ʔ)-s > *k^{ʕ}war-s > *k^{ʕ}wan-s > *kwanH* > guàn ‘pour out libation’
輠 *[g]^{ʕ}orʔ > *g^{ʕ}warʔ > *g^{ʕ}wanʔ > *hwanX* > huàn ‘turn around (as a wheel)’; also read
輠 *[g]^{ʕ}<r>orʔ > *g^{ʕ}rwarʔ > *g^{ʕ}rwajʔ > *hwaeX* > huà ‘turn around (as a wheel)’
踝 *m-k^{ʕ}<r>o[r]ʔ > *g^{ʕ}rwarʔ > *g^{ʕ}rwajʔ > *hwaeX* > huà ‘ankle’

TABLE 5.69 Reflection of *-or as *-oi in the Chǔ-Qú dialects

		Proto-Chǔ-Qú (Akitani 2003)
酸	*[s]ˁor > *swan* > suān ‘sour’	*soi 1
短	*tˁorʔ > *twanX* > duǎn ‘short’	*toi 1
鑽	*[ts]ˁor > *tswan* > zuān ‘perforate, penetrate’	*tsoi 1

(1100) 卵 *k.rˁorʔ > *k.rˁwarʔ > *rˁwanʔ > *lwan* ‘egg’; also read:
卵 *k.rˁorʔ > *k.rˁwarʔ > *rˁwajʔ > *lwaX* > luǒ ‘egg’; cf. pMǐn *lhon B; but Jiàn’ōu has a form /lua 3/ ‘egg’ of uncertain origin (Běijīng dàxué 2003:264).

(1101) 算 *[s]ˁorʔ-s > *sˁwarʔ-s > *sˁwanʔ-s > *swanH* > suàn ‘calculate; tally’; cf. Japanese *soroban* 算盤 ‘abacus’

(1102) 端 *tˁor > *tˁwar > *tˁwan > *twan* > duān ‘tip (n.)’
輲 *[d]or > *dwar > *dwan > *dzywen* > chuán ‘car with solid wheels’
瑞 *[d]or-s >*dwar-s > *dwaj-s > *dzyweH* > ruì ‘jade tablet’
喘 *[tʰ]orʔ > *tʰwarʔ > *tʰwanʔ > *tsyhwenX* > chuǎn ‘to pant’

(1103) 短 *tˁorʔ > *tˁwarʔ > *tˁwanʔ > *twanX* > duǎn ‘short’; cf. pMǐn *toi B ‘short’: Fúzhōu /tøi 3/, Xiàmén /te 3/.

In the Chǔ-Qú 處衢 dialects of southern Zhèjiāng (Cáo Zhìyún et al. 2000, Akitani 2003), where *-r normally goes to *-n*, OC *-or is reflected as Proto-Chǔ-Qú *-oi in three items, including the word ‘short’ just discussed; see Table 5.69.

5.5.5 *ə WITH ACUTE CODAS

Rhymes with *ə before acute codas provide the only cases where the same Old Chinese rhyme has both division-I and division-IV reflexes in Middle Chinese; this is due to the regular fronting of *ə between acute onsets and acute codas:

(1104) 恩 *ʔˁə[n] > *'on* > ēn ‘kindness, favor’
荐 *N-tsˁə[n]-s > *dzenH* > jiàn ‘grass, herb’

However, dialect treatments of such rhymes probably differed, because there is one case of *-ən > MC *-on* after acute onsets, and also cases of *-ən > *-won* as reflexes of OC *-ən or *-ər (see discussion in section 5.5.1.1):

(1105) 吞 *l̥ˁən > *thon* > tūn ‘to swallow’, pMǐn *thun A (note also the Mandarin pronunciation tūn, which would normally reflect MC *thwon*).

This 吞 *thon* is the only case in the *Guǎngyùn* where the final *-on* follows an acute initial; perhaps onomatopoeia is a factor. The *Guǎngyùn* also gives the reading *then* for 吞 when it represents a surname, which would be the expected regular development from *l̥ˁən.

(1106) 薦 *Cə.tsˁə[r]-s > *tsenH* > jiàn ‘grass, fodder’; pMǐn *-tsun C ‘straw mattress’,[86] probably from the same root as
荐 *N-tsˁə[n]-s > *dzenH* > jiàn ‘grass, herb’

TABLE 5.70 OC *ə with acute codas (type-A syllables): reconstructions compared

Baxter-Sagart		*-əj	*-ət	*-ət-s	*-ən	*-ər
rhyme group		⊂ 微 Wēi	⊂ 物 Wù		⊂ 文 Wén	⊂ 文 Wén ~ ⊂ 微 Wēi
Middle Chinese	*K-	*-oj* 哈	*-ot* 没	*-ojH* 代	*-on* 痕	*-on* 痕 ~ *-oj* 哈
	*P-, *Kʷ-	*-woj* 灰	*-wot* 没	*-wojH* 隊	*-won* 魂	*-won* 魂 ~ *-woj* 灰
	*T(s)-	*-ej* 齊	*-et* 屑	*-ejH* 霽	*-en* 先	*-en* 先 ~ *-ej* 齊
Karlgren (1957)	*K, *P-, *Kʷ-	*-ər	*-ət	*-əd	*-ən	—
	*T(s)-	*-iər	*-iət	*-iəd	*-iən	—
Dǒng Tónghé (1948)	*K, *P-, *Kʷ-	*-ə̂d	*-ə̂t	*-ə̂d	*-ə̂n	
	*T(s)-	*-iəd	*-iət	*-iəd	*-iən	
Wáng Lì (1958)	*K, *P-, *Kʷ-	*-əi	*-ə̆t	*-ə̄t	*-ən	—
	*T(s)-	*-iəi	*-iə̆t	*-iə̄t	*-iən	—
Li (1971)	*K-, *P-, *Kʷ	*-əd	*-ət	*-əd(h)	*-ən	—
	*T(s)-	*-iəd	*-iət	*-iəd(h)	*-iən	—
Pulleyblank (1977–1978)		*-i̯ə́l	*-i̯ə́t	*-i̯ə́ts	*-i̯ə́n	—
Starostin (1989)		*-ə̄j	*-ə̄t	*-ə̄ts	*-ə̄n	*-ə̄r
Baxter (1992)		*-ij	*-it	*-it-s	*-in	—
Zhèngzhāng (2003)		*-ɯɯl	*-ɯɯd	*-ɯɯds	*-ɯɯn	—

(1107) 存 *[dz]ˤə[n] > *dzwon* > cún ‘exist’, probably related to
在 *[dz]ˤəʔ > *dzojX* > zài ‘be at, be present’

MC *-won* as in 存 *dzwon* normally reflects *-un or *-ur, but further evidence that the vowel is *ə comes from this rhyme sequence in Ode 93.1:

(1108) rhyme sequence in Ode 93.1:
門 *mˤə[r] > *mwon* > mén ‘gate, door’
雲 *[ɢ]ʷə[n] > *hjun* > yún ‘cloud’
雲 *[ɢ]ʷə[n] > *hjun* > yún ‘cloud’
存 *[dz]ˤə[n] > *dzwon* > cún ‘exist’
巾 *krən > *kin* > jīn ‘kerchief’
員 *[ɢ]ʷə[n] > *hjun* > yún ‘(a particle)’

Our reconstructions of *ə followed by acute codas are summarized and compared with previous reconstructions in Table 5.70.

5.5.5.1 *-əj (⊂ traditional 微 Wēi)

The Middle Chinese reflexes of *-əj[87] are summarized in Tables 5.71 and 5.72; for convenience, we give separate tables for grave and acute initials.

A serious problem with the prevailing versions of the traditional rhyme analysis, and with many previous reconstructions, is that syllables like those in Table 5.72 are uniformly assigned to the traditional 脂 Zhī group (our *-ij), even though a close examination of the *Shījīng* rhymes makes it clear that they should be part of the 微 Wēi group. Let us take 遲 *l<r>ə[j] > *drij* > chí ‘slow’ as an example. The *Wáng Lì Gǔ Hànyǔ zìdiǎn* (2000) assigns it to the 脂 Zhī rhyme group. It rhymes in eight different rhyme sequences in the *Shījīng* (35.2, 138.1, 154.2, 162.1, 167.6, 168.6, 209.5, and 300.1). With one exception,

TABLE 5.71 Middle Chinese reflexes of *-əj after grave onsets

OC	MC	examples
*K^{ʕ}əj	*Koj*	哀 *ʔ^{ʕ}əj > *'oj* > āi ‘to pity; sad’
*K^{ʕ}rəj	*Keaj*	喈 *k^{ʕ}rəj > *keaj* > jiē ‘cold’
*K^{wʕ}əj	*Kwoj*	回 *[ɢ]^{wʕ}əj > *hwoj* > huí ‘go around’
*K^{wʕ}rəj	*Kweaj*	乖 *k^{wʕ}rəj > *kweaj* > guāi ‘oppose; disorder’
*P^{ʕ}əj	*Pwoj*	枚 *m^{ʕ}əj > *mwoj* > méi ‘stem, branch’
*P^{ʕ}rəj	*Peaj*	排 *[b]^{ʕ}rəj > *beaj* > pái ‘push’
*Kəj	*Kj+j*	衣 *ʔ(r)əj > *'j+j* > yī ‘clothes’
*Krəj	*Kij*	机 *krəjʔ > *kijX* > jī ‘small table, stool’
*K^{w}əj	*Kjw+j*	歸 *[k]^{w}əj > *kjw+j* > guī ‘return (v.)’
*K^{w}rəj	*Kwij*	[no clear examples]
*Pəj	*Pj+j*	非 *pəj > *pj+j* > fēi ‘is not’
*Prəj	*Pij*	悲 *prəj > *pij* > bēi ‘sad’

TABLE 5.72 Middle Chinese reflexes of *-əj after acute onsets

OC	MC	examples
*T^{ʕ}əj	*Tej*	弟 *l^{ʕ}əjʔ > *dejX* > dì ‘younger brother’
*T^{ʕ}rəj	*Treaj*	[no clear examples]
*Ts^{ʕ}əj	*Tsej*	躋 *[ts]^{ʕ}əj > *tsej* > jī ‘ascend’ 妻 *[ts^{h}]^{ʕ}əj > *tshej* > qī ‘consort, wife’
*Ts^{ʕ}rəj	*Tsreaj*	齋 *ts^{ʕ}r[ə]j > *tsreaj* > zhāi ‘purify oneself’
*Təj	*Tsyij*	夷 *ləj > *yij* > yí ‘level, peaceful’ 尸 *l̥əj > *syij* > shī ‘corpse’
*Trəj	*Trij*	遲 *l<r>ə[j] > *drij* > chí ‘slow’
*Tsəj	*Tsij*	私 *[s]əj > *sij* > sī ‘private’
*Tsrəj	*Tsrij*	[no clear examples]

every one these sequences involves at least some words that the same dictionary assigns to the 微 Wēi group; in half of them, *all* the rhyme words except 遲 chí are assigned to the 微 Wēi group (35.2, 154.2, 162.1, and 300.1). The one apparent exception is 138.1, in which 遲 chí rhymes with 飢 jī ‘hungry’, which the dictionary also assigns to 脂 Zhī. But this too is an error: 飢 jī ‘hungry’ is transparently related to 饑 jī ‘famine’, which everyone agrees belongs to the 微 Wēi group:

(1109) 饑 *kə[j] > *kj+j* > jī ‘famine’
飢 *Cə.k<r>ə[j] > *kij* > jī ‘hungry’

Once 遲 chí and 飢 jī are correctly reconstructed with *-əj (or conceivably *-ə[j][88]), then all eight of the sequences involving 遲 chí are regular.

We must also reconstruct *-əj rather than *-ij in

(1110) 尸 *l̥əj > *syij* > shī ‘corpse’
夷 *ləj > *yij* > yí ‘level, peaceful’; also ‘foreigner’

Rhyme evidence clearly indicates that 夷 yí had *-əj,[89] and it is well known that the graph ancestral to 尸 shī was used in the early script to represent 夷 yí: in oracle-bone

texts, {夷} in the meaning 'foreigner' (or perhaps as the name of a particular foreign group) takes forms like these (Jì Xùshēng 2010:695):

(1111) 

These evidently represent a person, seen from the side, with knees bent; at times the graph is hardly distinguishable from that for 人 rén 'person' (Jì Xùshēng 2010:651):[90]

(1112) 

Karlgren took 尸 shī to be the phonetic element in 屎 shǐ 'excrement' (*GSR* 561), which is generally assigned (correctly, we believe), to the 脂 Zhī group (*-ij):

(1113) 屎 *[qʰ]ijʔ > *xijʔ> *syijX* > shǐ 'excrement'; also read *xjij* < *[qʰ]ij (with irregular failure to palatalize) 'moan'

Following Karlgren, Baxter (1992:787) accordingly reconstructed both 屎 shǐ and 尸 shī with *-ij.

However, early forms of 屎 shǐ 'excrement' strongly suggest that the character is a pictogram, not a phonetic compound (*GG* 1.551)—especially when juxtaposed with early graphs for 尿 niào 'urine' (Jì Xùshēng 2010:705):

(1114)  (屎 *[qʰ]ijʔ > *syijX* > shǐ 'excrement')

(1115)  (尿 *kə.nˤewk-s > *newH* > niào 'urine')

Thus, with evidence from early documents, we can correct the reconstruction of 尸 shī 'corpse' to *l̥əj, accounting for its early use to write {夷} yí < yij < *ləj 'foreigner'.[91]

There do exist some irregular rhymes mixing *-i[j] and *-ə[j] in the *Shījīng*, but all the words in Table 5.72 (except 齋 *tsˤr[ə]j > *tsreaj* > zhāi 'purify oneself', which does not rhyme) can be confidently reconstructed with *-əj (or at least *-ə[j]). Correctly making the distinction between *-əj and *-ij is important for investigating ancient texts, reconstructing dialect history, and establishing correspondences between Chinese and languages that are genetically related to it.[92]

5.5.5.2 *-ət(-s) (⊂ traditional 物 Wù)

The Middle Chinese reflexes of *-ət[93] after grave initials are summarized in Table 5.73. The reflexes of *-ət-s are the same as those for *-əj-s: as in Tables 5.71 and 5.72, but in

TABLE 5.73 Middle Chinese reflexes of *-ət after grave onsets

OC	MC	examples
*K^{ʕ}ət	*Kot*	齕 *m-[q]^{ʕ}ət > *hot* > hé ‘bite (v.)’
*K^{ʕ}rət	*Keat*	軋 *q^{ʕ}rət > *'eat* > yà ‘crush’
*K^{wʕ}ət	*Kwot*	[no clear examples]
*K^{wʕ}rət	*Kweat*	[no clear examples]
*P^{ʕ}ət	*Pwot*	[no clear examples]
*P^{ʕ}rət	*Peat*	[no clear examples]
*Kət	*Kj+t*	乞 *C.q^{h}ət > *khj+t* > qǐ ‘beg, ask’
*Krət	*Kit*	乙 *qrət > *'it* > yǐ ‘second heavenly stem’
*K^{w}ət	*Kjut*	[no clear examples]
*K^{w}rət	*Kwit*	汨 *[ɢ^{w}]rət > *hwit* > yù ‘flow; go fast’
*Pət	*Pjut*	茀 *p[ə]t > *pjut* > fú ‘remove dense vegetation’
*Prət	*Pit*	[no clear examples]

qùshēng only. Examples of *-ət(-s) after acute initials are difficult to find, so we do not include a separate table for them; the only relatively clear cases are:

(1116) 饕 餮 *[t^{h}]^{ʕ}aw-t^{hʕ}ət > *thaw-thet* > tāotiè ‘glutton’
札 *s-q^{ʕ}rət > *tsreat* > zhá ‘strip (n.), tablet’

We reconstruct *-ət-s on the basis of etymological or graphic connections to words in *-ət. A number of phonetic elements are used exclusively for qùshēng words whose reflexes are consistent with *-ət-s; we reconstruct *-ət-s rather than *-əj-s in such cases to account for the fact that these phonetics are not used to write píngshēng or shǎngshēng words. Some words that appear to be from *-ət-s are actually from earlier *əp-s, and are discussed in section 5.7 below.

(1117) 乞 *C.q^{h}ət > *khj+t* > qǐ ‘beg, ask’
訖 *q^{h}ə[t]-s > *xj+jH* > qì ‘finish; rest’

(1118) 未 *m[ə]t-s > *mj+jH* > wèi ‘not yet’; ‘eighth earthly branch’. Borrowed into Khmu as /mòt/ (Damrong and Lindell 1994:104)
妹 *C.m^{ʕ}ə[t]-s > *mwojH* > mèi ‘younger sister’; pMǐn *mhye C.

(1119) 胃 *[ɢ]^{w}ə[t]-s > *hjw+jH* > wèi ‘stomach’
謂 *[ɢ]^{w}ə[t]-s > *hjw+jH* > wèi ‘say, tell, call’

5.5.5.3 *-ən (⊂ traditional 文 Wén)

The Middle Chinese reflexes of *-ən[94] are summarized in Table 5.74 for syllables with grave onsets, and in Table 5.75 for syllables with acute onsets. Here as with the other rhymes in Middle Chinese final *-n*, although sometimes we have positive evidence that the *-n* comes from earlier *-r, it is difficult to find positive evidence that an *-n* did *not* come from an *-r; so we frequently write *-ə[n].

Unlike the situation with *-əj described in the previous section, the traditional analysis does recognize the existence in the traditional 文 Wén group of syllable types like

TABLE 5.74 Middle Chinese reflexes of *-ən after grave onsets

OC	MC	examples
*Kᶜən	*Kon*	根 *[k]ᶜə[n] > *kon* > gēn ‘root, trunk’
*Kᶜrən	*Kean*	限 *[g]ᶜrə[n]ʔ > *heanX* > xiàn ‘obstacle, limit’
*Kʷᶜən	*Kwon*	魂 *[m.]qʷᶜə[n] > *hwon* > hún ‘spiritual soul’
*Kʷᶜrən	*Kwean*	鰥 *[k]ʷᶜrə[n] > *kwean* > guān ‘widower’
*Pᶜən	*Pwon*	門 *mᶜə[r] > *mᶜən > *mwon* > mén ‘gate, door’
*Pᶜrən	*Pean*	[no clear examples]
*Kən	*Kj+n*	筋 *C.[k]ə[n] > *kj+n* > jīn ‘sinew’
*Krən	*Kin*	銀 *ŋrə[n] > *ngin* > yín ‘silver’
*Kʷən	*Kjun*	雲 *[ɢ]ʷə[n] > *hjun* > yún ‘cloud’
*Kʷrən	*Kwin*	隕 *[ɢ]ʷrə[n]ʔ > *hwinX* > yǔn ‘fall down’
*Pən	*Pjun*	分 *pə[n] > *pjun* > fēn ‘divide’
*Prən	*Pin*	貧 *[b]rə[n] > *bin* > pín ‘poor’

TABLE 5.75 Middle Chinese reflexes of *-ən after acute onsets

OC	MC	examples
*Tᶜən	*Ten*	殄 *[d]ᶜə[n]ʔ > *denX* > tiǎn ‘cease; destroy’
*Tᶜrən	*Trean*	[no clear examples]
*Tsᶜən	*Tsen*	荐 *N-tsᶜə[n]-s > *dzenH* > jiàn ‘grass, herb’ 存 *[dz]ᶜə[n] > *dzwon* > cún ‘exist’ (irregular final)
*Tsᶜrən	*Tsrean*	[no clear examples]
*Tən	*Tsyin*	刃 *nə[n]-s > *nyinH* > rèn ‘edge of a blade’
*Trən	*Trin*	塵 *[d]rə[n] > *drin* > chén ‘dust (n.)’
*Tsən	*Tsin*	[no clear examples]
*Tsrən	*Tsrin*	[no clear examples]

those in Table 5.75. However, the traditional analysis puts both *-ən and *-un in the single rhyme group 文 Wén. In fact, the rhyming distinction between *-ən and *-un is unusually clear: the only rhyme that mixes them appears to be in Ode 248.5 (see Baxter 1992:425–431).

5.5.5.4 *-ər > *-ən (⊂ traditional 文 Wén) or > *-əj (⊂ traditional 微 Wēi), according to dialect

As after other vowels, *-r is reconstructed after *ə in words or phonetic series that seem to combine the reflexes of *-ən and *-əj; see the discussion and examples in section 5.5.1.1.

5.5.6 *i WITH ACUTE CODAS

Our reconstruction of the rhymes *-ij, *-it(-s), *-in, and *-ir are compared with previous reconstructions in Table 5.76.

These rhymes are noncontroversial for the most part, apart from two issues: (1) we reconstruct *-ik and *-iŋ in some words that have traditionally been included in the 真

TABLE 5.76 OC *i with acute codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-ij	*-it	*-it-s	*-in	*-ir
rhyme group	⊂ 脂 Zhī	⊂ 質 Zhì		⊂ 真 Zhēn	⊂ 真 Zhēn ~ ⊂ 脂 Zhī
Middle Chinese	*-ej* 齊	*-et* 屑	*-ejH* 霽	*-en* 先	*-en* 先 ~ *ej* 齊
Karlgren (1957)	*-iər	*-iet	*-ied	*-ien	—
Dǒng Tónghé (1948)	*-ied	*-iet	*-ied	*-ien	—
Wáng Lì (1958)	*-ei	*-ĕt	*-ēt	*-en	—
Li (1971)	*-id	*-it	*-idh	*-in	—
Pulleyblank (1977–1978)	*-ə́j	*-ə́c	*-ə́cs	*-ə́n	—
Starostin (1989)	*-īj	*-īt	*-īts	*-īn	—
Baxter (1992)	*-ij	*-it	*-its	*-in	—
Zhèngzhāng (2003)	*-ii	*-iid	*-iids	*-iin	—

Zhēn rhyme group and reconstructed with *-it and *-in; and (2) we conjecture that there was a rhyme *-ir, whose reflexes are sometimes like those of *-in and sometimes like those of *-ij. The first issue was discussed in section 5.4.4 above; the second will be discussed in section 5.5.6.4 below.

5.5.6.1 *-ij (⊂ traditional 脂 Zhī)

The Middle Chinese reflexes of *-ij[95] are summarized in Table 5.77.

TABLE 5.77 Middle Chinese reflexes of *-ij

OC	MC	notes	examples
*K$^{w\text{ʕ}}$ij	*Kwej*		睽 *k^{whʕ}ij > *khwej* > kuí ‘diverging, extraordinary’
*K$^{w\text{ʕ}}$rij	*Kweaj*		淮 *[ɢ]^{wʕ}rij > *hweaj* > huái ‘(name of a river)’
*C^{ʕ}ij	*Cej*		稽 *[k^{h}]^{ʕ}ij? > *khejX* > qǐ ‘bow the head to the ground’ 禮 *[r]^{ʕ}ij? > *lejX* > lǐ ‘propriety, ceremony’ 鏨 *[ts]^{ʕ}ij > *tsej* > jī ‘pickle (v.)’
*C^{ʕ}rij	*Ceaj*	[1]	階 *k^{ʕ}rij > *keaj* > jiē ‘steps, stairs’
*Kij	*Tsyij ~ Kjij*	[2]	旨 *kij? > *tsyijX* > zhǐ ‘fine-tasting’ 伊 *ʔij > *'jij* > yī ‘this’
*Krij	*Kij*		耆 *[g]rij > *gij* > qí ‘old’
*K^{w}ij	*Kjwij*		癸 *k^{w}ij? > *kjwijX* > guǐ ‘tenth heavenly stem’ 維 *ɢ^{w}ij > *ywij* > wéi ‘rope for tying’
*K^{w}rij	*Kwij*		帷 *ɢ^{w}rij > *hwij* > wéi ‘curtain’ 戣 *[g]^{w}rij > *gwij* > kuí ‘a kind of lance’
*Pij	*Pjij*		比 *C.pij? > *pjijX* > bǐ ‘compare’
*Prij	*Pij*		麋 *mr[i]j > *mij* > mí ‘kind of deer’
*Tij	*Tsyij*		砥 *tij? > *tsyijX* > zhǐ ‘whetstone’
*Trij	*Trij*		坻 *[d]rij > *drij* > chí ‘islet’
*Tsij	*Tsij*		死 *sij? > *sijX* > sǐ ‘die (v.)’
*Tsrij	*Tsrij*		師 *srij > *srij* > shī ‘army’

Notes on Table 5.77:

[1] While 皆 jiē < *keaj* ‘all’, 偕 xié < *keaj* ‘together’, and 階 jiē < *keaj* ‘steps, stairs’ all rhyme as *-ij, 喈 jiē < *keaj* and 湝 jiē < *heaj*, both ‘cold’, rhyme as *-əj. This is

probably because 喈 and 湝 are relatively late characters, created at a time when criteria for a xiéshēng match had loosened: *Gǔwénzì gǔlín* gives no examples for either that are earlier than the *Shuōwén* (*GG* 2.84, 2.142).

[2] There appears to be palatalization of velars before *-ij unless blocked by a prevocalic *-r-, in which case the Middle Chinese reflex of the rhyme is the division-III chóngniǔ final *-ij* (see the discussion of velar palatalization in section 4.1.2). Depending on the presence or absence of prevocalic *-r-, we have either division-III chóngniǔ *-ij* (as in 耆 *[g]rij > *gij* > qí 'old') or division-IV chóngniǔ *-jij* (as in 比 *C.pijʔ > *pjijX* > bǐ 'compare').

5.5.6.2 *-it(-s) (⊂ traditional 質 Zhì)

The Middle Chinese reflexes of *-it are summarized in Table 5.78. The reflexes of *-it-s[96] are the same as those of *-ij-s: as in Table 5.77, but in qùshēng only.

TABLE 5.78 Middle Chinese reflexes of *-it

OC	MC	notes	examples
*K$^{w\varsigma}$it	*Kwet*		穴 *[ɢ]$^{w\varsigma}$i[t] > *hwet* > xué 'cave, pit'
*K$^{w\varsigma}$rit	*Kweat*		[no clear examples]
*C$^{\varsigma}$it	*Cet*		結 *k$^{\varsigma}$i[t] > *ket* > jié 'tie (v.)' 苾 *[b]$^{\varsigma}$i[t] > *bet* > bì 'fragrant' 切 *[ts^{h}]$^{\varsigma}$i[t] > *tshet* > qiè 'cut; urgent'
*C$^{\varsigma}$rit	*Ceat*		黠 *[g]$^{\varsigma}$ri[t] > *heat* > xiá 'shrewd'
*Kit	*Tsyit? ~ Kjit*	[1]	一 *ʔi[t] > *'jit* > yī 'one' 吉 *C.qi[t] > *kjit* > jí 'auspicious'
*Krit	*Kit*		佶 *[g]ri[t] > *git* > jí 'strong, healthy (horse)'
*K^{w}it	*Kjwit*		繘 *C.q^{w}i[t] > *kjwit* > jú 'well-rope'
*K^{w}rit	*Kwit*		[no clear examples]
*Pit	*Pjit*	[2]	必 *pi[t] > *pjit* > bì 'necessarily' 蜜 *mit > *mjit* > mì 'honey'
*Prit	*Pit*		密 *mri[t] > *mit* > mì 'dense'
*Tit	*Tsyit*		質 *t-lit > *tsyit* > zhì 'substance, solid part' 實 *mə.li[t] > *zyit* > shí 'fruit; full'
*Trit	*Trit*		窒 *[t]ri[t] > *trit* > zhì 'stop up (v.)'
*Tsit	*Tsit*		疾 *[dz]i[t] > *dzit* > jí 'sickness'
*Tsrit	*Tsrit*		蟋蟀 *srit-srut > *srit-srwit* > xīshuài 'cricket'

Notes on Table 5.78:

[1] We would expect *Kit > *Tsyit* as a theoretical possibility, but we know of no examples; nor can we explain why 吉 *C.qi[t] > *kjit* > jí 'auspicious' fails to palatalize (unless it has something to do with the fact that the velar *k-* here comes from the prefixed uvular *C.q-).

[2] Note that we have both division-IV and division-III syllables in contrast from this rhyme: 蜜 *mit > *mjit* > mì 'honey' vs. 密 *mri[t] > *mit* > mì 'dense'.

Although in some cases we have positive evidence for reconstructing *-ik instead of *-it, the absence of such evidence is not sufficient reason to reconstruct *-it, so we often write *-i[t](-s).

We reconstruct *-it-s in words that have Middle Chinese reflexes like *-ij-s, but have etymological or graphical connections with words in *-it:

(1120) 結 *kˢi[t] > *ket* > jié ‘tie (v.)’
髻 *kˢi[t]-s > *kejH* > jì ‘hair knot, chignon’

(1121) 室 *s.ti[t] > *syit* > shì ‘chamber; house’
至 *ti[t]-s > *tsyijH* > zhì ‘arrive’
致 *t<r>i[t]-s > *trijH* > zhì ‘(cause to arrive): transmit’

5.5.6.3 *-in (⊂ traditional 真 Zhēn)

The Middle Chinese reflexes of *-in[97] are summarized in Table 5.79.

TABLE 5.79 Middle Chinese reflexes of *-in

OC	MC	notes	examples
*Kʷˢin	*Kwen*		玄 *[ɢ]ʷˢi[n] > *hwen* > xuán ‘dark’
*Kʷˢrin	*Kwean*		[no clear examples]
*Cˢin	*Cen*		賢 *[g]ˢi[n] > *hen* > xián ‘worthy’ 眠 *mˢi[n] > *men* > mián ‘shut the eyes; sleep’ 天 *l̥ˢi[n] > *then* > tiān ‘heaven’
*Cˢrin	*Cean*		[no clear examples]
*Kin	*Tsyin ~ Kjin*		腎 *Cə.[g]i[n]ʔ > *dzyinX* > shèn ‘kidney’ 因 *ʔi[n] > *'jin* > yīn ‘rely on’
*Krin	*Kin*		騮 *ʔ<r>i[n] > *'in* > yīn ‘grey and white horse’
*Kʷin	*Kjwin*	[1]	均 *C.qʷi[n] > *kjwin* > jūn ‘even, equal’
*Kʷrin	*Kwin*		筠 *[ɢ]ʷri[n] > *hwin* > yún ‘rind of bamboo’
*Pin	*Pjin*		賓 *pi[n] > *pjin* > bīn ‘guest’
*Prin	*Pin*		[no clear examples]
*Tin	*Tsyin*		真 *ti[n] > *tsyin* > zhēn ‘true, real’
*Trin	*Trin*		陳 *lri[n] > *drin* > chén ‘arrange’
*Tsin	*Tsin*		親 *[tsʰ]i[n] > *tshin* > qīn ‘close; parents’
*Tsrin	*Tsrin*		蓁 *[ts]ri[n] > *tsrin* > zhēn ‘luxuriant’

Notes on Table 5.79:

[1] As with *-ij and *-it(-s), depending on the absence or presence of *-r-, we can get as Middle Chinese reflexes either division-IV chóngniǔ *-j(w)in* or division-III chóngniǔ *-(w)in*:

(1122) 匀 *[N-q]ʷi[n] > *ywin* > yún ‘even, uniform’
筠 *[ɢ]ʷri[n] > *hwin* > yún ‘rind of bamboo’

Notice that here, too, prevocalic *-r- blocks the palatalization of *ɢʷ-, and the resulting initial is MC *hj-* instead of *y-*.

5.5.6.4 *-ir > *-in (⊂ traditional 真 Zhēn) or *-ij (⊂ traditional 脂 Zhī) according to dialect

Based on analogy to other rhymes, we would expect that if *-ir existed, it would sometimes have Middle Chinese reflexes like *-in, and sometimes like *-ij. The only example we have been able to find is

(1123) 牝 *[b]irʔ > *binʔ > *bjinX* > pìn 'female of animals'; also read 牝 *[b]irʔ > *bijʔ > *bjijX*

This word rhymes in *Lǎozǐ* 6 as if it were *-ijʔ:

(1124) from *Lǎozǐ* 6:

谷 神 不 死	gǔ shén bù sǐ	死 *sijʔ > *sijX* > sǐ 'die (v.)'
是 謂 玄 牝	shì wèi xuán PÌN	牝 *[b]irʔ > *bijʔ > *bjijX* 'female'

'The spirit of the valley never dies.
This is called the mysterious female.'

The *Jīngdiǎn shìwén* gloss on this passage says:

(1125) 玄 牝 : 頻 忍 反 、 舊 云 扶 比 反 、 簡 文 扶 緊 反
'[On] 玄 牝: [pronounced] *b(jin)* + (*ny)inX* = *bjinX*; formerly it was said to be *b(ju)* + (*p)jijX* = *bjijX*; [the Emperor] Jiǎnwén 簡 文[98] has *b(ju)* + (*k)jinX* = *bjinX*.' (*JDSW* 356)

So if we are right about the coda *-r, and if we knew when and where this part of the *Lǎozǐ* was composed, it could give us an additional clue about the geographical distribution of the Old Chinese dialect where *-r became *-j.

5.5.7 *u WITH ACUTE CODAS

Table 5.80 summarizes our reconstructions of rhymes with *u before acute codas, and compares them with previous reconstructions.

TABLE 5.80 OC *u with acute codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-uj	*-ut	*-ut-s	*-un	*-ur
rhyme group	⊂ 微 Wēi	⊂ 物 Wù		⊂ 文 Wén	⊂ 文 Wén ~ ⊂ 微 Wēi
Middle Chinese	*-woj* 灰	*-wot* 沒	*-wojH* 隊	*-won* 魂	*-won* 魂 ~ *woj* 灰
Karlgren (1957)	*-wər	*-wət	*-wəd	*-wən	—
Dǒng Tónghé (1948)	*-wə̂d	*-wə̂t	*-wə̂d	*-wə̂n	—
Wáng Lì (1958)	*-uəi?	*-uə̆t?	*-uət?	*-uən	—
Li (1971)	*-əd	*-ət	*-ədh	*-ən	—
Pulleyblank (1977–1978)	*-ʷə́l	*-ʷə́t	*-ʷə́ts	*-ʷə́n	—
Starostin (1989)	*-ūj	*-ūt	*-ūts	*-ūn	*-ūr
Baxter (1992)	*-uj	*-ut	*-uts	*-un	—
Zhèngzhāng (2003)	*-uul	*-uud	*-uuds	*-uun	—

The rounded vowel *u is subject to a diphthongization *u > *wə before acute codas, parallel to the diphthongization *o > *wa. This probably happened during the late Warring States period; see the excerpt from "Jiǔ zhāng" 《九章》poems of the *Chǔ cí* 《楚辭》in example (1006) above.

5.5.7.1 *-uj (⊂ traditional 微 Wēi)

The Middle Chinese reflexes of *-uj[99] are summarized in Table 5.81.

TABLE 5.81 Middle Chinese reflexes of *-uj

OC	MC		examples
*C^{ʂ}uj	*Cwoj*		塊 *[k^{h}]^{ʂ}uj-s > *khwojH* > kuài 'clod; lump' 推 *t^{hʂ}uj > *thwoj* > tuī 'push away' 罪 *[dz]^{ʂ}ujʔ > *dzwojX* > zuì 'crime, offense'
*P^{ʂ}ruj	*Peaj*	[1]	[no clear examples]
*C^{ʂ}ruj	*Cweaj*		塊 *[k^{h}]^{ʂ}<r>uj-s > *k^{h}<r>wəj-s > *khweajH* > kuài 'clod, lump' 懷 *[g]^{ʂ}ruj > *g^{ʂ}rwəj > *hweaj* > huái 'bosom; embrace'
*Kuj	*Kjw+j*		威 *ʔuj > *ʔwəj > *ʲjw+j* > wēi 'awe-inspiring'
*Kruj	*Kwij*		匱 *[g]ruj-s > *grwəj-s > *gwijH* > guì 'box (n.)'
*Puj	*Pj+j*	[1]	[no clear examples]
*Pruj	*Pij*		[no clear examples]
*Tuj	*Tsywij*		誰 *[d]uj > *dwəj > *dzywij* > shuí 'who'
*Truj	*Trwij*		追 *truj > *trwəj > *trwij* > zhuī 'pursue'
*Tsuj	*Tswij*		綏 *s.nuj > *s.nwəj > *swəj > *swij* > suí 'comfort (v.)'
*Tsruj	*Tsrwij*		衰 *sruj > *srwəj > *srwij* > shuāi 'diminish, decline'

Notes on Table 5.81:

[1] We seem to have no examples of *-uj after labial (or labialized) initials; if such syllables did exist, they may have been affected by an early dissimilation of *u in this environment.

5.5.7.2 *-ut(-s) (⊂ traditional 物 Wù)

The Middle Chinese reflexes of *-ut are summarized in Table 5.82. The reflexes of *-ut-s[100] are the same as those of *-uj-s: as in Table 5.81, but in qùshēng only.

We reconstruct *-ut-s in words that have the same Middle Chinese reflexes as *-uj-s but show etymological or graphic connections with words in *-ut:

(1126) 出 *t-k^{h}ut > *t^{h}ut > *tsyhwit* > chū 'go or come out'
出 *t-k^{h}ut-s > *t^{h}ut-s >*tsyhwijH* > chuì 'bring or take out'

(1127) 率 *s-rut > *srwit* > shuài 'follow, go along'
帥 *s-rut-s > *srwijH* > shuài 'leader (of an army)'

(1128) 卒 *[ts]ut > *tswit* > zú 'finish, die'
碎 *[s-ts^{h}]^{ʂ}u[t]-s > *swojH* > suì 'break'
醉 *Cə.tsu[t]-s > *tswijH* > zuì 'drunk (adj.)'

TABLE 5.82 Middle Chinese reflexes of *-ut

OC	MC	examples
*C^{s}ut	*Cwot*	骨 *k^{s}ut > *kwot* > gǔ ‘bone’ 沒 *m^{s}ut > *mwot* > mò ‘to dive, drown, die’ 卒 *[ts]^{s}ut > *tswot* > zú ‘soldier’
*P^{s}rut	*Peat*	[no clear examples]
*C^{s}rut	*Cweat*	滑 *Nə-g^{s}rut > *hweat* > huá ‘slippery’
*Kut	*Kjut*	屈 *[k^{h}]ut > *khjut* > qū ‘subdue’
*Krut	*Kwit*	[no clear examples]
*Put	*Pjut*	勿 *mut > *mjut* > wù ‘don’t’
*Prut	*Pit*	筆 *p.[r]ut (dial. > *prut) > *pit* > bǐ ‘writing brush’
*Tut	*Tsywit*	出 *t-k^{h}ut > *t^{h}ut > *tsyhwit* > chū ‘go or come out’
*Trut	*Trwit*	黜 *t.k^{h}<r>ut > *t^{h}rut > *trhwit* > chù ‘expel’
*Tsut	*Tswit*	卒 *[ts]ut > *tswit* > zú ‘finish, die’
*Tsrut	*Tsrwit*	率 *s-rut > *srwit* > shuài ‘follow, go along’

5.5.7.3 *-un (⊂ traditional 文 Wén)

The Middle Chinese reflexes of *-un[101] are summarized in Table 5.83.

As noted earlier, even though they are both included in the traditional 文 Wén rhyme group, the separation in rhyming between *-ən and *-un is very clear; see Baxter (1992:429–434).

5.5.7.4 *-ur: > *-un (⊂ traditional 文 Wén) or *-uj (⊂ traditional 微 Wēi), according to dialect

As with other rhymes in *-r, we reconstruct *-ur in items that show connections with both *-un and *-uj, or that rhyme with such words:

TABLE 5.83 Middle Chinese reflexes of *-un

OC	MC	examples
*C^{s}un	*Cwon*	温 *ʔ^{s}un > *'won* > wēn ‘warm; gentle’ 屯 *[d]^{s}un > *dwon* > tún ‘accumulate’ 尊 *[ts]^{s}u[n] > *tswon* > zūn ‘honor (v.)’
*P^{s}run	*Pean*	[no clear examples]
*C^{s}run	*Cwean*	綸 *k.r^{s}u[n] (dial. > *k^{s}run) > *kwean* > guān ‘ribbon; kelp’
*Kun	*Kjun*	愠 *ʔun-s > *'junH* > yùn ‘anger, angry’
*Krun	*Kwin*	菌 *[g]runʔ > *gwinX* > jùn ‘mushroom’
*Pun	*Pjun*	聞 *mu[n] > *mjun* > wén ‘hear (v.)’
*Prun	*Pin*	縉 *m-ru[n] (dial. > *mrun) > *min* > mín ‘wrap around’
*Tun	*Tsywin*	春 *t^{h}un > *tsyhwin* > chūn ‘springtime’ 綸 *k.ru[n] > *lwin* > lún ‘woof; twist a cord’
*Trun	*Trwin*	輴 *l̥ru[n] > *trhwin* > chūn ‘funeral car’
*Tsun	*Tswin*	遵 *[ts]u[n] > *tswin* > zūn ‘follow (a road)’
*Tsrun	*Tsrwin*	[no clear examples]

(1129) 敦 *tˢur > *tˢun > *twon* > dūn ‘solid, thick’
敦 *tˢur > *tˢuj > *twoj* > duī ‘manage, direct’
(also used to transcribe a foreign *-r in the name of Dūnhuáng 敦煌; see section 5.5.1.3 above)

(1130) 隼 *[s]urʔ > *[s]unʔ > *swinX* > sǔn ‘hawk, falcon’
準 *turʔ > *tunʔ > *tsywinX* > zhǔn ‘water level’
水 *s.turʔ > *s.tujʔ > *sywijX* > shuǐ ‘water; river’, pMǐn *tšyi B

(1131) 奔 *pˢur > *pˢun > *pwon* > bēn ‘run (v.)’; rhymes as *-ur in Odes 49.2 and 73.2.4; possibly internally in 49.1
賁 *[b]ur > *bˢun > *bjun* > fén ‘great, big’
賁 *por-s > *pwar-s > *pwaj-s > *paj-s > *pjeH* > bì ‘ornate (name of a hexagram)’

5.6 Rhymes with the codas *-w and *-wk

We reconstruct *-w and *-wk after three of the six Old Chinese vowels: *a, *e, and *i. If these codas appeared after other vowels, we have found no trace of them. Rhymes with the coda *-wk are parallel in many ways to those with *-w; alternatively, *-wk could be analyzed as a labiovelar *-kʷ. It is not uncommon for the same phonetic elements to be used for forms with *-w and *-wk; for example:

(1132) 肅 *siwk > *sjuwk* > sù ‘solemn, severe’
簫 *sˢiw > *sew* > xiāo ‘pan-pipe’

(1133) 宵 *[s]ew > *sjew* > xiāo ‘night, evening’
削 *[s]ewk > *sjak* > xiāo ‘scrape, pare’

It is more common for syllables with vocalic codas and syllables with stop codas to be kept separate in the writing system, but the contacts between *-w and *-wk may simply reflect the fact that the coda *-wk is relatively infrequent, so there were fewer appropriate phonetic elements available in the script (see section 3.4). Note also that there is no parallel nasal coda “*-wŋ.”

5.6.1 *a WITH *-w AND *-wk(-s)

Our reconstructions of *-aw and *-awk are compared with previous reconstructions in Table 5.84.

5.6.1.1 *-aw (⊂ traditional 宵 Xiāo)

The Middle Chinese reflexes of *-aw[102] are summarized in Table 5.85.

TABLE 5.84 OC *a with codas *-w and *-wk (type-A syllables): reconstructions compared

Baxter-Sagart	*-aw	*-awk	*-awk-s
rhyme group	⊂ 宵 Xiāo	⊂ 藥 Yào	
Middle Chinese	*-aw* 豪	*-ak* 鐸 ~ *-owk* 沃 ~ *-uwk* 屋	*-awH* 号
Karlgren (1957)	*-og	*-ok	*-og
Dǒng Tónghé (1948)	*-ɔ̂g	*-ɔ̂k	*-ɔ̂g
Wáng Lì (1958)	*-au	*-ăuk	*-āuk
Li (1971)	*-agw	*-akw	*-agwh
Pulleyblank (1977–1978)	*-áʁ	*-áq	*-áqs
Starostin (1989)	*-āw	*-ākʷ	*-ākʷs
Baxter (1992)	*-aw	*-awk	*-awks
Zhèngzhāng (2003)	*-aaw	*-aawɢ	*-aawɢs

TABLE 5.85 Middle Chinese reflexes of OC *-aw

OC	MC	notes	examples
*Cˢaw	*Caw*		高 *Cə.[k]ˢaw > *kaw* > gāo ‘high, tall’ 毛 *C.mˢaw > *maw* > máo ‘hair’ 刀 *C.tˢaw > *taw* > dāo ‘knife’
*Cˢraw	*Caew*	[1]	交 *[k]ˢraw > *kaew* > jiāo ‘cross (v.)’ 貓 *C.mˢraw > *maew* > māo ‘cat’ 巢 *[dz]ˢraw > *dzraew* > cháo ‘nest’
*K(r)aw	*Kjew*	[2]	橋 *[g](r)aw > *gjew* > qiáo ‘bridge’
*P(r)aw	*Pjew*		表 *p(r)awʔ > *pjewX* > biǎo ‘exterior’
*Kʷ(r)aw	*Kjew*	[3]	鴞 鴞 *tʰij.[ɢ]ʷ(r)aw > *tsyhij.hjew* > chīxiāo ‘owl’
*Tsraw	*Tsrjew* > *Tsraew*	[1]	[indistinguishable from *Tsˢraw]
otherwise:			
*C(r)aw	*Cjew*		沼 *tawʔ > *tsyewX* > zhǎo ‘pool’ 朝 *m-t<r>aw > *drjew* > cháo ‘(morning) audience at court’

Notes on Table 5.85:

[1] The *Guǎngyùn* has no syllables of the form “*Tsrjew*.” Probably there were type-B syllables of the form *Tsraw that became first *Tsrjew* and then *Tsraew* because of the tendency of MC “*-j-*” to be lost after *Tsr-*; consequently, we have no good way of distinguishing between original *Tsˢraw and original *Tsraw.

[2] In type-B syllables with grave initials, *-aw and *-raw evidently merged, so the presence or absence of *-r- cannot be detected from Middle Chinese readings alone.

[3] In order to account for the syllable *hjew* in 鴟 鴞 chīxiāo < *tsyhij.hjew* ‘owl’, we must assume that there were Old Chinese syllables like *Kʷ(r)aw. Initial MC *hj-* can normally reflect only *[ɢ]ʷ-, which would have lost its labialization through dissimilation from the coda *-w. Other cases of *Kʷ(ˢ)- before *-aw may have occurred, but we know of no way of identifying them.

5.6.1.2 *-awk(-s) (⊂ traditional 藥 Yào)

The Middle Chinese reflexes of *-awk are summarized in Table 5.86. The reflexes of *-awk-s[103] are the same as those of *-aw-s: as in Table 5.85, but in qùshēng only.

TABLE 5.86 Middle Chinese reflexes of OC *-awk

OC	MC	notes	examples
*C^{ʂ}awk	*Cak* ~ *Cowk* ~ *Cuwk*	[1]	鶴 *[g]^{ʂ}awk > *hak* > hè ‘crane’ 雀 *[g]^{ʂ}awk > *howk* > hè ‘high’ 襮 *p^{ʂ}awk > *powk* ~ *pak* > bó ‘embroidered collar’ 暴 *m-p^{ʂ}awk > *buwk* > pù ‘expose to sun’
*Ts^{ʂ}rawk	*Tsraewk?*	[2]	[no clear examples]
otherwise:			
*C^{ʂ}rawk	*Caewk*		樂 *[ŋ]^{ʂ}rawk > *ngaewk* > yuè ‘music’ 卓 *t^{ʂ}rawk > *traewk* > zhuō ‘high; splendid’
*Tsrawk	*Tsrjak* > *Tsraewk?*	[2]	[no clear examples]
otherwise:			
*C(r)awk	*Cjak*	[3]	虐 *[ŋ](r)awk > *ngjak* > nüè ‘cruel’ 綽 *t^{h}awk > *tsyhak* > chuò ‘indulgent, gentle’

Notes on Table 5.86:

[1] The reflexes of *C^{ʂ}awk are very irregular and unpredictable; they must have varied from dialect to dialect. Mostly we have MC *Cak* and *Cowk*; in a few cases we have *Cuwk*.

[2] By analogy to other rhymes, we would expect the developments *Ts^{ʂ}rawk > *Tsraewk* and *Tsrawk > *Tsrjak* > *Tsraewk*, but we have no good examples.

[3] In type-B syllables with initials of other types, we have *C(r)awk > *Cjak*; the presence of *-r- cannot be detected in grave-initial syllables.

We reconstruct *-awk-s (rather than *-aw-s) to account for etymological or graphical connections with words in *-awk:

(1134) 樂 *[r]^{ʂ}awk > *lak* > lè ‘joy; enjoy’
樂 *[ŋ]^{ʂ}rawk > *ngaewk* > yuè ‘music’
樂 *[ŋ]^{ʂ}rawk-s > *ngaewH* > yào ‘cause to rejoice’

(1135) 暴 *m-p^{ʂ}awk > *buwk* > pù ‘expose to sun’
暴 *[b]^{ʂ}awk-s > *bawH* > bào ‘violent’

(1136) 卓 *t^{ʂ}rawk > *traewk* > zhuō ‘high; splendid’
罩 *t^{ʂ}rawk-s > *traewH* > zhào ‘covering basket’

5.6.2 *e WITH *-w AND *-wk(-s)

Our reconstructions of *-ew and *-ewk(-s) are compared with previous reconstructions in Table 5.87.

TABLE 5.87 OC *e with codas *-w and *-wk(-s) (type-A syllables): reconstructions compared

Baxter-Sagart	*-ew	*-ewk	*-ewk-s
rhyme group	⊂ 宵 Xiāo	⊂ 藥 Yào	
Middle Chinese	*-ew* 蕭	*-ek* 錫	*-ewH* 嘯
Karlgren (1957)	*-iog	*-iok	*-iog
Dǒng Tónghé (1948)	*-iɔg	*-iɔk	*-iɔg
Wáng Lì (1958)	*-iau	*-iăuk	*-iāuk
Li (1971)	*-iagw	*-iakw	*-iagwh
Pulleyblank (1977–1978)	*-ˠáʁ	*-ˠáq	*-ˠáqs
Starostin (1989)	*-ēw	*-ēkʷ	*-ēkʷs
Baxter (1992)	*-ew	*-ewk	*-ewks
Zhèngzhāng (2003)	*-eew	*-eewɢ	*-eewɢs

5.6.2.1 *-ew (⊂ traditional 宵 Xiāo)

The Middle Chinese reflexes of *-ew[104] are summarized in Table 5.88.

TABLE 5.88 Middle Chinese reflexes of OC *-ew

OC	MC	notes	examples
*C^{ʂ}ew	*Cew*		堯 *[ŋ]^{ʂ}ew > *ngew* > yáo ‘high’ 摽 *p^{hʂ}ew > *phew* > piāo ‘strike down’ 挑 *l^{ʂ}ew? > *dewX* > tiāo ‘provoke’
*C^{ʂ}rew	*Caew*	[1]	磽 *[C.q]^{hʂ}rew > *khaew* > qiāo ‘stony soil’ 摽 *p^{hʂ}rew > *phaew* > pāo ‘cast aside’ 筲 *[s](^{ʂ})rew > *sraew* > shāo ‘bamboo vessel’
*Kew	*Tsyew ~ Kjiew*	[2]	燒 *[ɲ̊]ew > *xew > *syew* > shāo ‘burn’ 腰 *ʔew > *'jiew* > yāo ‘waist’
*Pew	*Pjiew*		瓢 *(Cə.)[b]ew > *bjiew* > piáo ‘gourd’
*Krew	*Kjew*	[3]	[no clear examples]
*Prew	*Pjew*		[no clear examples]
*Tsrew	*Tsrjew* > *Tsraew*	[1]	稍 *[s](^{ʂ})rew-s > *sraewH* > shào ‘gradually’
otherwise:			
*C(r)ew	*Cjew*		趙 *[d]rewʔ > *drjewX* > zhào ‘(surname)’ 宵 *[s]ew > *sjew* > xiāo ‘night, evening’

Notes on Table 5.88:

[1] In general it is not possible to distinguish the syllable types *Ts^{ʂ}rew and *Tsrew, because of the change of *Tsrj-* > *Tsr-*: *Tsrew > *Tsrjew* > *Tsraew*. In one case the *Jīngdiǎn shìwén* gives two readings for 稍 shào ‘rations’: *sraewH* and an older reading, *srjewH*:

(1137) *Jīngdiǎn shìwén*, on *Zhōu lǐ*:
稍、所教反、舊踈詔反
“稍 [rations]: 所教反 [*sr(joX) + (k)aewH = sraewH*]; formerly read 踈詔反 [*sr(jo) + tsyewH (= (tsy-) + -jewH) = srjewH*]” (*JDSW* 135)

[2] From *Kew and *Pew we get division-IV chóngniǔ syllables *Kjiew* and *Pjiew*—unless the velar initial palatalizes, which is somewhat unpredictable. We have palatalization in 燒 *[ŋ̊]ew > *xew > *syew* > shāo 'burn', but the glottal stop is not subject to palatalization, so we get 腰 *ʔew > *'jiew* > yāo 'waist'.

[3] From syllables like *Krew and *Prew we would expect division-III chóngniǔ syllables "*Kjew*" and "*Pjew*," but we know of no good examples of this development.

5.6.2.2 *-ewk(-s) (⊂ traditional 藥 Yào)

The Middle Chinese reflexes of *-ewk are summarized in Table 5.89. The reflexes of *-ewk-s[105] are the same as those of *-ew-s: as in Table 5.88, but in qùshēng only.

TABLE 5.89 Middle Chinese reflexes of OC *-ewk

OC	MC	notes	examples
*C^{ᶜ}ewk	*Cek*	[1]	激 *[k]^{ᶜ}ewk > *kek* > jī 'dam up (water)' 翟 *l^{ᶜ}ewk > *dek* > dí 'pheasant' 溺 *n^{ᶜ}ewk > *nek* > nì 'to sink in water'
*C^{ᶜ}rewk	*Caewk*		葯 *[q]^{ᶜ}rewk > *'aewk* > yào 'Iris leaves' 濯 *l^{ᶜ}rewk > *draewk* > zhuó 'wash'
*Tsrewk	*Tsrjak* > *Tsraewk*	[2]	[indistinguishable from *Ts^{ᶜ}rewk]
otherwise:			
*C(r)ewk	*Cjak*	[3]	約 *[q](r)ewk > *'jak* > yuē 'bind (v.), agree' 籥 *lewk > *yak* > yuè 'flute; key; tube' 削 *[s]ewk > *sjak* > xiāo 'scrape, pare'

Notes on Table 5.89:

[1] In syllables like *C^{ᶜ}ewk, *-ewk loses the rounding in the coda and becomes MC *-ek*, merging with original *C^{ᶜ}ek and *C^{ᶜ}iwk.

[2] The reflexes of *Ts^{ᶜ}rewk and *Tsrewk appear to merge as *Tsraewk* and are thus indistinguishable from Middle Chinese readings alone.

[3] Otherwise, *-ewk in type-B syllables becomes *-jak*; the presence or absence of prevocalic *-r- after grave initials cannot be detected from Middle Chinese.

We reconstruct *-ewk-s (rather than *-ew-s) based on etymological or graphic connections with *-ewk, as in these examples:

(1138) 激 *[k]^{ᶜ}ewk > *kek* > jī 'dam up (water)'
竅 *[k]^{ʰᶜ}ewk-s > *khewH* > qiào 'hole, opening'

(1139) 約 *[q](r)ewk > *'jak* > yuē 'bind (v.), make an agreement'
約 *[q]ewk-s > *'jiewH* > yào 'bond, agreement (n.)'

Notice in (1139) that the reading *'jiewH* has a division-IV chóngniǔ final and thus tells us that the vowel is *e.

(1140) 溺 *n^{ᶜ}ewk > *nek* > nì 'to sink in water'
溺, 尿 *kə.n^{ᶜ}ewk-s > *newH* > niào 'urine'

TABLE 5.90 OC *i with codas *-w and *-wk(-s) (type-A syllables): reconstructions compared

Baxter-Sagart	*-iw	*-iwk	*-iwk-s
rhyme group	⊂ 幽 Yōu	⊂ 覺 Jué	
Middle Chinese	*-ew* 蕭	*-ek* 錫	*-ewH* 嘯
Karlgren (1957)	*-iôg	*-iôk	*-iôg
Dǒng Tónghé (1948)	*-iog	*-iok	*-iog
Wáng Lì (1958)	*-iəu	*-iəuk	*-iəuk
Li (1971)	*-iəgw	*-iəkw	*-iəgwh
Pulleyblank (1977–1978)	*-ʲə́w	*-ʲə́kʷ	*-ʲə́kʷs
Starostin (1989)	*-īw	*-īkʷ	*-īkʷs
Baxter (1992)	*-iw	*-iwk	*-iwks
Zhèngzhāng (2003)	*-iiw	*-iiwɢ	*-iiwɢs

(1141) 翟 *l^{ʕ}ewk > *dek* > dí ‘pheasant’
曜 *lewk-s > *yewH* > yào ‘shine’
濯 *l^{ʕ}rewk > *draewk* > zhuó ‘wash’
濯 *l^{ʕ}rewk-s > *draewH* > zhào ‘wash clothes’

(1142) 削 *[s]ewk > *sjak* > xiāo ‘scrape, pare’
削 *[s]ewk-s > *sjewH* > xiào ‘scrape, pare’
削 *[s^{ʕ}]rewk-s > *sraewH* > shào ‘zone near the capital’

5.6.3 *i WITH *-w AND *-wk(-s)

Our reconstructions of *-iw and *-iwk(-s) are compared with previous reconstructions in Table 5.90.

5.6.3.1 *-iw (⊂ traditional 幽 Yōu)

The Middle Chinese reflexes of *-iw[106] are summarized in Table 5.91.

TABLE 5.91 Middle Chinese reflexes of OC *-iw

OC	MC	notes	examples
*C^{ʕ}iw	*Cew*		條 *[l]^{ʕ}iw > *dew* > tiáo ‘arrange’ 簫 *s^{ʕ}iw > *sew* > xiāo ‘pan-pipe’
*C^{ʕ}riw	*Caew*		膠 *[k]^{ʕ}riw > *kaew* > jiāo ‘glue’ 啁 *t^{ʕ}riw > *traew* > zhāo ‘twitter, noise’
*Kjiw	*Tsyuw ~ Kjiw*	[1]	收 *s-kiw > *syuw* > shōu ‘collect; harvest’
*K(r)iw	*Kjiw*		幽 *[ʔ](r)iw > *'jiw* > yōu ‘dark; secluded’
*P(r)iw	*Pjiw*		髟 *p(r)iw > *pjiw* > biāo ‘long hair’ 謬 *m-riw-s > *mjiwH* > miù ‘lie, error’
otherwise:			
*C(r)iw	*Cjuw*	[2]	周 *tiw > *tsyuw* > zhōu ‘cycle; all around’ 秋 *ts^{h}iw > *tshjuw* > qiū ‘autumn; crop’ 綢 *[d]riw > *drjuw* > chóu ‘bind round’ 愁 *[dz]riw > *dzrjuw* > chóu ‘grieved’ 修 *s-liw > *sjuw* > xiū ‘adorn’

Notes on Table 5.91:

[1] OC *-iw (after nonpharyngealized initials) is the source of the Middle Chinese final *-jiw* (幽 rhyme), which, with a few exceptions, is limited to syllables with grave initials. The final *-jiw* is like a division-IV chóngniǔ final in the sense that although it is from a type-B syllable, it is placed in division IV of the rhyme tables (which is why we write it as *-jiw* in our Middle Chinese notation, with both *-j-* and *-i-*). The usual pattern is that where there is a division-IV chóngniǔ final, there will be a corresponding division-III chóngniǔ final reflecting the same Old Chinese rhyme, preceded by *-r-. But the graphic evidence indicates that *-riw after grave initials still produced the division-IV final *-jiw*:

(1143) 翏 *[r]iw-s > *ljuwH* > liù ‘flying high (no pre-Hàn text)’; phonetic in
謬 *m-riw-s > *mjiwH* > miù ‘lie, error’
樛 *k-riw > (dial. > *kriw) > *kjiw* > jiū ‘twist (v.)’

[2] The regular type-B reflex of *-iw after acute initials is *-juw,* as in 秋 *ts^{h}iw > *tshjuw* > qiū ‘autumn; crop’, implying that at some point there was a change: *-iw > *-juw*. But it is likely that some dialects in the Middle Chinese period did not undergo this change, retaining a distinctive final “*-iw*” after acute initials also. The few acute-initial words with *-jiw* in the *Guǎngyùn* probably reflect such a dialect, and the *Jīngdiǎn shìwén* also records some readings like this (for example, 鏐 liú < *ljuw* < *[r]iw ‘fine gold’ spelled as “*ljiw,*” *JDSW* 85). Studies of rhymes from the time of the *Qièyùn* or before might make it possible to locate this dialect feature geographically.

5.6.3.2 *-iwk(-s) (⊂ traditional 覺 Jué)

The Middle Chinese reflexes of *-iwk are summarized in Table 5.92. The reflexes of *-iwk-s[107] are the same as those of *-iw-s: as in Table 5.91, but in qùshēng only.

TABLE 5.92 Middle Chinese reflexes of OC *-iwk

OC	MC	notes	examples
*C^{ʂ}iwk	*Cek*	[1]	滌 *l^{ʂ}iwk > *dek* > dí ‘wash, clean (v.)’ 戚 *s.t^{hʂ}iwk > *tshek* > qī ‘relatives’
*C^{ʂ}riwk	*Caewk?*	[2]	[no clear examples]
*C(r)iwk	*Cjuwk*	[3]	穆 *mriwk > *mjuwk* > mù ‘harmonious’ 叔 *s-tiwk > *syuwk* > shū ‘third of four brothers’ 肅 *siwk > *sjuwk* > sù ‘solemn, severe’ 逐 *[l]riwk > *drjuwk* > zhú ‘pursue’

Notes on Table 5.92:

[1] As with *-ewk, in syllables like *C^{ʂ}iwk, *-iwk loses the rounding in the coda and merges with *-ek.

[2] By analogy to other rhymes, we would expect *C^{ʂ}riwk > *Caewk*, but have found no clear examples of this.

[3] There seems to be no rùshēng counterpart "*-jiwk*" to MC *-jiw*; in type-B syllables, *-iwk merges with *-uk and becomes *-juwk*.

We reconstruct *-iwk-s (rather than *-iw-s) on the basis of etymological or graphic connections with *-iwk, but since in this group the same phonetic element is sometimes used for both *-iw and *-iwk, the graphic evidence is not conclusive, and we often write *-iw(k)-s:

(1144) 肅 *siwk > *sjuwk* > sù 'solemn, severe'
嘯 *sˤiw(k)-s > *sewH* > xiào 'to wail'
繡 *[s]iw(k)-s > *sjuwH* > xiù 'embroider'

5.7 Rhymes with labial codas (*-p and *-m)

Words with labial codas are significantly less frequent in the early Chinese lexicon than those with velar or dental codas: as a rough estimate, in our database of lexical items, about 8 percent have (Middle Chinese) labial codas *-p* or *-m*, 24 percent have velar codas *-k* or *-ng*, and 23 percent have dental codas *-t* or *-n*.[108] This would have made it especially difficult to find appropriate words with labial codas to use as rhymes; and it also would have made it more difficult to find suitable phonetic elements to write words with labial codas.

We can illustrate this point by considering the difficulty of finding a rhyme for the English word *orange*. It is often said that no English word rhymes with *orange*; in fact there is one obscure word that rhymes with it: *sporange*, a botanical term equivalent to *sporangium* 'a receptacle containing spores; a spore-case or capsule'.[109] Now *orange* has a certain frequency in ordinary text, but its frequency in a corpus of rhyme words must be much lower, virtually zero, in fact; unless the word *sporange* is appropriate to the context, a poet must either relax the usual criteria for rhyming, or not use *orange* as a rhyme at all. If there were a few more words that rhymed with *orange*, its frequency as a rhyme word might go up, but would still be quite low compared with its frequency in ordinary text. Similarly, if one were trying to find a phonetic element to write *orange* in a Chinese-like script for English, one would face analogous problems.

The same argument applies to words with labial codas in Old Chinese: rhyme sequences with labial codas are rather infrequent in the *Shījīng*, and recourse to faute-de-mieux phonetics (see section 3.4) appears to have been more frequent than with other types of syllables. For example, it seems to be more common with labial codas for the same phonetic element to be used for both *-p and *-m.

Thus both rhymes and xiéshēng connections involving labial codas tend to be less regular than with other syllable types. Since the two main kinds of evidence for reconstructing Old Chinese rhymes—rhymes and phonetic compounds—are less helpful than with other kinds of syllables, the reconstruction of vowels in individual words with

TABLE 5.93 OC *a with labial codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-ap	*-ap-s (> *-at-s)	*-am
rhyme group	⊂ 葉 Yè		⊂ 談 Tán
Middle Chinese	*-ap* 盍	*-ajH* 泰	*-am* 談
Karlgren (1957)	*-âp	*-âb	*-âm
Dǒng Tónghé (1948)	*-âp	*-âb	*-âm
Wáng Lì (1958)	*-ăp	*-āp	*-am
Li (1971)	*-ap	*-abh	*-am
Pulleyblank (1977–1978)	*-áp	*-áps	*-ám
Starostin (1989)	*-āp	*-āps	*-ām
Baxter (1992)	*-ap	*-aps	*-am
Zhèngzhāng (2003)	*-aab	*-aabs	*-aam

labial codas is sometimes underdetermined by the evidence, and we often have to use square brackets to indicate our uncertainty about the vowels.

However, we have good reason to believe that all six Old Chinese vowels did originally occur before labial codas. The traditional analysis recognized only two rhyme groups with the coda *-p (葉 Yè and 緝 Qī) and two with the coda *-m (談 Tán and 侵 Qīn). These have generally been reconstructed with *a and *ə, respectively, as in Tables 5.93 and 5.94.

However, the hypotheses of the six-vowel reconstruction require us to also reconstruct front *e and *i before the labial codas *-p and *-m. According to the front-vowel hypothesis, Middle Chinese division-IV finals and division-IV chóngniǔ finals can only come from Old Chinese rhymes with front vowels.[110] There are six such finals with labial codas in Middle Chinese: *-ep*, *-em*, *-jiep*, *-jiem*, *-jip*, and *-jim*. In addition, according to the traditional analysis, MC *-em* and *-ep* each have two sources: MC *-em* can come from either the 談 Tán group or the 侵 Qīn group, and MC *-ep* can come from either the 葉 Yè group or the 緝 Qī group, as shown in Table 5.95.

TABLE 5.94 OC *ə with labial codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-əp	*-əp-s (> *-ət-s)	*-əm
rhyme group	⊂ 緝 Qī		⊂ 侵 Qīn
Middle Chinese	*-op* 合	*-ojH* 代	*-om* 覃
Karlgren (1957)	*-əp	*-əb?	*-əm
Dǒng Tónghé (1948)	*-ə̂p	*-ə̂b	*-ə̂m
Wáng Lì (1958)	*-ə̆p	[*-ə̄p]?	*-əm
Li (1971)	*-əp	*-əbh	*-əm
Pulleyblank (1977–1978)	*-áp	*-áps	*-ám
Starostin (1989)	*-ə̄p	*-ə̄ps	*-ə̄m
Baxter (1992)	*-ip	*-ips	*-im
Zhèngzhāng (2003)	*-əəb	*-əəbs	*-əəm

TABLE 5.95 OC sources of MC -em and -ep

Middle Chinese	traditional rhyme group	Karlgren, Fang-kuei Li	Baxter-Sagart
-em	談 Tán	*-iam	*-em
	侵 Qīn	*-iəm	*-im
-ep	葉 Yè	*-iap	*-ep
	緝 Qī	*-iəp	*-ip

Since our system does not allow combinations like *-ia- or *-iə-, we reconstruct front vowels *e and *i before labial codas to account for examples like the following.

(1145) 協 *[ɢ]ˤep > *hep* > xié 'in harmony' (traditional 葉 Yè group)

(1146) 塾 *[t]ˤip > *tep* > dié '(place in Sìchuān)' (traditional 緝 Qī group)

(1147) 厭 *ʔep > *'jiep* > yā 'press (v.)' (traditional 葉 Yè group)

(1148) 挹 *qip > *'jip* > yì 'suppress' (traditional 緝 Qī group)

(1149) 點 *tˤemʔ > *temX* > diǎn 'black spot' (traditional 談 Tán group)

(1150) 念 *nˤim-s > *nemH* > niàn 'think of' (traditional 侵 Qīn group)

(1151) 猒 *ʔem-s > *'jiemH* > yàn 'satisfaction' (traditional 談 Tán group)

(1152) 愔 *[q]im > *'jim* > yīn 'mild, peaceful' (traditional 侵 Qīn group)

Our reconstructions of *-ep, *-em, *-ip, and *-im are compared with other reconstructions in Tables 5.96 and 5.97.

As Tables 5.96 and 5.97 show, the rhymes we reconstruct with *-ep, *-em, *-ip, and *-im have traditionally been reconstructed in such a way as to agree with the traditional categories: thus both Karlgren and Li reconstructed *-iap, *-iam, *-iəp, and *-iəm, so they appear to rhyme with *-ap, *-am, *-əp, and *-əm, respectively.

As a matter of fact, it is difficult to confirm a clear rhyming distinction in the *Shījīng* between front and nonfront vowels before labial codas: although Baxter (1992) confirmed the rhyme distinctions predicted by the six-vowel system in syllables with other codas,

TABLE 5.96 OC *e with labial codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-ep	*-ep-s (> *-et-s)	*-em
rhyme group	⊂ 葉 Yè		⊂ 談 Tán
Middle Chinese	*-ep* 帖	*-ejH* 霎	*-em* 添
Karlgren (1957)	*-iap	*-iab	*-iam
Dǒng Tónghé (1948)	*-iɐp	*-iɐb	*-iɐm
Wáng Lì (1958)	*-iăp	*-iāp	*-iam
Li (1971)	*-iap	*-iabh	*-iam
Pulleyblank (1977–1978)	*-ʲáp	*-ʲáps	*-ʲám
Starostin (1989)	*-ēp	*-ēps	*-ēm
Baxter (1992)	*-ep	*-eps	*-em
Zhèngzhāng (2003)	*-eeb	*-eebs	*-eem

TABLE 5.97 OC *i with labial codas (type-A syllables): reconstructions compared

Baxter-Sagart	*-ip	*-ip-s (> *-it-s)	*-im
rhyme group	⊂ 緝 Qī		⊂ 侵 Qīn
Middle Chinese	*-ep* 帖	*-ejH* 霽	*-em* 添
Karlgren (1957)	*-iəp	*-iəb	*-iəm
Dǒng Tónghé (1948)	*-iəp	*-iəb	*-iəm
Wáng Lì (1958)	*-iăp	*-iāp	*-iəm
Li (1971)	*-iəp	*-iəbh	*-iəm
Pulleyblank (1977–1978)	*-ʲə́p	*-ʲə́ps	*-ʲə́m
Starostin (1989)	*-īp	*-īps	*-īm
Baxter (1992)	*-ip	*-ips	*-im
Zhèngzhāng (2003)	*-iib	*-iibs	*-iim

the rhyme sequences involving words with labial codas were too few to allow statistically significant results, and in any case a number of such rhyme sequences are clearly irregular. In fact, there are no rhyme sequences involving words we reconstruct with *-ep, and only one ambiguous sequence involving a word with *-em.[111]

However, the *Shījīng* does have two rhymes that can be confidently reconstructed with *-im:

(1153) Ode 162.5:
駸 *[tsʰ]r[i]m > *tsrhim* > qīn 'gallop' (also read MC *tshim*, reflecting a Middle Chinese dialect in which *tsr-* became *ts-*, *tsrh-* became *tsh-*, etc.)
諗 *n̥imʔ > *syimX* > shěn 'remonstrate'

(1154) Ode 189.6:
簟 *[l]ˤimʔ > *demX* > diàn 'bamboo mat'
寢 *[tsʰ]imʔ > *tshimX* > qǐn 'sleep'

In (1153), we can reconstruct 諗 *n̥imʔ on the basis of its phonetic element 念 niàn < *nˤim-s, and in (1154), 簟 diàn < *demX* must be reconstructed with *-imʔ to account for the Middle Chinese division-IV final *-em*. The phonetic element 彡 seems to indicate OC *-im, as we see in both sequences.

There is also a likely example of a rhyme in *-ip:

(1155) Ode 5.3:
揖 *s.qrip > *tsrip*, (dial.) *tsip* > jí 'cluster together' (also read *qip > *'jip* > yī 'bow (v.), salute', showing the *i vowel)
蟄 *[d]rip > *drip* > zhé 'hibernate; cluster'

Here 揖 jí < *tsip* has the alternative reading *'jip* with a division-IV chóngniǔ final, which can only be reconstructed with *-ip; and we reconstruct *-ip in 蟄 zhé < *drip* because of division-IV words written with this phonetic:

(1156) 墊 *[t]ˤ[i]m-s > *temH* > diàn 'descend', also read
蟄 *[t]ˤip > *tep* > dié '(place in Sìchuān)'

We have now established that four of the six Old Chinese vowels occur before labial codas. What about the rounded vowels *o and *u? There is indirect but convincing evidence that these vowels also occurred before labial codas. Dǒng Tónghé (1948:108–112) identified several phonetic series that resemble (our) *-əp and *-əm in that they have division-I reflexes in MC *-op* or *-om*, but resemble our *-ap and *-am in that they have division-III reflexes in MC *-jep*, *-jaep*, *-jop,* or *-jem*. He included these words in the traditional 葉 Yè and 談 Tán groups (with our *-ap, *-ep and *-am, *-em), but he reconstructed them with a distinctive vowel *ɐ. Dǒng Tónghé's *-ɐp and *-ɐm generally correspond to our *-op and *-om.[112]

The development of words with final *-p-s often gives clues to the identity of the preceding vowel. For example, our system predicts that *-op-s should develop as in (1157).

(1157) *C^{ʕ}op-s > *C^{ʕ}ot-s > *C^{ʕ}wat-s > *CwajH*
*Cop-s > *Cot-s > *Cwat-s > *CjwejH*

When words in MC *-wajH* or *-jwejH* appear to come from the same root as words with final *-p, we reconstruct them with *-op-s and reconstruct *-op in the unsuffixed root. An example is

(1158) 舀 *[ts^{h}]<r>op > *tsrheap* > chā 'pestle'
臿 *[ts^{h}]<r>op-s > *tsrhjwejH* > cuì 'to pound with a pestle'

As for *-up and *-um, these normally merge with *-əp and *-əm, so they are also difficult to identify with confidence. But as with *-op-s, forms in *-p-s give us some evidence about the main vowel. According to our system, we would expect *-up-s to develop as in (1159):

(1159) *C^{ʕ}up-s > *C^{ʕ}ut-s > *C^{ʕ}wət-s > *CwojH*
*Cup-s > *Cut-s > *Cwət-s > *Cjw+jH* or *CwijH*

When words with these Middle Chinese finals have connections with words in final *-p, we reconstruct them with *-up-s, and the root with *-up. For example:

(1160) 集 *[dz][u]p > *dzip* > jí 'gather, collect'
萃 *[dz][u]p-s > *dzwijH* > cuì 'collect, crowd'

Another clue to main vowels before labials is the fact that there was evidently a dialect of Old Chinese in which final labials *-p and *-m simply changed unconditionally to *-k and *-ŋ. Part of the evidence for this is rhyme sequences that mix velar and labial codas; since vowels are easy to identify before velar codas, these rhymes provide evidence about the vowels in the words that had labial codas. A number of *Shījīng* rhymes seem to show this dialect feature. For example, in Ode 128, we have two different rhyme sequences of this type:

(1161) Ode 128.2:
中 *truŋ > *trjuwng* > zhōng 'center'
驂 *m-s^{ʕ}rum > *tshom* > cān 'team of three horses'

(1162) Ode 128.3:
膺 *[q](r)əŋ > *'ing* > yīng ‘breast(plate)’
弓 *kʷəŋ > *kjuwng* > gōng ‘bow (n.)’
縢 *lˁəŋ > *dong* > téng ‘tie; band’
興 *qʰ(r)əŋ > *xing* > xīng ‘lift, rise’
音 *[q](r)əm > *'im* > yīn ‘sound, tone’

Here we reconstruct 驂 cān < *tshom* with *-um because of its rhyme with *-uŋ in 128.2, and we reconstruct 音 yīn < *'im* with *-əm because of its rhyme with *-əŋ in 128.3.

We conjecture that the unconditional change of final *-p and *-m to *-k and *-ŋ was a western dialect feature; the poems in which such mixed rhymes occur seem to have mostly a Western Zhōu background. We have at least one explicit comment reflecting this, from *Yán shì jiā xùn* 《顏氏家訓》 by Yán Zhītuī, one of the *Qièyùn* authors:

> I have exhaustively visited Shǔ 蜀 region, and they pronounce 粒 lì [MC *lip* ‘grain, particle’] as 逼 bī [MC *pik* ‘compel’]; but at the time they had no way to explain it. I said: “In the *Sān cāng* 《三蒼》 and the *Shuōwén* 《說文》, this word is written with 白 bái above and 匕 bǐ below [i.e., as 皀], and is glossed in both cases as 粒 lì [‘grain, particle’]. The *Tōngsú wén* 《通俗文》 gives its pronunciation as 方力反 [*p(jang) + (l)ik = pik*].” They were all delighted to discover this.[113]

The Shǔ area referred to is in modern Sìchuān province.

In the meaning ‘grain, particle’, the character 皀 bī to which Yán Zhītuī refers has three pronunciations in the *Guǎngyùn*: *pip*, *pik*, and *kip*.[114] We can account for this range of facts if we assume that the original form for ‘grain, particle’ 粒 lì < *lip* was *p.rəp; it appears that in the dialect of the Shǔ area visited by Yán Zhītuī, the final *-p changed to *-k: *p.rəp > *p.rək, and the presyllable was retained: *p.rək > *prək, leading to MC *pik*. The MC form *kip* reflects *k.rəp—either a variant with a different presyllable, or the result of a dissimilation *p.rəp > *k.rəp. In either case, in a dialect that retained the presyllable, we would have *k.rəp > *krəp > MC *kip*. MC 粒 *lip* reflects the usual development in Middle Chinese, in which the presyllable is lost: *k.rəp > *rəp > *lip*; but writing the word with the character 粒, with phonetic 立 lì < lip < *k.rəp ‘stand (v.)’, suggests that the presyllable may have been *k.-. In any case, we must reconstruct *C.rəp, with a presyllable of some kind, to account for southeastern dialects: Shàowǔ has /sən 7/ (Lǐ Rúlóng and Zhāng Shuāngqìng 1992:87), which would be the regular reflex of pMǐn *lhəp D; Hakka has upper-register /l/ (Méixiàn /lɛp 7/), as does Cantonese (Guǎngzhōu /nɐp 7/ ~ /lɐp 7/). These forms could reflect either *k.rəp (as suggested by the character 粒) or the original *p.rəp.

Since the relevant items with clear reconstructions are comparatively few, we will treat all the rhymes with high vowels together, then the rhymes with nonhigh vowels. The Middle Chinese reflexes of rhymes with high vowels before *-p are summarized in Table 5.98.

We reconstruct *-əp-s, *-up-s, and *-ip-s in words with etymological or graphical connections to *-əp, *-up, and *-ip, respectively; as a result of the early change of *-p-s to *-t-s, these suffixed rhymes are predicted to have reflexes like those of *-ət-s, *-ut-s, and *-it-s. Because *-p-s has the same reflexes as *-t-s, a significant number of words with *-p-s have gone unrecognized, and have previously been reconstructed as if they had *-t-s (Karlgren's *-d, Li's *-dh).

(1163) *-əp-s > *-ət-s > *-əj-s
*-up-s > *-ut-s > *-wət-s > *-wəj-s
*-ip-s > *-it-s > *-ij-s

TABLE 5.98 Middle Chinese reflexes of Old Chinese high vowels before *-p

OC	MC	notes	examples
*C^{ʕ}əp	*Cop*	[1]	眾, 遝 *m-r^{ʕ}əp > *dop* > tà 'reach to; and'
*C^{ʕ}up		[2]	納 *n^{ʕ}[u]p > *nop* > nà 'bring or send in'
*C^{ʕ}ip	*Cep*		墊 *[t]^{ʕ}ip > *tep* > dié '(place in Sìchuān)'
*C^{ʕ}rəp *C^{ʕ}rup *C^{ʕ}rip	*Ceap*		[predicted, but no clear examples]
*Kip	*Kjip*	[3]	揖 *qip > *'jip* > yī 'bow (v.), salute' (all examples have MC ʔ-)
*Pip	*Pjip?*		[predicted, but no examples]
*Kwəp	*Kjuwk?*	[4]	[predicted, but no clear examples]
*P(r)əp	*Pjuwk?*		[predicted, but no clear examples]
otherwise:			
*C(r)əp	*Cip*	[1]	吸 *q^{h}(r)əp > *xip* > xī 'inhale'
*C(r)up		[2]	入 *n[u]p > *nyip* > rù 'enter'
*C(r)ip		[5]	執 *[t]ip > *tsyip* > zhí 'seize'

Notes on Table 5.98:

[1] We reconstruct *ə in 眾, 遝 *m-r^{ʕ}əp > *dop* > tà 'reach to; and' because of the related forms with *-s suffix:

(1164) 眾, 遝 *m-r^{ʕ}əp > *dop* > tà 'reach to; and'
逮 *m-r^{ʕ}əp-s > *m-r^{ʕ}ət-s > *dojH* > dài 'reach to'; also read *dejH*[115]
及 *[m-k-]rəp > *gip* > jí 'reach to'
暨 *[m-k-]rəp-s > *m-krət-s > *gijH* > jì 'reach to' (Karlgren: *g'i̯ɛd)

We also reconstruct *-əp(-s) in the family of words in (1165).

(1165) 吸 *q^{h}(r)əp > *xip* > xī 'inhale'
愾 *q^{h}əp-s > *xj*+*jH* > kài 'sigh; angry'
氣 *C.q^{h}əp-s > *khj*+*jH* > qì 'cloudy vapors'

These words are frequently glossed the same and seem to be related, even if the morphology is not entirely clear. The reading *dejH* for 逮 *m.rˤəp-s, repeatedly given as an alternate pronunciation in the *Jīngdiǎn shìwén* (e.g., *JDSW* 97, on Ode 257.6), is most easily explained as resulting from sound changes happening in different orders in different dialects. In a syllable like *m.rˤət-s, we would expect the *ə to be fronted because it occurs between an acute onset and an acute coda, producing *dejH*. The reading *dojH* reflects either a dialect in which this fronting did not occur at all, or a dialect in which *-əp-s changed to *-ət-s after the fronting of original *-ət-s, so that it escaped this change.

[2] We reconstruct *u in 納 *nˤ[u]p > *nop* > nà ‘bring or send in’ and 入 *n[u]p > *nyip* > rù ‘enter’ because of the related words with the *-s suffix:[116]

(1166) 入 *n[u]p > *nyip* > rù ‘enter’
納 *nˤ[u]p > *nop* > nà ‘bring or send in’
內 *nˤ[u]p-s > *nˤut-s > *nˤwət-s > *nˤwəj-s > *nwojH* > nèi ‘inside’
退 *n̥ˤ[u]p-s > *-ut-s > *-wət-s >*-wəj-s > *thwojH* > tuì ‘withdraw (≠ advance)’ (Karlgren: *t’wəd)

Here are two more such families of words where we can reconstruct *-[u]p(-s):

(1167) 雜 *[dz]ˤ[u]p > *dzop* > zá ‘mixed’
集 *[dz][u]p > *dzip* > jí ‘gather, collect’
萃 *[dz][u]p-s > *dzwijH* > cuì ‘collect, crowd’

(1168) 答 *[t]ˤ[u]p > *top* > dá ‘answer’
對 *[t]ˤ[u]p-s > *tˤut-s > *tˤwət-s > *tˤwəj-s > *twojH* > duì ‘respond’

[3] For reasons that are not fully understood, the Middle Chinese division-IV chóngniǔ finals *-jip*, *-jim*, *-jiep*, and *-jiem* occur only with the Middle Chinese initial *ʼ-* (影 Yǐng). It could be that the relevant examples with velar initials palatalized: *Kip > *Tsyip* etc., although we have no clear examples of this. These division-IV chóngniǔ finals do not occur after labial initials at all.

[4] By analogy to cases like 熊 *C.[ɢ]ʷ(r)əm > *hjuwng* > xióng ‘bear (n.)’ and 風 *prəm > *pjuwng* > fēng ‘wind (n.)’, we would expect that forms like “*Kjuwk*” and “*Pjuwk*” could come from *-up, but we know of no such examples.

[5] We reconstruct *i in 執 *[t]ip > *tsyip* > zhí ‘seize’ because this phonetic element is used to write division-IV words such as 墊 *[t]ˤip > *tep* > dié ‘(place in Sìchuān)’ (see above); the qùshēng derivatives also develop as if from *-it-s. Finally, the word 蟄 *[d]rip > *drip* > zhé ‘hibernate; cluster’ rhymes as *-ip in Ode 5.3 (example (1155) above).

The Middle Chinese reflexes of *-əm, *-um, and *-im are summarized in Table 5.99.

TABLE 5.99 Middle Chinese reflexes of Old Chinese high vowels before *-m

OC	MC	notes	examples
*Cˢəm	*Com*		南 *nˢ[ə]m > *nom* > nán ‘south’
*Cˢum		[1]	暗 *qˢum-s > *ʻomH* > àn ‘dark’
*Cˢim	*Cem*	[2]	簟 *[l]ˢimʔ > *demX* > diàn ‘bamboo mat’
*Cˢrəm	*Ceam*		減 *kˢr[ə]mʔ > *keamX* > jiǎn ‘reduce’
*Cˢrum			[no clear examples]
*Cˢrim			[no clear examples]
*Kim	*Kjim*	[3]	愔 *[q]im > *ʼjim* > yīn ‘mild, peaceful’
*Pim	*Pjim?*		[no examples]
*Kwəm	*Kjuwng*	[4]	熊 *C.[ɢ]ʷ(r)əm > *hjuwng* > xióng ‘bear (n.)’
*P(r)əm	*Pjuwng*		風 *prəm > *pjuwng* > fēng ‘wind (n.)’
otherwise:			
*C(r)əm	*Cim*	[1]	音 *[q](r)əm > *ʼim* > yīn ‘sound, tone’
*C(r)um			陰 *q(r)um > *ʻim* > yīn ‘dark’
*C(r)im		[2]	諗 *n̥imʔ > *syimX* > shěn ‘remonstrate’

Notes on Table 5.99:

[1] We reconstruct *ə in 音 *[q](r)əm > ‘im > yīn ‘sound, tone’ because it rhymes with *-əŋ in Ode 128.3 (see (1162) above). But although it is a homonym of 音 yīn in Middle Chinese, we reconstruct 陰 *q(r)um > *ʼim* > yīn ‘dark’ with *u because it rhymes with *-uŋ in Ode 154.8:

(1169) 沖 沖 *[d]ruŋ-[d]ruŋ > *drjuwng-drjuwng* > chōng chōng ‘sound of cutting ice’
陰 *q(r)um > *ʼim* > yīn ‘dark’

And even though it is written with 音 yīn < *[q](r)əm as phonetic, we also reconstruct *-um in 暗 *qˢum-s > *ʻomH* > àn ‘dark’, because of its likely etymological connection to 陰 *q(r)um. According to *Gǔwénzì gǔlín* (*GG* 6.411), the character 暗 àn is not attested before Hàn times, which makes it too late for the phonetic to be diagnostic for the distinction between *-əm and *-um.

[2] As noted above, 簟 *[l]ˢimʔ > *demX* > diàn ‘bamboo mat’ must be reconstructed with *-im to account for the MC final *-em*; as seen above (1154), it rhymes in Ode 189.6 with 寢 *[tsʰ]imʔ > *tshimX* > qǐn ‘sleep’, which has the same phonetic as 駸 *[tsʰ]r[i]m > *tsrhim* > qīn ‘gallop’, which in turn rhymes with a character whose phonetic is 念 *nˢim-s > *nemH* > niàn ‘think of’ (1153).

[3] As with *-jip* < *-ip, MC *-jim* < *-im occurs only with the Middle Chinese initial *ʼ-*.

[4] ‘Bear’ and ‘wind’, which the traditional analysis recognizes as part of the traditional 侵 Qīn group, are to be reconstructed with *-əm: we assume that *-əm was rounded to *-um under the influence of the labial or labialized initial, then the final *-m dissimilated to *-ŋ. The graphic connections of 風 *prəm > *pjuwng* > fēng ‘wind (n.)’ suggest that it had *-r- before the vowel; but at the time *-r- disappeared, the vowel was

already rounded and thus *-r- did not leave a trace on the final (as with original *-ruŋ; see section 5.4.6.3).

The Middle Chinese reflexes of Old Chinese rhymes with nonhigh vowels before *-p are summarized in Table 5.100.

We reconstruct *-ap-s, *-ep-s, and *-op-s in words that have reflexes like *-at-s, *-et-s, and *-ot-s, but which have etymological or graphic connections with words in *-p.

TABLE 5.100 Middle Chinese reflexes of Old Chinese nonhigh vowels before *-p

OC	MC	notes	examples
*C^{ʂ}ap	*Cap*	[1]	盍*m-[k]^{ʂ}ap > *hap* > hé ‘thatch, cover (v.)’
*C^{ʂ}ep	*Cep*		挾 *m-k^{ʂ}ep > *hep* > xié ‘grasp’
*C^{ʂ}op	*Cop*	[2]	合 *m-k^{ʂ}op > *hop* > hé ‘come together’
*C^{ʂ}rap	*Caep*	[1]	甲 *[k]^{ʂ}r[a]p > *kaep* > jiǎ ‘first heavenly stem’
*C^{ʂ}rep	*Ceap*		狹 *N-k^{ʂ}<r>ep > *heap* > xiá ‘narrow’
*C^{ʂ}rop		[2]	洽 *N-k^{ʂ}<r>[o]p > *heap* > qià ‘accord with’
*K(r)ap	*Kjaep*	[3]	劫 *k(r)ap > *kjaep* > jié ‘rob’
*K(r)op			跲 *[k](r)op > *kjaep* > jiá ‘stumble’
*K(r)ep			脅 *q^{h}<r>ep > *xjaep* > xié ‘side of the body’
*Kep	*Kjiep*	[4]	厭 *ʔep > *ʔjiep* > yā ‘press (v.)’
*K^{w}rap	*Kjep*	[5]	爇 *[ɢ]^{w}(r)[a]p > *hjep* > yè ‘shine, gleam’
*P(r)ap	*Pjop*	[6]	法 *[p.k]ap > *pjop* > fǎ ‘model, law’
*P(r)op		[7]	乏 *[b](r)[o]p > *bjop* > fá ‘lack (v.)’
*Pep	*Pjiep?*		[no examples]
*Prep	*Pjep?*		[no examples]
*Tsrap	*Tsrjep* > *Tsreap* ~ *Tsraep?*		[no clear examples]
*Tsrop		[8]	舀 *[ts^{h}]<r>op > *tsrheap* > chā ‘pestle’
*Tsrep			[no clear examples]
otherwise:			
*C(r)ap	*Cjep*		獵 *r[a]p > *ljep* > liè ‘hunt’
*C(r)ep		[9]	攝 *kə.n̥ep > *syep* > shè ‘catch, grasp’
*C(r)op			[no clear examples other than 舀 *[ts^{h}]<r>op above]

Notes on Table 5.100:

[1] Generally, MC *-ap* reflects *C^{ʂ}ap and *-aep* reflects *C^{ʂ}rap. We reconstruct *-ap(-s) in

(1170) 盍 *m-[k]^{ʂ}ap > *hap* > hé ‘thatch, cover (v.)’
蓋 *[k]^{ʂ}ap-s > *kajH* > gài ‘cover (v.); cover (n.)’

(1171) 接 *[ts][a]p > *tsjep* > jiē ‘connect’
際 *[ts][a]p-s > *tsjejH* > jì ‘connection’

Note that although the phonetic 祭 *[ts]et-s > *tsjejH* > jì ‘sacrifice’ has *-et-s and probably represents *-et in 察 *[ts^{h}]^{ʂ}ret > *tsrheat* > chá ‘examine’, the character 際 jì is of

late origin and cannot be relied on to represent either the early vowel or the early coda (it is not attested in pre-Hàn documents according to *GG* 10.840).

[2] We reconstruct *o in 合 hé < *hop* based on the qùshēng derivative 會 huì < *hwajH* and others:

(1172) 合 *m-kˤop > *hop* > hé ‘come together; bring together’
洽 *N-kˤ<r>[o]p > *heap* > qià ‘accord with’
會 *m-kˤop-s > *hwajH* > huì ‘meeting; have a meeting’
會 *kˤop-s > *kwajH* > kuài ‘calculate; calculation’
襘 *kˤop-s > *kwajH* > guì ‘place where two ends of a collar or belt join’

[3] Generally, MC *-jop* occurs only after *P*-type initials, and *-jaep* only after *K*-type initials. Because of their multiple possible origins, it is often difficult to be confident about which vowel to reconstruct in them.

[4] Parallel to the other syllables with labial codas, the only Middle Chinese syllable with the division-IV chóngniǔ final *-jiep* is *'jiep*.

[5] When labialized initials occurred before rhymes with labial codas, they are usually difficult to detect because they would have lost their labialization by dissimilation. But reconstructing 爇 *[ɢ]ʷ(r)[a]p > *hjep* > yè ‘shine, gleam’ is the only way in our system to account for the MC initial *hj-* (喻 三 Yùsān = 云 Yún); normally MC *hj-* occurs only in hékǒu syllables (i.e., accompanied by *-w-* in our notation); here the *-w-* has been lost by dissimilation.

[6] It has long been a problem how to explain the presence (from the earliest date) of the character 去 qù in 灋 ~ 法. Some problems remain, but here is the scenario we suggest: (1) The character 去 qù was earliest used for syllables of the form *Kap (e.g., 劫 *k(r)ap > *kjaep* > jié ‘rob’). (2) The word written by 灋 ~ 法 has a labial preinitial: 法 *[p.k]ap > *pjop* > fǎ ‘model, law’. (3) The reading 去 qù < *khjoH* could represent either the western dialect where *-p in coda position changes to *-k (*[k]ʰ(r)ap-s > *-ak-s > *-a-s > *khjoH*); or the forms with MC *-jo* could originate in the restressing of unstressed variants that had reduced or lost the final stop, parallel to the loss of final *-k in 來 *mə.rˤək > *rˤək > *rˤə (unstressed form) > *loj* > lái ‘come’ (see Baxter 1992:330 and section 5.4.2.2); the MC reading *khjoX*, for example, could have evolved from *[kʰ](r)ap > *kʰaʔ (unstressed form). (4) The word {廢} *[p-k]ap-s > *-at-s > *pjojH* > fèi ‘cast aside’ (written with 灋 in early documents) may somehow be related to the root of 去 *[k]ʰ(r)ap-s > *khjoH* > qù ‘depart’.

[7] The element 乏 *[b](r)[o]p > *bjop* > fá ‘lack (v.)’ seems to be kept distinct from 去 qù as a phonetic element, which would be explained if it had *-op instead of *-ap. The following example with *-oŋ (a dialect development from *-om) also supports *o in words with this phonetic element:

(1173) 覂 *p(r)omʔ (dial. >) *p(r)oŋʔ > *pjowngX* > fěng ‘overturn (no pre-Hàn exx.)’.

In his commentary on the *Hàn shū*, Yán Shīgǔ 顏師古 gives this pronunciation for an occurrence of 泛 fàn, and says that the original character was 覂, glossing it as ‘overturn’ (“覆也”).

[8] As noted above, we reconstruct *-op in 舀 *[ts^{h}]<r>op > *tsrheap* > chā ‘pestle’ because of the related qùshēng form with *-jwejH*:

(1174) 舀 *[ts^{h}]<r>op > *tsrheap* > chā ‘pestle’
臿 *[ts^{h}]<r>op-s > *tsrhjwejH* > cuì ‘to pound with a pestle’

[9] Reconstructing *-ep is consistent with the Middle Chinese readings of words written with the phonetic 聶 niè < *nrjep* ~ shè < *syep*; moreover, the word {懾} *[t.n][e]p > *tsyep* > zhé ‘to fear’ is also written with the phonetic 執 *[t]ip > *tsyip* > zhí ‘seize’, supporting the reconstruction of a front vowel. Although words written with the same phonetic element usually have the same main vowel, it is not unusual for the same phonetic to write both *i and *e, as here; but interchanges of *i with other vowels are rare.

The Middle Chinese reflexes of Old Chinese rhymes with nonhigh vowels before *-m are summarized in Table 5.101.

TABLE 5.101 Middle Chinese reflexes of Old Chinese nonhigh vowels before *-m

OC	MC	notes	examples
*C^{ʂ}am	*Cam*		籃 *k.r^{ʂ}am > *lam* > lán ‘basket’, pMĭn *lhɑm A
*C^{ʂ}em	*Cem*		兼 *[k]^{ʂ}em > *kem* > jiān ‘combine; at the same time’
*C^{ʂ}om	*Com*	[1]	贛 *[k]^{ʂ}om(ʔ)-s > *komH* > gàn ‘(river name)
*C^{ʂ}ram	*Caem*		監 *[k]^{ʂ}ram > *kaem* > jiān ‘inspect’
*C^{ʂ}rem	*Ceam*		歉 *k^{hʂ}remʔ-s > *kheamH* > qiàn ‘modest’
*C^{ʂ}rom		[2]	陷 *[ɢ]^{ʂ}romʔ-s > *heamH* > xiàn ‘fall into a pit’
*K(r)am	*Kjaem*		嚴 *ŋ(r)am > *ngjaem* > yán ‘stern, majestic’
*K(r)om	*Kjom*	[2]	欠 *[k]^{h}(r)om-s > *khjomH* > qiàn ‘yawn’
*Kem	*Kjiem*	[3]	厭 *ʔem > “*jiem* > yān ‘contented (adj.)’
*Krem	*Kjem*	[4]	鉗 *C.[g]<r>[e]m > *gjem* > qián ‘pincers’
*P(r)am	*Pjom*		[no clear examples]
*P(r)om		[5]	范 *[m-p^{h}](r)omʔ > *bjomX* > fàn ‘bee’
*Pem	*Pjiem?*	[3]	[no examples]
*Prem	*Pjem?*		貶 *pr[e]mʔ > *pjemX* > biǎn ‘diminish’
*Kw(r)am	*Kjem*	[6]	炎 *[ɢ]^{w}(r)am > *hjem* > yán ‘burn, blazing’
*C(r)am	*Cjem*		檐 *Cə.ɢam > *yem* > yán ‘eaves’
*C(r)em		[7]	占 *tem > *tsyem* > zhān ‘prognosticate’
*C(r)om		[2]	淹 *ʔ(r)om > *‘jem* > yān ‘submerge, soak’

Notes on Table 5.101:

[1] We reconstruct *-om in 贛 gàn < *komH* because of its contacts with *-oŋ, presumably reflecting a dialect that changed final labials to velars:

(1175) 贛 *[k]^{ʂ}om-s > *komH* > gàn ‘the Gàn river in Jiāngxī’

(1176) 贛 ~ 貢 *[k]^{ʂ}om-s > *[k]^{ʂ}oŋ-s > *kuwngH* > gòng ‘tribute; to present’

In its current form, 贛 ~ 貢 has the phonetic 工 gōng < *kuwng* < *k^{ʂ}oŋ ‘officer’, but this is a late addition due in part to graphic confusion; the earliest form of the character consists of 章 zhāng (representing 璋 zhāng ‘(jade) insignium’) and 丌 jǐ (a person with

both arms extended), as in this form (from the Western Zhōu vessel Gēng Yíng dǐng 庚嬴鼎):[117]

(1177) 

Chén Jiàn (2007) describes in detail how later forms of the character came to be written with the phonetic 欠 *[k]ʰ(r)om-s > *khjomH* > qiàn 'yawn' and eventually with 工 gōng < *kuwng* < *kˤoŋ 'officer', but the forms with 工 gōng are quite late. The association of 贛 ~ 貢 'present (v.)' with the ceremonies of the Western Zhōu court may have something to do with its pronunciation as *kuwngH* < *[k]ˤoŋ-s, with the substitution of *-ŋ for original *-m that appears to be a western dialect feature. The preservation of *-m in 贛 *[k]ˤom-s > *komH* > gàn, the name of the river in Jiāngxī, may be a clue to the region where *-om was preserved.

[2] 欠 qiàn < *khjomH* 'yawn, 舀 xiàn < *heamH* 'small pit', and 奄 yǎn < *ʔjemX* 'cover' are all among the phonetic elements Dǒng Tónghé reconstructed with *-ɐm because of their connections to both MC *-om* and MC *-jem* (see the discussion above, and Dǒng Tónghé 1948:108–109). The words in (1178) are probably all related:

(1178) 欠 *[k]ʰ(r)om-s > *khjomH* > qiàn 'yawn'
坎 *[k]ʰˤomʔ > *khomX* > kǎn 'pit'
舀 *[ɢ]ˤromʔ-s > *heamH* > xiàn 'small pit'
陷 *[ɢ]ˤromʔ-s > *heamH* > xiàn 'fall into a pit'

[3] Apart from a few problematic cases, the division-IV chóngniǔ final *-jiem* basically occurs only with the initial ʔ- (影 Yǐng), as with the other division-IV chóngniǔ finals with labial codas.

[4] In spite of its phonetic element 甘 *[k]ˤ[a]m > *kam* > gān 'sweet', 鉗 qián < *gjem* 'pincers' may have *-em if it is historically related to 挾 *m-kˤep > *hep* > xié 'grasp' and other related forms:

(1179) 挾 *m-kˤep > *hep* > xié 'grasp'
夾 *kˤ<r>ep > *keap* > jiā 'press between'
挾 *S-kˤep > *tsep* > xié 'grasp'
狹 *N-kˤ<r>ep > *heap* > xiá 'narrow'

[5] 范 *[m-pʰ](r)omʔ > *bjomX* > fàn 'bee' is probably a dialect variant of 蜂 *pʰ(r)oŋ > *phjowng* > fēng 'bee'.

[6] We must reconstruct initial *[ɢ]ʷ- in 炎 *[ɢ]ʷ(r)am > *hjem* > yán 'burn, blazing' to account for the MC initial *hj-*; recall that 炎 yán is phonetic in 熊 *C.[ɢ]ʷ(r)əm > *hjuwng* > xióng 'bear (n.)', which also requires initial *[ɢ]ʷ- to account for the dissimilation of the coda, *-m > *-ŋ. Note that 炎 yán is used for both *[ɢ]ʷ(r)am and *C.[ɢ]ʷ(r)əm, even though the vowels are different: an example of a faute-de-mieux phonetic in a part of the phonological space where precise phonetic elements are difficult to find.

[7] The phonetic element 占 zhān < *tem can be taken as a reliable indicator that the rhyme is either *-em or *-ep:

(1180) 占 *tem > *tsyem* > zhān ‘prognosticate’
點 *tˁemʔ > *temX* > diǎn ‘black spot’
苫 *s.tem > *syem* > shān ‘thatch’
怗 *[tʰ]ˁep > *thep* > tiē ‘submit, peaceful’

This concludes our discussion of the rhymes of Old Chinese.

{ 6 }

Conclusion

6.1 What kind of language was Old Chinese?

It would be naïve to attempt to discuss the question of what kind of language Old Chinese was without considering the historical context in which the question has been asked. In the European intellectual world, both China itself and the nature of the Chinese language have been topics of intense interest for several centuries. The persistence of certain Chinese institutions over several thousand years led some European observers to conclude that unlike the part of the globe they themselves inhabited, China had changed very little. In his *Philosophy of History*, Hegel wrote that, for reasons that seem rather abstract, both China and India were "outside the World's history":

> With the Empire of China History has to begin, for it is the oldest, as far as history gives us any information; and its *principle* has such substantiality, that for the empire in question it is at once the oldest and the newest. Early do we see China advancing to the condition in which it is found at this day; for as the contrast between objective existence and subjective freedom of movement in it, is still wanting, every change is excluded, and the fixedness of a character which recurs perpetually, takes the place of what we should call the truly historical. China and India lie, as it were, still outside the World's History, as the mere presupposition of elements whose combination must be waited for to constitute their vital progress. (Hegel 1899:116; emphasis in the original)

Chinese is often said to be the human language that has been in continuous use for the longest time. Of course, if we are referring to spoken languages, this is largely a matter of terminology: we use different names for Vedic Sanskrit and Hindi, even though their relationship is comparable to the relationship between Old Chinese and modern standard Chinese. But as far as scripts are concerned, the Chinese script probably is the oldest one in continuous use, having been in existence since at least the thirteenth century BCE (thus predating the Phoenician alphabet); and early European observers had no reason to believe that it had changed much over the previous two or three millennia either. Given the common failure to distinguish written language from spoken language, it was easy to draw the conclusion that Old Chinese was just like modern Chinese, only older.

Ideas about the early Chinese language have also been affected by nineteenth-century European views about the nature of language differences. When modern linguistics was beginning to develop in the nineteenth century, it was commonly assumed that human languages would fall into a small number of radically different structural types, just as the then newly fashionable science of comparative anatomy divided animals into vertebrata, mollusca, articulata, and radiata on the basis of their internal structure (see Baxter 2002 for discussion of this connection). The attempt to classify languages in an analogous manner focused on the ways morphemes were combined into larger expressions. There were many competing proposals, but August Wilhelm von Schlegel (1818:14), for example, divided languages into three types: (1) those with no grammar at all (such as Chinese); (2) those that add affixes mechanically to roots, without modification; and (3) inflected languages, whose elements are combined "organically," undergoing internal changes, rather than mechanically. The Indo-European languages were assigned to this third group, which (unsurprisingly) was considered the most advanced. Different language families were thought to be associated with different types of linguistic structure (like the differences in structure among different groups in the animal kingdom), which in turn were often assumed to correspond to the specific mentalities of the nations or "races" that used them.

Furthermore, in the nineteenth century it was still widely believed that the Earth was no more than a few thousand years old; so it seemed plausible that language had evolved rather recently, and perhaps differently in different "races." Attempts were made to assess the degree of evolutionary development of particular languages, and it was common to imagine that Chinese, whatever its other virtues might be, had a primitive structure, close to what the earliest stages of human language might have been like. Since it was believed to have the monosyllabic structure that was characteristic of the earliest forms of human speech, it followed that it must have changed very little over time. Thus William Dwight Whitney could still write, in 1867 (with curious echoes of Hegel):

> Portions of the Chinese literature, it is true, are nearly or quite as old as anything Indo-European, and the Chinese language . . . is in some respects more primitive in its structure than any other human tongue; but what it was at the beginning, that it has ever since remained, a solitary example of a language almost destitute of a history. (1867:233–234)

> One tongue, the Chinese . . . has never advanced out of its primitive monosyllabic stage; its words remain even to the present day simple radical syllables, closely resembling the Indo-European roots, formless, not in themselves parts of speech, but made such only by their combination into sentences. . . . Yet this scanty and crippled language has served all the needs of a highly cultivated and literary people for thousands of years. (1867:257)

> Not very much requires to be said in explanation of the structure and history of a language so simple—a language which might be said to have no grammatical

> structure, which possesses neither inflections nor parts of speech, and which has changed less in four thousand years than most others in four hundred, or than many another in a single century. (1867:334)

It is unusual nowadays to hear these ideas expressed so clearly, but one still encounters the idea that Chinese is somehow deeply different from European languages in a way that is intimately connected with the differences between "Eastern" and "Western" thought.

Although the influence of these ideas from nineteenth-century linguistics can still be detected in sinological discourse, the situation within linguistics has changed. Modern linguists generally regard the human language faculty as a biological adaptation of our species, which does not vary significantly from one human group to another. We now know that the different morphological patterns that were once thought to define essentially different types of languages can change dramatically over time, even within a single language family.

Consequently, apart from what may be common to all human languages, the members of a language family do not necessarily have anything in common other than their common ancestor, and typological similarity is no longer regarded as evidence of a family relationship. Thus there is no such thing as Indo-European or Sino-Tibetan language structure.[1] The Sino-Tibetan family, once thought to be characterized by tonality and "isolating" structure, includes both tonal and nontonal languages, and languages with and without elaborate inflection. Within Indo-European, there are also tonal languages, and English itself has lost most of its inflections and moved in the direction of a morphological structure more like that of modern Chinese. Consequently, we have no reason to assume that any ancient language was typologically similar to the modern languages descended from it.

Moreover, human language as a biological adaptation is now believed to be at least tens of thousands of years old, not a recent cultural invention, as was widely believed in the nineteenth century. So there is no reason to think that the ancient languages we can reconstruct were essentially different from or more primitive than modern languages in any structural sense or that the kinds of changes that affected them were significantly different from the changes that affect languages today.

With these considerations in mind, how can we characterize Old Chinese? We can begin by saying that it had almost none of the features that are typically thought of as characteristic of Chinese.

It was not tonal. Tones developed after the Old Chinese period, when consonants were lost and the accompanying pitch differences became phonologically distinctive: loss of final glottal stop produced shǎngshēng, and the loss of final -[h] (from earlier *-s) produced qùshēng. There are in fact dialects in which the consonantal elements [ʔ] and [h] are still present (e.g., Xiàoyì 孝義, in Shānxī province; see Sagart 1999b:132 and Guō Jiànróng 1989).

It was not monosyllabic. Evidence from modern dialects and early loans requires us to reconstruct word-initial minor syllables in many cases. Tightly attached preinitial consonants must be reconstructed to account for cases like (1181):

(1181) 牀 *k.dzraŋ > *dzrjang* > chuáng ‘bed’, pMǐn *dzh-; Proto-Vietic *k-ɟəːŋ ‘bed’, Chứt [Sách, Rục] /kəciːŋ²/, Maleng [Brô] /kacɨəŋ/; Maleng [Kha Pong] kəciːŋ², Vietnamese *giường* [zɯʌŋ A2]

Loosely attached presyllables are reconstructed to account for cases where both Mǐn and Vietnamese show intervocalic lenition, as in (1182):

(1182) 脰 *kə.dˤok-s > *duwH* > dòu ‘neck’, pMǐn *-d-; Proto-Vietic *k-ɗɔːk ‘nape of the neck’, Rục kadɔ́k, VN *dọc* [zɔk D2] ‘stem of a plant or pipe’

In some cases, the presyllabic material may be a synchronic prefix in Old Chinese or may have been a prefix at some earlier stage of the language, but we have no reason to doubt that in some cases it could be part of the root. One possible explanation for the existence of such complex initial consonant clusters is that they could arise through the reduction of the first syllable of what was originally a full disyllabic word. An example of such a process is found in Moroccan Arabic, where originally disyllabic verb forms have lost their first vowel, producing complex clusters (Harrell 1966):

(1183)

Modern Standard Arabic	Moroccan Arabic
jabal ‘mountain’	žbəl
katab ‘he wrote’	ktəb
namir ‘tiger’	nmər
taqīl ‘heavy’	tqil
baʕid ‘distant’	bʕid

Although rather unlike that of modern Chinese, the word structure we reconstruct for Old Chinese is similar to that found in the native vocabulary of modern Khmer (excluding polysyllabic loanwords): both monosyllabic words and words with minor presyllables, and considerable derivational morphology. (Of course, this does not imply that Chinese and Khmer are genetically related, for the reasons outlined above.)

6.2 Dialect differences in Old Chinese

It is to be expected that there was considerable dialect diversity during the Old Chinese period. We have made some progress in identifying a number of Old Chinese dialect features and locating them geographically:

1. The coda *-r became *-j in dialects in and near the Shāndōng peninsula (see section 5.5.1.4). Traces of this development can be seen in the Chǔ-Qú and Mǐn dialects, which in a number of words have final [i] corresponding to MC *-n*.

2. Initial *l̥(ˁ)- and *n̥(ˁ)- changed to [tʰ] in coastal areas but into [x] or [h] in areas more to the west; there was a similar split development of *ɾ̥(ˁ)- (see section 4.3.5).
3. Treatment of presyllables varied significantly from dialect to dialect. The Mǐn dialects appear to reflect a variety where preinitial obstruents were lost before obstruent initials:

(1184) 書 *s-ta > *syo* > shū 'write'; pMǐn *tšy A (as if from OC *ta)

But obstruent preinitials before resonant initials led to different reflexes in Mǐn and Hakka, while in the dialects represented in the Middle Chinese written sources, and in most modern dialects, such obstruent preinitials were simply dropped (see section 4.4.4.4):

(1185) 鹵 *rˁaʔ > *luX* > lǔ 'salty (sc. land)', pMǐn *l-, Méixiàn (Hakka) /lu 1/
老 *C.rˁuʔ > *lawX* > lǎo 'old', pMǐn *lh-, Méixiàn /lau 3/

The rich commentarial literature on early texts and the Middle Chinese written sources probably contain additional clues that may make it possible to further refine our hypotheses about early dialect differences.

6.3 Known issues

By taking account of a larger range of evidence than previous reconstructions, we believe that we have made progress toward a more adequate reconstruction of Old Chinese. However, we are aware that unresolved issues remain. Here we summarize some of these issues and sketch what we consider to be promising directions for future research.

6.3.1 *-a VS. *-A, *-ak VS. *-Ak, *-aj VS. *-Aj

In the Middle Chinese reflexes of *-a, *-aj, and *-ak, there are contrasts that we are not yet able to account for: after acute onsets, from *-a we sometimes have *-jo* and sometimes *-jae* (section 5.4.1.1); from *-ak we sometimes have *-jak* and sometimes *-jek* (section 5.4.1.2); and from *-aj we sometimes have *-je* and sometimes *-jae* (section 5.5.2.1). We use ad hoc notations to mark these distinctions, but they simply identify the problem and do not solve it. In the case of *-a, we have contrasts such as these:

(1186) *-a > *-jo*: 諸 *ta > *tsyo* > zhū 'many'
*-A > *-jae*: 者 *tAʔ > *tsyaeX* > zhě '(nominalizing particle)'

In the case of *-ak, we have contrasts such as these:

(1187) *-ak > *-jak*: 斫 *tak > *tsyak* > zhuó 'cut, hack'
*-Ak > *-jek*: 尺 *tʰAk > *tsyhek* > chǐ 'foot (measure)'

In the case of *-aj, we have contrasts such as these:

(1188) *-aj > *-je:* 移 *laj > *ye* > yí ‘move (v.)’
*-Aj > *-jae:* 哆 *[t-l̥]Aj? > *tsyhaeX* > chǐ ‘large’ (also read *[t-l̥]aj? > *tsyheX* > chǐ ‘large’)

The explanation might have to do with dialect differences or prosodic factors; another possibility is that in some cases the development of the rhyme might be influenced by the preinitial. For now, it should simply be emphasized that our *A is not a seventh vowel: it is an explicitly ad hoc notation to flag some unsolved problems.

6.3.2 *s- VS. *S-

Similarly, in a small number of cases, a preinitial *s seems to have metathesized with a following stop to form an affricate, when we would expect a different reflex. In such cases we use a capital *S- as an ad hoc notation to mark the irregularity:

(1189) 甑 *S-təŋ-s > *tsingH* > zèng ‘boiler for steaming rice’, pHM *tsjɛŋH; probably from the same root as
烝 *təŋ > *tsying* > zhēng ‘to rise (of steam); steam (v.t.)’

The usual reflexes are *s.t- > *sy-*:

(1190) 羶 *s.tan > *syen* > shān ‘smell of sheep’; the phonetic is
亶 *tʕan? > *tanX* > dǎn ‘sincere, truly’

In these cases, too, we cannot explain the contrast. It is possible that there really were two kinds of preinitial *s-; or perhaps the difference between *s.C- and *sə.C- is involved.

6.3.3 UNEXPLAINED PHONOLOGICAL GAPS

There are some word or syllable structures that we have found no reason to reconstruct but that may well have existed: for example, we have reconstructed no cases of *sə. before voiceless stops or before nasals. Hypotheses about these missing structures might provide solutions to other problems (such as the problem of *s.- vs. *S.- just discussed).

6.3.4 UNKNOWN FUNCTIONS OF THE *-s SUFFIX

We have provisionally assumed that all cases of the postcoda *-s are morphologically suffixes, and we have reconstructed several well-supported functions for such a suffix, including (1) deriving nouns from verbs, (2) deriving outwardly directed verbs from stative verbs or adjectives, and (3) deriving verbs from nouns (see section 3.3.2.7). However, there are still many attested cases of *-s that are not covered by these explanations. It is quite likely that some of the original morphology of Old Chinese has

become obscured in the reading tradition, so that we cannot always rely on our Middle Chinese sources to tell us which forms had *-s and which did not. However, the question deserves further research.

6.4 General directions for future research

More generally, further and more precise research is needed on each of the kinds of evidence for reconstructing Old Chinese outlined in Chapter 2. This is true of the traditional trio of Middle Chinese, Old Chinese rhymes, and graphic evidence, and even more so for evidence from previously neglected sources such as new paleographical discoveries, modern dialects, and early Chinese loanwords in other languages.

Although much attention has been devoted to the written sources for Middle Chinese, it has not always been clear what questions we should be trying to answer when examining them. Now that it is well established that the *Qièyùn* system was not a single dialect, it would be useful to investigate more thoroughly the dialect diversity represented in our sources and to try to connect it with what can be learned from direct research on modern dialects. Our revised reconstruction suggests a number of research questions to be pursued, such as the geographical distribution of the different reflexes of the coda *-r, or of the different treatments of preinitials.

So far, the study of Old Chinese rhymes has focused mostly on the *Shījīng*, which is the largest single corpus of early rhymes, but there are rhymed passages scattered throughout early texts that are also worthy of study. By using hypotheses about phonological changes and dialect distinctions within the Old Chinese period, it might be possible to locate texts more accurately in space and time based on the characteristics of their rhymes—or to revise and correct our hypotheses.

Although in principle we have preferred to use evidence from the pre-Qín script rather than the standard script in developing our reconstruction, the number of available early documents is steadily increasing, and making full use of them for linguistic reconstruction will require much time and effort from many people. Here we have tried to indicate the kind of research that is needed, but much more remains to be done. We are confident that our reconstruction is a more effective tool for paleography than the traditional approach now widely used, but additional research is needed to demonstrate this and to test and possibly correct our hypotheses.

In particular, it would be useful to know with more precision the spatial and temporal origins of changes in the pre-Qín script. We have made explicit hypotheses about sound changes that took place during this period and have argued that these changes can explain certain changes in the script—such as the replacement of 昏 hūn by 門 mén as a phonetic element for writing {聞} wén ‘to hear’ (see section 3.4). One way of testing and improving hypotheses like this is to systematically investigate when and where words came to be written in new ways; this should clarify the chronology and geography of linguistic changes during the pre-Qín period, which in turn should make it easier to locate particular texts in place and time based on internal evidence.

We believe that we have demonstrated the necessity of using data from modern dialects, not just the Middle Chinese of the *Qièyùn* system, in reconstructing Old Chinese. There is now much better documentation of the Mǐn dialects than in the past, and although we have relied on Norman's reconstructions, additional precise historical work on these dialects is needed in order to make full use of the evidence they provide. No adequate Old Chinese reconstruction can ignore the phenomenon of softened initials in Northern Mǐn, for example, but some of the cases where softened initials correspond to Middle Chinese voiced initials do appear to be of secondary origin (see section 4.2.1.1). There is still more work to be done on reconstructing both the onsets and the finals of Proto-Mǐn in order to properly sort out the historical layers of vocabulary in these dialects. Also, for reconstructing Old Chinese vocabulary, it is not enough to know that such-and-such a distinction existed in Proto-Mǐn; we also need to reconstruct as many individual words as possible that illustrate the distinction.

It is now also clear that not just the Mǐn dialects but also Hakka, Wǎxiāng, and the Chǔ-Qú 處衢 dialects of southern Zhèjiāng preserve features lost in Middle Chinese, and other dialects can probably be added to the list. All these should be thoroughly researched from a historical point of view.

Finally, there is much more to learn about early Chinese loan words in other languages and probably loans into Chinese from those languages as well. Important historical work on the history of Kra-Dai, Vietic, and Hmong-Mien is now underway, which should make it possible to improve our reconstructions in the future.

It is largely evidence of the kinds just mentioned that has led to the main innovations in our new reconstruction of Old Chinese, which mostly involve a more complex system of presyllabic elements. The reconstruction of rhymes has remained fairly stable since Baxter (1992), apart from the addition of the coda *-r and the revised reconstructions of individual items. By contrast, our hypotheses about presyllables are based in many cases on still incomplete data and analysis, and although we are confident that we have made progress, we expect that this part of our reconstruction will be most likely to require modification as research continues in the future. As we argued earlier (section 1.2.1), linguistic reconstruction is a continuing process, and our reconstructions are a basis for further research rather than a final result.

6.5 Old Chinese in broad comparative context

In elaborating our reconstruction of Old Chinese, we have been careful not to base our inferences on facts from the Tibeto-Burman languages, not because we think they are not related to Chinese—we do accept that Sino-Tibetan is a valid grouping—but as a methodological choice: if Chinese and Tibeto-Burman are the two primary branches of the Sino-Tibetan family, as some authors believe, it is preferable that reconstruction of the ancestral language be based on wholly independent reconstructions of Old Chinese and Proto-Tibeto-Burman.

Our new reconstruction at times brings Old Chinese words closer to existing Tibeto-Burman forms: the word 'fly (n.)', our 蠅 *m-rəŋ (see section 4.4.2.4), is now closer to Written Tibetan *sbrang* (perhaps < *s-mrang) than in any other previous reconstructions of this word. Our reconstruction does, however, sometimes move some Old Chinese words away from existing Tibeto-Burman reconstructions: in 水 'water', our *s.turʔ, final *-r appears to move Old Chinese away from Proto-Tibeto-Burman *twij 'water' (Benedict 1972), Proto-Sino-Tibetan *tujH 'water' (Peiros and Starostin 1996 2.146). It does, however, lead to more regular sound correspondences. Consider the word 川 *t.l̥u[n] > *tsyhwen* > chuān 'stream, river', where the final consonant is placed between brackets because it is ambiguous for OC *-n and *-r: supposing the coda was *-r, the main syllable in this form can be compared with Benedict's Proto-Tibeto-Burman reconstruction *lwi(y) 'flow; stream' with the same rhyme correspondence: Proto-Tibeto-Burman (PTB) *-wij: OC *-ur, as 'water'. Similarly for 'egg', Benedict's Proto-Tibeto-Burman *twiy: the main early word for 'egg' in Chinese, 卵 *k.rˤorʔ > *lwanX* > luǎn 'egg', is unrelated to the Tibeto-Burman word, but there is a vulgar word for 'egg', also used for 'testicles' in southern Chinese dialects: Cantonese /tʃʰœn 1/ 'egg', Hakka /tʃʰun 1/ 'eggs of birds, reptiles; roe of fish'. This is derivable from an OC *tʰu[n] (where [n] is ambiguous between *r and *n). Assuming, again, that the Old Chinese coda was *-r, this word matches Proto-Tibeto-Burman (PTB) *twij by the same rhyme correspondence as that for 'stream' and 'water':

The data in Table 6.1 suggest that the Proto-Sino-Tibetan words ended in some kind of rhotic sound, which went to [j] word-finally in Proto-Tibeto-Burman. The words for 'water' and 'egg' have different tones in some Tibeto-Burman languages: for instance Boro /²dōy/ 'water, river' versus /¹dōy/ 'egg' (Bhattacharya 1977:280, 288), Mizo (Lushai) /tui 35/ 'water' versus /tui 55/ 'egg' (Matisoff 2003:195). It is possible that some of these tonal contrasts, not taken into account in existing reconstructions of Proto-Tibeto-Burman, might originate in the presence or absence of the glottal stop inherited by Old Chinese. Compare the Chinese and Proto-Bodo-Garo forms (from Joseph and Burling 2006) in Table 6.2. The Proto-Bodo-Garo tone 2 comes from final -ʔ, still present in Garo, according to Joseph and Burling (2006:101).

Many comparative questions remain without an answer: What are *s. and *t. in the Chinese forms for 'water' and 'stream'? Why is initial *l̥- voiceless in the Chinese word for 'stream'? Why is the initial stop unaspirated in the Chinese word for 'water' but aspirated in 'egg'? We expect that progress in Tibeto-Burman reconstruction will eventually bring some answers; we do not exclude that other answers might come from comparison of Sino-Tibetan with other language groups of the region.

TABLE 6.1 Correspondence between PTB *-wij (Benedict) and OC *-ur (Baxter-Sagart)

	PTB *-wij (Benedict)	OC *-ur (Baxter-Sagart)
water	*twij	*s.turʔ
egg	*twij	*tʰu[n] (< *-urʔ)
stream	*lwi(j)	*t.l̥u[n] (< *-urʔ)

TABLE 6.2 Correspondence between OC *-ʔ and Proto-Bodo-Garo tone 2

Old Chinese	Proto-Bodo-Garo (Joseph and Burling)
以 *ləʔ > yiX > yǐ ‘take, use’	*la 2 ‘take, have’
負 *[b]əʔ > bjuwX > fù ‘carry on the back’	*ba 2 ‘carry a child’

Although we have avoided using data from outside Chinese to test hypotheses about Old Chinese, it is still true that an improved understanding of related languages should eventually give us a better understanding of Old Chinese as well. An example from Proto-Germanic may serve as a parallel. Some Proto-Germanic roots showed alternations between *s and *z (surviving in English in *was* vs. *were* or *lose* vs. (*for)lorn*, with /r/ from earlier *z) or between *þ and *đ (surviving in English *seethe* and its old past participle *sodden*). These alternations can be reconstructed for Proto-Germanic, but to understand their origin we must look at related languages within the larger Indo-European family; then we see that they result from differences in placement of the Proto-Indo-European accent (the pattern known as Verner’s law). This broader perspective does not necessarily change our reconstruction of Proto-Germanic, but it gives us a better understanding of it. Similarly, we expect that some phenomena of Old Chinese will not be fully understood until the history of the larger Sino-Tibetan family is clarified. More broadly, phenomena that are puzzling from a Sino-Tibetan point of view may become clearer when examined in a still broader comparative context.

In closing, we hope that, apart from the light thrown on the history of Chinese proper, our reconstruction will help clarify some aspects of the Sino-Tibetan family’s history: in particular, that it will facilitate the search for early Sino-Tibetan innovations. This, we believe, is essential to resolving the family’s structure and a prerequisite to successful reconstruction of the protolanguage.

Appendix of reconstructed forms

The list below includes all and only the words reconstructed in this book; a more comprehensive set of reconstructions (updated as new evidence becomes available) is available at http://ocbaxtersagart.lsait.lsa.umich.edu/. Words are listed in alphabetical order by modern pronunciation in pīnyīn romanization, then by Middle Chinese transcription. Modern Mandarin pronunciations are based on *Hànyǔ dà zìdiǎn* and do not always match the pronunciations that would be predicted on the basis of Middle Chinese. The English glosses are for identification only and are not intended as definitive semantic reconstructions.

哀 āi	*'oj* < *ʔˤəj ‘to pity; sad’: 285
艾 ài	*ngajH* < *C.ŋˤa[t]-s ‘Artemisia; moxa’: 92, 272
安 ān	*'an* < *[ʔ]ˤa[n] ‘peace(ful)’: 263–264; see also Ānxī < *'an.sik*
安息 Ānxī	*'an.sik* < W. Hàn *[ʔ]ˤa[n].sək ‘Ānxī: ‘Iranian country in the western regions’ (from Aršaka = Arsaces, founder of the Arsacid dynasty): 263–264; see also ān < *'an* ‘peace(ful)’
暗 àn	*'omH* < *qˤum-s ‘dark’: 310
卬 áng	*ngang* < *[k.ŋ]ˤaŋ ‘high; lift high’: 57, 163, 215
盎 àng	*'angH* < *ʔˤaŋ-s ‘basin; (tublike:) swollen’: 100
媪 ǎo	*'awX* < *ʔˤuʔ ‘old woman’: 102, 246
豝 bā	*pae* < *pˤra ‘sow, pig’: 51, 223
八 bā	*peat* < *pˤr[e]t ‘eight’: 214, 275
拔 bá	*beat* < *bˤ<r>ot ‘uproot’: 280, 281, 400n78; see also bèi < *bajH*
胈 bá	*pat* < *pˤot ‘small hairs on body; roots of grass’: 280
罷 bà	*beaX* < *[b]ˤrajʔ ‘stop, cease’: 269
白 bái	*baek* < *bˤrak ‘white’: 17, 65, 72, 108
柏 bǎi	*paek* < *pˤrak ‘cypress’: 65

百 bǎi *paek* < *pˢrak ‘hundred’: 65, 225
稗 bài *beaH* < *C.[b]ˢre-s ‘weed resembling grain’: 232
敗 bài *baejH* < *N-pˢra[t]-s ‘suffer defeat’; see also bài < *paejH*: 11, 54, 117, 118
敗 bài *paejH* < *pˢra[t]-s ‘defeat (v.t.)’; see also bài < *baejH*: 11, 54, 117, 118
拜 bài *peajH* < *C.pˢro[t]-s ‘bow, bend (v.)’: 281
班 bān *paen* < *pˢ<r>an ‘divide, distribute’: 60
搬 bān *pan* < *Cə.pˢan ‘move’: 186
板 bǎn *paenX* < *C.pˢranʔ ‘plank, board’: 53, 168, 274
板 bǎn *paenX* < *pˢranʔ ‘perverse’: 259
辦 bàn *beanH* < *[b]ˢren-s ‘manage, deal with’: 277
半 bàn *panH* < *pˢan-s ‘half’: 60, 61, 274
邦 bāng *paewng* < *pˢroŋ ‘country’: 215, 244
包 bāo *paew* < *pˢ<r>u ‘wrap, bundle’: 55, 124, 247
雹 báo *baewk* < *C.[b]ˢruk ‘hail (n.)’: 88, 249
抱 bào *bawX* < *[m-p]ˢuʔ ‘carry in the arms’: 124
寶 bǎo *pawX* < *pˢuʔ ‘precious thing’: 247
暴 bào *bawH* < *[b]ˢawk-s ‘violent’: 297; see also pù < *buwk*
悲 bēi *pij* < *prəj ‘sad’: 285
碑 bēi *pje* < *pre ‘stele; upright pole of stone or wood’: 17, 19, 216, 231, 232
卑 bēi *pjie* < *pe ‘low, humble’: 17, 19, 216, 231, 232; see also Xiānbēi < *sjen.pjie*
北 běi *pok* < *pˢək ‘north’: 230
拔 bèi *bajH* < *bˢot-s ‘thinned out (forest)’: 273, 281; see also bá < *beat*
備 bèi *bijH* < *[b]rək-s ‘complete (adj.)’: 228
被 bèi *bjeX* < *m-pʰ(r)ajʔ ‘coverlet’: 88
背 bèi *bwojH* < *m-pˢək-s ‘turn the back on’: 55; see also bèi < *pwojH*
背 bèi *pwojH* < *pˢək-s ‘the back’: 55, 230; see also bèi < *bwojH*
奔 bēn *pwon* < *pˢur ‘run (v.)’: 255, 295
賁 bēn *pwon* < *pˢur ‘ardent, brave’: 255; see also bì < *pjeH*, fén < *bjun*
本 běn *pwonX* < *C.pˢə[n]ʔ ‘tree trunk’ 17, 168
崩 bēng *pong* < *Cə.pˢəŋ ‘collapse (v., of a mountain)’: 86, 89, 186, 231
祊 bēng *paeng* < *pˢraŋ ‘side of the temple gate; sacrifice there’: 143
繃 bēng *peang* < *pˢrəŋ ‘to bind around’: 231
埲 běng *puwngX* < *pˢoŋʔ ‘scabbard ornament’: 244
迸 bèng *peangH* < *pˢreŋ-s ‘drive out’: 235
逼 bī *pik* < *prək ‘urge, press’: 228, 230
鼻 bí *bjijH* < *Cə-bi[t]-s ‘smell (v.t.)’: 132, 188

鼻 bí — *bjijH* < *m-bi[t]-s ‘nose’: 89, 95, 132, 142, 188, 393n4
鄙 bǐ — *pijX* < *prəʔ ‘border town’: 229
筆 bǐ — *pit* < *p.[r]ut (dialect: *p.r- > *pr-) ‘writing brush’: 42, 43, 89, 162, 294
彼 bǐ — *pjeX* < *pajʔ ‘that’: 65
比 bǐ — *pjijX* < *C.pijʔ ‘compare’: 289, 290
髀 bì — *bejX* < *m-pˁeʔ ‘femur’: 55, 232; see also bì < *pjieX*
髀 bì — *pjieX* < *peʔ ‘femur, haunch’: 55; see also bì < *bejX*
苾 bì — *bet* < *[b]ˁi[t] ‘fragrant’: 290
辟 bì — *bjiek* < *[N]-pek ‘law, rule; lawful’: 233
庳 bì — *bjieX* < *N-peʔ ‘low, short’: 117
壁 bì — *pek* < *C.pˁek ‘house wall’: 168, 233
碧 bì — *pjaek* < *prak ‘light blue’: 225
賁 bì — *pjeH* < *por-s ‘ornate (name of a hexagram)’: 259, 295; see also bēn < *pwon*, fén < *bjun*
蔽 bì — *pjiejH* < *pe[t]-s ‘cover (v.)’: 276, 277
畀 bì — *pjijH* < *pi[t]-s ‘give’: 142, 390n65
必 bì — *pjit* < *pi[t] ‘necessarily’: 290
邊 biān — *pen* < *pˁe[n] ‘side’ 100, 277
鞭 biān — *pjien* < *pe[n] ‘whip (n.)’ 277, 388n52
扁 biǎn — *penX* < *pˁe[r]ʔ ‘flat and thin’: 278
貶 biǎn — *pjemX* < *pr[e]mʔ ‘diminish’: 313, 403n111
弁 biàn — *bjenH* < *C.[b]ro[n]-s ‘cap’: 204–205, 209
辨 biàn — *bjenX* < *[b]renʔ ‘distinguish’: 277
便 biàn — *bjienH* < *[b]e[n]-s ‘comfortable; advantageous’: 204–205
諞 biàn — *bjienX* < *[m-pʰ]e[r]ʔ ‘insincere words’: 278; see also pián < *bjien*
變 biàn — *pjenH* < *pro[n]-s ‘change (v.)’ 208–209, 217, 252, 282, 394n13, 395n17
髟 biāo — *pjiw* < *p(r)iw ‘long hair’: 300
表 biǎo — *pjewX* < *p(r)awʔ ‘exterior’: 218, 296
別 bié — *bjet* < *N-pret ‘be separated (intr.)’: 88, 116–117, 118, 275; see also bié < *pjet*
別 bié — *pjet* < *pret ‘separate (tr.)’: 116; see also bié < *bjet*
賓 bīn — *pjin* < *pi[n] ‘guest’: 196, 291
冰 bīng — *ping* < *p.rəŋ (dialect: *p.r- > *pr-) ‘ice’: 217, 396n27; see also líng < *ling*
丙 bǐng — *pjaengX* < *praŋʔ ‘third heavenly stem’: 17, 163, 217, 227
稟 bǐng — *pimX* < *p.rimʔ (dialect: *p.r- > *pr-) ‘receive’: 162
稟 bǐng — *pimX* < *p.rimʔ (dialect: *p.r- > *pr-) ‘rations’: 162; see also lǐn < *limX*

波 bō — *pa* < *p^{ʕ}aj ‘wave (n.)’: 197, 269, 381n10

剝 bō — *paewk* < *[p]^{ʕ}rok ~ *mə-p^{ʕ}rok ‘flay, peel’: 215, 243

撥 bō — *pat* < *p^{ʕ}at ‘spread out’: 271

泊 bó — *bak* < *[b]^{ʕ}ak ‘calm, still’: 65

伯 bó — *paek* < *p^{ʕ}rak ‘father’s elder brother’: 65

襮 bó — *powk* < *p^{ʕ}awk ‘embroidered collar’: 297

跛 bǒ — *paX* < *p^{ʕ}ajʔ ‘walk lame’: 65

擘 bò — *peak* < *p^{ʕ}rek ~ *mə-p^{ʕ}rek ‘cleave, split’: 233

番番 bōbō — *pa-pa* < *p^{ʕ}ar-p^{ʕ}ar ‘martial’: 256, 257; see also fān < *phjon*

卜 bǔ — *puwk* < *p^{ʕ}ok ‘divine (v.)’: 243, 244

補 bǔ — *puX* < *[Cə]-p^{ʕ}aʔ ‘to patch’: 95, 187, 382n27

步 bù — *buH* < *mə-b^{ʕ}a-s ‘step’: 88, 95, 178

不 bù — *pjuw* < *pə ‘not’: 53, 229; see also bùlǜ < *pjuw.lwit*

不律 bùlǜ — *pjuw.lwit* < *pə.[r]ut ‘writing brush (pronunciation in Wú 吳 ap. *Shuōwén*; E. Hàn)’: 43, 162; see also bù < *pjuw*, lǜ < *lwit*

才 cái — *dzoj* < *[dz]^{ʕ}ə ‘talent, ability’: 202–203

采 cǎi — *tshojX* < *s.r̥^{ʕ}əʔ ‘gather, pluck’: 21, 24

採 cǎi — *tshojX* < *s.r̥^{ʕ}əʔ ‘gather, pluck’: 150

彩 cǎi — *tshojX* < *s.r̥^{ʕ}əʔ ‘colorful’: 150

驂 cān — *tshom* < *m-s^{ʕ}rum ‘team of three horses’: 306–307

蠶 cán — *dzom* < *C.[dz]^{ʕ}[ə]m ‘silkworm’: 171

倉 cāng — *tshang* < *ts^{hʕ}aŋ ‘granary’: 55, 128

藏 cáng — *dzang* < *m-ts^{hʕ}aŋ ‘store (v.)’: 55, 128

草 cǎo — *tshawX* < *[ts^{h}]^{ʕ}uʔ ‘grass, plants’: 104, 246

參差 cēncī — *tsrhim.tsrhje* < *[ts^{h}r][u]m.ts^{h}raj ‘uneven’: 269, 400n74; see also shēn < *srim,* 差 chā < *tsrhae*, chāi < *tsrhea*

層 céng — *dzong* < *m-s-t^{ʕ}əŋ ‘additional floor, field’: 33, 55, 59, 382n19; see also céng < *dzong* ‘in two storeys, double’

層 céng — *dzong* < *N-s-t^{ʕ}əŋ ‘in two storeys, double’ 54, 59, 192; see also céng < *dzong* ‘additional floor, field’

差 chā — *tsrhae* < *ts^{h}raj ‘distinction; to select’ 74, 80, 266, 269, 270; see also chāi < *tsrhea*, 參差 cēncī < *tsrhim.tsrhje*

扱 chā — *tsrheap* < *tsrhjep* < *s-q^{h}r[ə]p ‘gather, collect’: 140; *Jīngdiǎn shìwén* also gives the readings *tsrhip*, *khip*, *xip*, and *ngip* (*JDSW* 118, 145)

臿 chā — *tsrheap* < *[ts^{h}]<r>op ‘pestle’: 306, 311, 313

察 chá — *tsrheat* < *[ts^{h}]^{ʕ}ret ‘examine’: 213, 275, 277, 311, 392n94

拆 chāi — *trhaek* < *q^{hʕ}<r>ak ‘take apart, dismantle’ (dialect: *q^{hʕ}r- > *r̥^{ʕ}- > *trh*-): 175

差 chāi — *tsrhea* < *[ts^{h}]raj ‘distinction; to select’ 74, 80, 266, 269, 270; see also chā < *tsrhae*, 參差 cēncī < *tsrhim.tsrhje*

豺 chái *dzreaj* < *[dz]ˢrə ‘wolf’: 229
儕 chái *dzreaj* < *[dz]ˢ<r>əj ‘category, equals’: 58, 213
孱 chán *dzrean* < *dzjren* < *[dz]r[a][n] ‘timid’: 274
單于 chányú *dzyen.hju* < W. Hàn *dar.ɦʷa (< OC *[d]ar + *ɢʷ(r)a) ‘Xiōngnú ruler’: 260, 399n66; see also 單 dān < *tan,* 于 yú < *hju*
產 chǎn *sreanX* < *s-ŋrarʔ ‘bear (v.), produce’: 18, 148, 391n76
腸 cháng *drjang* < *lraŋ ‘intestines’: 109, 110, 166, 173
嘗 cháng *dzyang* < *Cə.daŋ ‘taste (v.)’: 53, 188
鬯 chàng *trhjangH* < *tʰraŋ-s ‘aromatic spirits’: 80
唱 chàng *tsyhangH* < *mə-tʰaŋ-s ‘to lead (in singing)’: 178
朝 cháo *drjew* < *m-t<r>aw ‘(morning) audience at court’: 55, 296; see also zhāo < *trjew*
巢 cháo *dzraew* < *[dz]ˢraw ‘nest’: 296
車 chē *tsyhae* < *[t.qʰ](r)A ‘chariot’: 158, 224; see also jū < *kjo*
撤 chè *drjet* < *m-tʰret ‘remove, take away’: 128; see also chè < *trhjet*
坼 chè *trhaek* < *Nə-qʰˢ<r>ak ‘split (v.i.)’ (dialect: *qʰˢr- > *ʰˢ- > *trh-*): 175
撤 chè *trhjet* < *tʰret ‘remove, take away’: 128, 275; see also chè < *drjet*
塵 chén *drin* < *[d]rə[n] ‘dust (n.)’: 288
晨 chén *zyin* < *sə-[d]ər ‘part of Scorpio; morning’: 253, 399n58
陳 chén *drin* < *lri[n] ‘arrange’: 291
辰 chén *dzyin* < *[d]ər ‘fifth earthly branch’: 181, 255
瞠 chēng *trhaeng* < *tʰˢraŋ ‘stare’: 227
經 chēng *trhjeng* < *t-kʰreŋ ‘red’: 79, 159
稱 chēng *tsyhing* < *tʰəŋ ‘weigh; evaluate; call’: 55; see also chèng < *tsyhingH*
橙 chéng *dreang* < *[d]ˢrəŋ ‘citrus tree (*Shuōwén*)’: 231
澄 chéng *dring* < *[d]rəŋ ‘limpid, clear’: 231
程 chéng *drjeng* < *l<r>eŋ ‘rule, norm’: 164
塍 chéng *zying* < *m.ləŋ ‘raised path between fields’: 133, 382n19
騁 chěng *trhjengX* < *[ʱ]eŋʔ ‘gallop’: 167
稱 chèng *tsyhingH* < *mə-tʰəŋ-s ‘steelyard’: 55, 77, 95, 178; see also chēng < *tsyhing*
絺 chī *trhij* < *qʰrəj ‘fine cloth’ (dialect: *qʰr- > *ʱ- > *trh-*): 103
离 chī *trhje* < *ʱaj ‘mountain demon’: 116
鴟鴞 chīxiāo *tsyhij.xjew* < *tʰij.[ɢ]ʷ(r)aw ‘owl’: 296
坻 chí *drij* < *[d]rij ‘islet’: 289
遲 chí *drij* < *l<r>ə[j] ‘slow’: 109, 284–285, 401n91
池 chí *drje* < *Cə.lraj ‘pool (n.)’: 190
馳 chí *drje* < *[l]raj ‘gallop’: 269

哆 chǐ *tsyhaeX* < *[t-l̥]Aj ʔ ‘large’; see also chǐ < *tsyheX:* 270, 321
尺 chǐ *tsyhek* < *t^{h}Ak ‘foot (measure)’: 76, 104, 226, 320, 385n25
哆 chǐ *tsyheX* < *[t-l̥]aj ʔ ‘large’: 270, 321; see also chǐ < *tsyhaeX*
齒 chǐ *tsyhiX* < *t-[k^{h}]ə(ŋ)ʔ or *t-ŋ̊əʔ ‘front teeth’: 32, 48, 57, 79, 157–158
翅 chì *syeH* < *s-k^{h}e-s ‘wing’: 140
赤 chì *tsyhek* < *[t-q^{h}](r)Ak ‘red’: 103
沖 chōng *drjuwng* < *[d]ruŋ ‘sound of cutting ice’: 310
重 chóng *drjowng* < *[m]-troŋ ‘repeat; double’: 244; see also zhòng < *drjowngX*
蟲 chóng *drjuwng* < *C.lruŋ ‘insect’: 109, 172
崇 chóng *dzrjuwng* < *[dz]<r>uŋ ‘exalt, honor’: 250
寵 chǒng *trhjowngX* < *r̥oŋʔ ‘favor, grace’: 112
瘳 chōu *trhjuw* < *r̥iw ‘recover’: 115
綢 chóu *drjuw* < *[d]riw ‘bind round’: 300
愁 chóu *dzrjuw* < *[dz]riw ‘grieved’: 74, 300
杻 chǒu *trhjuwX* < *ŋ̊<r>uʔ ‘shackles, handcuffs’: 80
杽 chǒu *trhjuwX* < *ŋ̊<r>uʔ ‘shackles, handcuffs’: 407
臭 chòu *tsyhuwH* < *t-q^{h}u(ʔ)-s ‘odor, to stink (intransitive)?’: 57
初 chū *tsrhjo* < *[ts]^{h}ra ‘beginning’: 223
出 chū *tsyhwit* < *t-k^{h}ut ‘go or come out’: 56, 79, 158, 293, 294; see also chuì < *tsyhwijH*
除 chú *drjo* < *[l]<r>a ‘remove; get rid of’ 81, 109, 145–146, 390n69, 390n70
鉏 chú *dzrjo* < *s-[l]<r>a ‘hoe (n.)’: 145–146, 390n69
鋤 chú *dzrjo* < *s-[l]<r>a ‘hoe (n.)’ 81, 145–146, 390n69
芻 chú *tsrhju* < *[ts^{h}]ro ‘grass for fuel or fodder’: 242, 396n25
楚 chǔ *tsrhjoX* < *s.r̥aʔ ‘thorns’: 150
杵 chǔ *tsyhoX* < *t.q^{h}aʔ ‘pestle’: 79, 83, 128–129
處 chǔ *tsyhoX* < *t.q^{h}aʔ ‘be at’: 129, 138; see also chù < *tsyhoH*
畜 chù *trhjuwH* < *q^{h}<r>uk-s ‘domesticated animals’: 250; see also chù < *trhjuwk*, xù < *xjuwk*, xù < *xjuwH*
畜 chù *trhjuwk* < *q^{h}<r>uk ‘store (v.)’: 103, 249, 250; see also chù < *trhjuwH*, xù < *xjuwk,* xù < *xjuwH*
黜 chù *trhwit* < *t.k^{h}<r>ut ‘expel’: 294
處 chù *tsyhoH* < *t.q^{h}aʔ-s ‘place (n.)’: 129; see also chǔ < *tsyhoX*
揣 chuǎi *tsrhjweX* < *s-t^{h}<r>orʔ ‘to measure; to estimate’: 80, 139
嘬 chuài *tsrhwaejH* < *[ts^{h}](ʶ)ro[t]-s ‘bite, eat’; see also chuài < *tsrhweajH:* 281

嘬 chuài	*tsrhweajH* < *[tsʰ](ˢ)ro[t]-s ‘bite, eat’; see also chuài < *tsrhwaejH:* 281
穿 chuān	*tsyhwen* < *tʰo[n] ‘bore through’: 76, 104
川 chuān	*tsyhwen* < *t.l̥u[n] (*-jwen* is irregular; we would expect *-win*) ‘stream, river’: 53, 166, 251, 324
傳 chuán	*drjwen* < *m-tron ‘transmit’: 282; see also zhuàn < *drjwenH*
輲 chuán	*dzywen* < *[d]or ‘car with solid wheels’: 283
船 chuán	*zywen* < *Cə.lo[n] ‘boat’: 190
喘 chuǎn	*tsyhwenX* < *[tʰ]orʔ ‘to pant’: 80, 283
窗 chuāng	*tsrhaewng* < *s-l̥ˤ<r>oŋ ‘window’ 56, 91, 146, 150
窻 chuāng	*tsrhaewng* < *s-l̥ˤ<r>oŋ ‘window’: 150
幢 chuáng	*draewng* < *[d]ˤroŋ ‘a kind of flag’: 244
牀 chuáng	*dzrjang* < *k.dzraŋ ‘bed’: 37, 71, 95, 97, 153, 160, 227, 319
吹 chuī	*tsyhwe* < *tʰo[r] ‘blow (v.)’: 76, 252, 266, 271, 279
錘 chuí	*drjwe* < *m-t<r>oj ‘sledgehammer’: 279
椎 chuí	*drwij* < *k.druj ‘hammer’: 160
出 chuì	*tsyhwijH* < *t-kʰut-s ‘bring or take out’: 293; see also chū < *tsyhwit*
輴 chūn	*trhwin* < *l̥ru[n] ‘funeral car’: 294
春 chūn	*tsyhwin* < *tʰun ‘springtime’: 76, 104, 294
脣 chún	*zywin* < *sə.dur ‘lip’: 181
綴 chuò	*trjwet* < *trot ‘stitch’: 281
輟 chuò	*trjwet* < *trot ‘stop, cease’: 281
錣 chuò	*trwaet* < *tˤrot ‘iron point at end of whip’: 281
綽 chuò	*tsyhak* < *tʰawk ‘indulgent, gentle’: 297
差 cī	*tsrhje*, see 參差 cēncī < *tsrhim.tsrhje*; see also chā < *tsrhae*, chāi < *tsrhea*
慈 cí	*dzi* < *[N-ts]ə ‘loving, kind’: 90
餈 cí	*dzij* < *dzij ‘rice or millet cake’: 108
泚 cǐ	*tshjeX* < *[tsʰ]e(j)ʔ ‘clear (adj.)’: 262, 400n70
賜 cì	*sjeH* < *s-lek-s ‘give’: 51
次 cì	*tshijH* < *[s-n̥]i[j]-s ‘put in order; second’: 90
刺 cì	*tshjeH* < *[tsʰ]ek-s ‘sharp point, thorn’: 234; see also cì < *tshjek*
刺 cì	*tshjek* < *[tsʰ]ek ‘pierce, stab’: 233, 234; see also cì < *tshjeH*
聰 cōng	*tshuwng* < *s-l̥ˤoŋ ‘hear well; intelligent’: 150, 244
從 cóng	*dzjowng* < *[dz]oŋ ‘to follow’: 244
叢 cóng	*dzuwng* < *dzˤoŋ ‘collect; thicket’: 108
粗 cū	*tshu* < *Nə-s.r̥ˤa ‘coarse, thick (as hair)’: 192–193
竄 cuàn	*tshwanH* < *[tsʰ]ˤo[n]-s ‘hide; flee’: 282

催 cuī — *tshwoj* < *s-tʰᶜuj ‘urge, repress’: 139
衰 cuī — *tsrhjwe* < *[tsʰ]roj ‘reduce’: 279; see also shuāi < *srwij*
萃 cuì — *dzwijH* < *[dz][u]p-s ‘collect, crowd’: 306, 309
脆 cuì — *tshjwejH* < *[tsʰ]o[t]-s ‘brittle’: 281
檇 cuì — *tsrhjwejH* < *[tsʰ]<r>op-s ‘to pound with a pestle’: 306, 313
存 cún — *dzwon* < *[dzᶜ]ə[n] ‘exist’: 202–203, 284, 288
寸 cùn — *tshwonH* < *[tsʰ]ᶜu[n]-s ‘thumb; inch’: 31–32, 80, 155
撮 cuō — *tshwat* < *[tsʰ]ᶜot ‘pinch; a pinch’: 29-
脞 cuǒ — *tshwaX* < *tsʰᶜojʔ ‘frivolous, trifling’: 280
達 dá — *dat* < *[l]ᶜat ‘arrive at’: 271
答 dá — *top* < *[t]ᶜ[u]p ‘answer’: 309
大 dà — *dajH* < *lᶜa[t]-s ‘big’: 109, 276
袋 dài — *dojH* < *Cə.lᶜək-s ‘bag’: 190
逮 dài — *dojH* < *m-rᶜəp-s ‘reach to’: 134, 308–309, 403n115
帶 dài — *tajH* < *C.tᶜa[t]-s ‘girdle, strap’: 272
戴 dài — *tojH* < *Cə.tᶜək-s ‘carry on the head’: 186
擔 dān — *tam* < *mə-tᶜam ‘carry on the shoulder’: 48, 88, 176
單 dān — *tan* < *Cə.tᶜar ‘single, simple’ 66, 186, 258, 259; see also chányú < *dzyen-hju*
亶 dǎn — *tanX* < *tᶜanʔ ‘sincere, truly’: 259, 321
癉 dǎn — *tanX* < *tᶜanʔ ‘illness; toil’: 259
癉 dǎn — *tanX* < *tᶜanʔ ‘illness; toil’: 259
旦 dàn — *tanH* < *tᶜan-s ‘dawn’: 259, 274
當 dāng — *tang* < *tᶜaŋ ‘match (v.); have the value of, rank with’: 56
刀 dāo — *taw* < *C.tᶜaw ‘knife’: 97, 98, 168, 246, 296
道 dào — *dawX* < *[kə.l]ᶜuʔ ‘way’: 194, 247, 247
稻 dào — *dawX* < *[l]ᶜuʔ ‘rice, paddy’: 246
得 dé — *tok* < *tᶜək ‘obtain’: 10–11, 101, 380n4, 385n25
德 dé — *tok* < *tᶜək ‘virtue’ 10–11, 380n4, 385n25
登 dēng — *tong* < *k-tᶜəŋ ‘a kind of sacrificial vessel’: 97
登 dēng — *tong* < *tᶜəŋ ‘ascend’: 59, 136, 192, 231
鐙 dēng — *tong* < *k-tᶜəŋ ‘lamp’: 153
翟 dí — *dek* < *lᶜewk ‘pheasant’: 299, 300
滌 dí — *dek* < *lᶜiwk ‘wash, clean (v.)’: 301
氐 dǐ — *tejX* < *tᶜijʔ ‘bottom’: 100
底 dǐ — *tejX* < *tᶜijʔ ‘bottom; stop, obstruct’: 197
折 dì — *dejH* < *[d]ᶜet-s ‘solitary standing (sc. tree)’: 276; see also shé < *dzyet*, zhé < *tsyet*
杕 dì — *dejH* < *[d]ᶜet-s ‘solitary-growing (sc. tree)’: 276
弟 dì — *dejX* < *lᶜəjʔ ‘younger brother’: 285

地 dì — *dijH* < *[l]ˢej-s ‘earth, ground’: 109

驒騱 diānxí — *ten.hej* < *tˢer.gˢe ‘a kind of wild horse (ridden by the Xiōngnú)’: 66

點 diǎn — *temX* < *tˢemʔ ‘black spot’: 72, 97, 98, 100, 304, 315, 403n111

玷 diàn — *temX* < *tˢemʔ ‘black spot’: 403n111

簟 diàn — *demX* < *[l]ˢimʔ ‘bamboo mat’: 305, 310

墊 diàn — *temH* < *[t]ˢ[i]m-s ‘descend’: 305; see also dié < *tep*

墊 dié — *tep* < *[t]ˢip ‘(place in Sìchuān)’ (no pre-Hàn attestations): 304, 305, 308, 309; see also diàn < *temH*

釘 dīng — *teng* < *tˢeŋ ‘nail (n.)’: 126; see also dìng < *tengH*

頂 dǐng — *tengX* < *tˢeŋʔ ‘top of the head’: 235

鼎 dǐng — *tengX* < *tˢeŋʔ ‘cauldron’: 43

定 dìng — *dengH* < *m-tˢeŋ-s ‘make fixed, settle (v.t.)’: 126; see also dìng < *dengH* ‘become fixed’, dìng < *tengH*

定 dìng — *dengH* < *N-tˢeŋ-s ‘become fixed; settled (v.i.)’: 126, see also dìng < *dengH* ‘make fixed, settle (v.t.)’, dìng < *tengH*

定 dìng — *tengH* < *tˢeŋ-s ‘ready-cooked (food)’: 126; see also dìng < *dengH*

釘 dìng — *tengH* < *tˢeŋ-s ‘nail (v.)’: 126; see also dīng < *teng*

冬 dōng — *towng* < *tˢuŋ ‘winter’: 250

東 dōng — *tuwng* < *tˢoŋ (< *tˢoŋʔ??) ‘east’: 9–10, 147, 244, 390n74

動 dòng — *duwngX* < *[Cə-m-]tˢoŋʔ ‘move’: 147, 390n74

兜 dōu — *tuw* < *tˢo ‘helmet, hood’: 55, 124

斗 dǒu — *tuwX* < *tˢoʔ ‘bushel; ladle’: 71, 242

脰 dòu — *duwH* < *kə.dˢok-s ‘neck’: 95, 184, 244, 319

毒 dú — *dowk* < *[d]ˢuk ‘poison (n.)’; also (in Mǐn dialects) *m-[d]ˢuk-s ‘to poison (v.)’: 132, 249

讀 dú — *duwk* < *C.lˢok ‘read (v.)’: 109

裻 dú — *sowk* < *[s]ˢuk ‘seam in the back of a coat’: 249; see also dú < *towk*

裻 dú — *towk* < *tˢuk ‘seam in the back of a coat’: 249; see also dú < *sowk*

肚 dǔ — *tuX* < *tˢaʔ ‘belly, stomach’: 55, 126; see also dù < *duX*

賭 dǔ — *tuX* < *məˑtˢaʔ ‘wager’: 88

度 dù — *duH* < *[d]ˢak-s ‘measure (n.)’: 220, 226; see also duó < *dak*

肚 dù — *duX* < *m-tˢaʔ ‘belly’: 55, 126–127; see also dǔ < *tuX*

端 duān — *twan* < *tˢor ‘tip (n.)’: 283

短 duǎn — *twanX* < *tˢorʔ ‘short’: 283

斷 duàn — *twanX* < *tˢo[n]ʔ ‘to cut in two’: 117; see also 斷 duàn < *dwanX*

斷 duàn — *dwanX* < *N-tˢo[n]ʔ ‘be cut in two’: 117, 118, 282; see also 斷 duàn < *twanX*

敦 duī — *twoj* < *tˢur (dialect: *-r > *-j) ‘manage, direct’: 263, 295; see also dūn < *twon,* 敦煌 Dūnhuáng < *twon.hwang*

對 duì — *twojH* < *[t]ˢ[u]p-s ‘respond’: 309

敦 dūn — *twon* < *tˢur ‘solid, thick’: 263, 295: see also duī < *twoj,* 敦煌 Dūnhuáng < *twon.hwang*

燉 dūn — *twon*, see 敦煌 Dūnhuáng < *twon.hwang*

敦煌 Dūnhuáng — *twon.hwang* < *tˢur.[ɢ]ʷˢaŋ ‘Dūnhuáng’ (place name): 263, 295 also written 燉煌; see also 敦 dūn < *twon*, duī < *twoj*

遯 dùn — *dwonH* < *lˢu[n]ʔ-s ‘withdraw’: 251

多 duō — *ta* < *[t.l]ˢaj ‘many’: 10–11, 164

度 duó — *dak* < *[d]ˢak ‘measure (v.)’: 27, 220, 225, 226, 397n40; see also dù < *duH*

鐸 duó — *dak* < *lˢak ‘a kind of bell’: 27

奪 duó — *dwat* < *Cə.lˢot ‘seize’: 190

掇 duó — *twat* < *tˢot ‘pick, gather’: 21

墮 duò — *dwaX* < *lˢojʔ ‘to fall’: 182; see also huī < *xjwie*

惰 duò — *dwaX* < *lˢojʔ ‘lazy’: 280

阿 ē — *'a* < *qˢa[j] ‘slope, river bank’: 121, 271, 399n63; see also 阿會亘 ēhuìxuān < *'a.hwajH.sjwen*

鵝 é — *nga* < *ŋˢa[r] ‘goose’: 92

訛 é — *ngwa* < *m-qʷʰˢaj ‘move; change’: 269

惡 è — *'ak* < *ʔˢak ‘bad, ugly’: 59, 226, 226; see also wù < *'uH*

厄 è — *'eak* < *qˢ<r>[i]k ‘part of a yoke’: 58

餓 è — *ngaH* < *ŋˢaj-s ‘hungry’: 257, 272

愕 è — *ngak* < *N-qʰˢak ‘scared’: 121, 175

諤 è — *ngak* < *ŋˢak ‘speak frankly’: 56

阿會亘 ēhuìxuān — *'a.hwajH.sjwen* < E. Hàn *ʔˢa-ɦˢwajs-swar (< OC *qˢaj + *m-kˢop-s + *s-[q]ʷar) < Sanskrit *ābhāsvara* ‘shining’: 258; see also 阿 ē < *'a*, 會 huì < *hwajH*, 亘 xuān < *sjwen*

恩 ēn — *'on* < *ʔˢə[n] ‘kindness, favor’: 283

兒 ér — *nye* < *ŋe ‘child’: 77, 108, 133

而 ér — *nyi* < *nə ‘and, but’: 53, 72–73

耳 ěr — *nyiX* < *C.nəʔ ‘ear’: 158

爾 ěr — *nyeX* < *n[ə][r]ʔ ‘you(r)’: 133

二 èr — *nyijH* < *ni[j]-s ‘two’: 110

發 fā — *pjot* < *Cə.pat ‘fly forth, send forth’: 186, 210, 271, 272, 273, 391n82

乏 fá — *bjop* < *[b](r)[o]p ‘lack (v.)’: 311, 312

法 fǎ — *pjop* < *[p.k]ap ‘model, law’: 151, 152–153, 272, 311, 312
灋 fǎ — *pjop* < *[p.k]ap ‘model, law’: 151, 152–153, 272, 311, 312
髮 fà — *pjot* < *pot ‘root; hair (of head)’: 273, 281, 400n78
番 fān — *phjon* < *pʰar ‘a turn, a time’: 259, 399n62; see also bōbō < *pa-pa
蕃 fān — *pjon* < *par ‘hedge, screen, fence’: 257, 258
藩 fān — *pjon* < *par ‘hedge, screen, fence’: 257, 258
燔 fán — *bjon* < *[b]ar ‘burn, roast’: 256, 257
繁 fán — *bjon* < *[b]ar ‘abundant, numerous’: 258
反 fǎn — *pjonX* < *Cə.panʔ ‘reverse (v.)’: 186, 208–209, 256, 259, 274, 394n13, 394n15, 394n16
范 fàn — *bjomX* < *[m-pʰ](r)omʔ ‘bee’: 313, 314
飯 fàn — *bjonH* < *bo[n]ʔ-s ‘cooked rice or millet’: 205, 282
匚 fāng — *pjang* < *paŋ ‘container, box (*Shuōwén*)’: 142–143, 151, 159
方 fāng — *pjang* < *C-paŋ ‘square’: 57, 142–143, 151, 158–159, 227
昉 fǎng — *pjangX* < *paŋʔ ‘just then, at that time’: 217
非 fēi — *pj+j* < *pəj ‘is not’: 285
飛 fēi — *pj+j* < *Cə.pə[r] (dialect: *-r > *-j) ‘fly (v.)’: 86, 186
肥 féi — *bj+j* < *[b][ə]r ‘fat (adj.)’: 86
吠 fèi — *bjojH* < *Cə.bo[t]-s ‘bark (v.)’: 189, 281
沸 fèi — *pj+jH* < *Nə.p[u][t]-s ‘boil (v.)’: 88, 95, 174
廢 fèi — *pjojH* < *pat-s ‘great’: 272
廢 fèi — *pjojH* < *[p-k]ap-s ‘cast aside’: 152–153, 154, 272, 312, 391n82
分 fēn — *pjun* < *pə[n] ‘divide’: 216, 217, 288
焚 fén — *bjun* < *[b]u[n] ‘burn (v.)’: 251
賁 fén — *bjun* < *[b]ur ‘great, big’: 295; see also bēn < *pwon*, bì < *pjeH*
粉 fěn — *pjunX* < *mə.pənʔ ‘flour’: 177
蜂 fēng — *phjowng* < *pʰ(r)oŋ ‘bee’: 104, 244, 314
風 fēng — *pjuwng* < *prəm ‘wind (n.)’: 195, 309, 310
馮 féng — *bjuwng* < *[Cə.b]əŋ ‘Féng (surname)’: 216, 231
覂 fěng — *pjowngX* < *p(r)omʔ (dialect: *-om > *-oŋ) ‘overturn’ (no pre-Hàn exx.): 312
縫 fèng — *bjowngH* < *C.[b](r)oŋ-s ‘seam’: 171
奉 fèng — *bjowngX* < *m-pʰ(r)oŋʔ ‘present (v.) with both hands’: 128; see also fèng < *phjowngX*
奉 fèng — *phjowngX* < *pʰ(r)oŋʔ ‘present (v.) with both hands’: 104, 128; see also fèng < *bjowngX*
膚 fū — *pju* < *pra ‘skin’: 223
幞 fú — *bjowk* < *[b](r)ok ‘kerchief (*Shuōwén*)’: 243

浮 fú — *bjuw* < *m.b(r)u ‘float (v.)’: 131
伏 fú — *bjuwH* < *[b]ək-s (< *[b]uk-s?) ‘hatch (v.)’: 228
茀 fú — *pjut* < *p[ə]t ‘remove dense vegetation’: 287
福 fú — *pjuwk* < *pək ‘blessing’: 228, 230
斧 fǔ — *pjuX* < *p(r)aʔ ‘axe’: 100, 224, 381n11
府 fǔ — *pjuX* < *p(r)oʔ ‘repository’: 381n11
縛 fù — *bjak* < *bak ‘bind (v.)’: 107, 225
負 fù — *bjuwX* < *[b]əʔ ‘carry on the back’: 325
阜 fù — *bjuwX* < *[b](r)uʔ ‘big mound’: 247
復 fù — *bjuwH* < *[N]-pruk-s ‘again’: 249; see also fù < *bjuwk*
復 fù — *bjuwk* < *m-p(r)uk ‘return’: 249; see also fù < *bjuwH*
婦 fù — *bjuwX* < *mə.bəʔ ‘woman, wife’: 88, 156, 178
腹 fù — *pjuwk* < *p(r)uk ‘belly’: 126
改 gǎi — *kojX* < *C.qˤəʔ ‘change (v.)’: 30–31, 229, 385n24
攺 gǎi — *kojX* < *C.qˤəʔ ‘change (v.)’: 30–31, 229, 385n24
蓋 gài — *kajH* < *[k]ˤap-s ‘cover (v.); cover (n.)’: 151, 153, 197, 311
甘 gān — *kam* < *[k]ˤ[a]m ‘sweet’: 314
澉 gān — *kan* < *[k]ˤar ‘dry’: 260
肝 gān — *kan* < *s.kˤa[r] ‘liver’: 137
軋 gàn — *kanH* < *[k]ˤar-s ‘sunrise (*Shuōwén*)’: 261
幹 gàn — *kanH* < *[k]ˤar-s ‘stem; framework’: 261
贛 gàn — *komH* < *[k]ˤom-s ‘the Gàn river in Jiāngxī’: 313–314, 403n117
剛 gāng — *kang* < *kˤaŋ ‘strong; hard’: 227
綱 gāng — *kang* < *kˤaŋ ‘guiding rope of net’: 43
亢 gāng — *kang* < *k-ŋˤaŋ ‘lift high’: 57, 96, 163
膏 gāo — *kaw* < *Cə.kˤaw ‘lard (n.)’: 186
高 gāo — *kaw* < *Cə.[k]ˤaw ‘high, tall’: 296
鼛 gāo — *kaw* < *[k]ˤu ‘big drum’: 247
告 gào — *kowk* < *kˤuk ‘announce, inform’: 249
歌 gē — *ka* < *[k]ˤaj ‘sing, song’: 256, 269, 271
割 gē — *kat* < *Cə-kˤat ‘cut (v.); harm (v.)’: 271
各 gé — *kaek* < *kˤrak ‘go to’: 185
格 gé — *kaek* < *kˤrak ‘go to’: 185
隔 gé — *keak* < *[k]ˤrek ‘obstruct, separate (v.)’: 233
革 gé — *keak* < *kˤrək ‘hide, skin’: 213, 230
合 gě — *kop* < *kˤop ‘together; put together; combined’: 125, 388n46; see also hé < *hop*
根 gēn — *kon* < *[k]ˤə[n] ‘root, trunk’: 288
庚 gēng — *kaeng* < *kˤraŋ ‘seventh heavenly stem’: 166

更 gēng *kaeng* < *k^{ʕ}raŋ ‘change (v.)’: 43, 227
耕 gēng *keang* < *k^{ʕ}<r>eŋ ‘plow (v.)’: 235
公 gōng *kuwng* < *C.q^{ʕ}oŋ ‘impartial, just; public’: 66, 181
公 gōng *kuwng* < *C.q^{ʕ}oŋ ‘father; prince’: 28–29, 31, 66, 101, 182, 383n7, 385n24
宮 gōng *kjuwng* < *k(r)uŋ ‘dwelling; palace; note of scale’: 250
工 gōng *kuwng* < *k^{ʕ}oŋ ‘officer’: 28, 66, 313–314
工 gōng *kuwng* < *k^{ʕ}oŋ ‘work’: 244, 250
攻 gōng *kuwng* < *k^{ʕ}oŋ ‘attack’: 250
龔 gōng *kjowng* < *k<r>oŋ ‘respectful’: 244, 245
恭 gōng *kjowng* < *k<r>oŋ ‘respectful’: 244, 245
龏 gōng *kjowng* < *k<r>oŋ ‘respectful’: 244, 245
弓 gōng *kjuwng* < *k^{w}əŋ ‘bow (n.)’: 228, 231, 307
觥 gōng *kwaeng* < *[k]^{wʕ}raŋ ‘drinking horn’: 227
廾 gǒng *kjowngX* < *k(r)oŋʔ ‘join the hands’: 119
共 gòng *gjowngH* < *N-k(r)oŋʔ-s ‘together, all’: 119, 245
貢 gòng *kuwngH* < *[k]^{ʕ}oŋ-s < *[k]^{ʕ}om-s ‘tribute’: 313–314, 403n117
贛 gòng *kuwngH* < *[k]^{ʕ}oŋ-s < *[k]^{ʕ}om-s ‘tribute’: 313–314, 403n117
狗 gǒu *kuwX* < *Cə.k^{ʕ}roʔ ‘dog’: 186, 215
彀 gòu *kuwH* < *[k]^{ʕ}(r)ok-s ‘draw a bow to the full’: 244
孤 gū *ku* < *k^{wʕ}a ‘orphan’: 223
菇 gū *ku* < *mə.k^{ʕ}a ‘mushroom’: 177
穀 gǔ *kuwk* < *[k]^{ʕ}ok ‘grain’: 243, 244
牯 gǔ *kuX* < *Cə.k^{wʕ}aʔ ‘male (bovine)’: 187
骨 gǔ *kwot* < *k^{ʕ}ut ‘bone’: 294
故 gù *kuH* < *k^{ʕ}aʔ-s ‘old (not new)’: 75, 101
瓜 guā *kwae* < *k^{wʕ}ra ‘melon, gourd’: 223
卦 guà *kweaH* < *[k]^{wʕ}re-s ‘prognosticate with Achillea’: 232
乖 guāi *kweaj* < *k^{wʕ}rəj ‘oppose; disorder’: 285
夬 guài *kwaejH* < *[k]^{wʕ}ret-s ‘divide, make a breach’: 276
怪 guài *kweajH* < *[k]^{wʕ}rə-s ‘extraordinary’: 229
關 guān *kwaen* < *[k]^{ʕ}ro[n] ‘barrier’: 214; see also 間關 jiānguān < *kean.kwaen*
倌 guān *kwaenH* < *k^{wʕ}ra[n]-s ‘servant, groom’: 274
冠 guān *kwan* < *[k.ʔ]^{ʕ}or ‘cap (n.)’: 58, 151; see also guàn < *kwanH*
官 guān *kwan* < *k^{wʕ}a[n] ‘official (n.)’: 234, 274, 278
鰥 guān *kwean* < *[k]^{wʕ}rə[n] ‘widower’: 288
綸 guān *kwean* < *k.r^{ʕ}u[n] (dialect: *k.r^{ʕ}- > *k^{ʕ}r-) ‘ribbon; kelp’: 294; see also lún < *lwin*
痯 guǎn *kwanX* < *k^{wʕ}a[n]ʔ ‘exhausted, helpless’: 259

管 guǎn *kwanX* < *k$^{w\varsigma}$a[n]ʔ ‘exhausted, helpless’: 259; see also guǎn < *kwanX* ‘tube; flute’

管 guǎn *kwanX* < *[k]$^{\varsigma}$o[n]ʔ ‘tube; flute’: 282; see also guǎn < *kwanX* ‘exhausted, helpless’

筦 guǎn *kwanX* < *[k]$^{\varsigma}$o[n]ʔ ‘tube; flute’: 282

冠 guàn *kwanH* < *k.ʔ$^{\varsigma}$or-s ‘cap (v.)’: 58, 151, 154; see also guān < *kwan*.

裸 guàn *kwanH* < *[k]$^{\varsigma}$or(ʔ)-s ‘pour out libation’: 282

貫 guàn *kwanH* < *k$^{\varsigma}$on-s ‘pass through the center’: 208–209, 395n16

觀 guàn *kwanH* < *C.q$^{w\varsigma}$ar-s ‘watchtower’: 234, 278; see also 榮觀 róngguàn < *hjwaeng.kwanH*

鸛 guàn *kwanH* < *C.q$^{w\varsigma}$ar-s ‘heron’: 261

光 guāng *kwang* < *k$^{w\varsigma}$aŋ ‘light, brightness’: 81, 117

廣 guǎng *kwangX* < *k$^{w\varsigma}$aŋʔ ‘wide’: 227

歸 guī *kjw+j* < *[k]^{w}əj ‘return (v.)’: 385, 391n80, 401n91

圭 guī *kwej* < *[k]$^{w\varsigma}$e ‘jade scepter’: 232

龜 guī *kwij* < *[k]^{w}rə ‘tortoise’: 229, 248, 398n54

詭 guǐ *kjweX* < *[k](r)ojʔ ‘perverse’: 279

癸 guǐ *kjwijX* < *k^{w}ijʔ ‘tenth heavenly stem’: 289

鬼 guǐ *kjw+jX* < *k-ʔujʔ ‘ghost’: 101, 151, 154, 391n80

簋 guǐ *kwijX* < *k^{w}ruʔ ‘guǐ ritual vessel’: 247, 248, 398n54

軌 guǐ *kwijX* < *k^{w}ruʔ ‘wheel ruts’: 218, 247, 248, 397n30, 398n54

匱 guì *gwijH* < *[g]ruj-s ‘box (n.)’: 293

撅 guì *kjwejH* < *k(r)[o][t]-s ‘lift (the dress)’: 281

貴 guì *kjw+jH* < *kuj-s ‘precious; expensive’: 101, 102, 196, 391n79

襘 guì *kwajH* < *k$^{\varsigma}$op-s ‘place where two ends of a collar or belt join’: 312

郭 guō *kwak* < *k$^{w\varsigma}$ak ‘outer wall’: 225

馘 guó *kweak* < *C.q$^{w\varsigma}$<r>ək ‘severed left ears’: 230

果 guǒ *kwaX* < *[k]$^{\varsigma}$o[r]ʔ ‘fruit; result’: 282

過 guò *kwaH* < *k$^{w\varsigma}$aj-s ‘to pass; transgress’: 271

害 hài *hajH* < *N-k$^{\varsigma}$at-s ‘be hurt (v.i.); injury (n.)’: 197, 272

駭 hài *heajX* < *[g]$^{\varsigma}$rəʔ ‘alarmed’: 229

寒 hán *han* < *Cə.[g]$^{\varsigma}$a[n] ‘cold’: 274

韓 hán *han* < *[g]$^{\varsigma}$ar ‘(state in the Korean peninsula, Three Kingdoms period)’: 261

含 hán *hom* < *Cə-m-k$^{\varsigma}$[ə]m ‘hold in the mouth’: 192

翰 hàn *hanH* < *[g]$^{\varsigma}$ar (rhymes as *-ar, but MC implies *[g]$^{\varsigma}$ar -s) ‘white (of a horse)’: 259; see also hàn < *hanH* ‘prop up, support’

翰 hàn *hanH* < *m-kˤar-s ‘prop up, support’: 257, 258; see also hàn < *hanH* ‘white (of a horse)’

旱 hàn *hanX* < *[g]ˤa[r]ʔ ‘dry, drought’: 106

漢 hàn *xanH* < *n̥ˤar-s (W dialect: *n̥- > *x*-, *-r > *-n*) ‘(river name)’: 112, 114, 387n37

茠 hāo *xaw* < *qʰˤu ‘weed (v.)’: 103

薅 hāo *xaw* < *qʰˤu ‘weed (v.)’: 103, 390n71

號 háo *haw* < *[C.g]ˤaw ‘call out’: 246

好 hǎo *xawX* < *qʰˤuʔ ‘good’: 59, 102, 103, 246; see also hào < *xawH*

好 hào *xawH* < *qʰˤuʔ-s ‘love, like (v.)’: 59; see also hǎo < *xawX*

盍 hé *hap* < *m-[k]ˤap ‘thatch, cover (v.)’: 151, 153, 197, 311

合 hé *hop* < *m-kˤop ‘come together; bring together’: 125, 127, 311, 312; see also gě < *kop*

齕 hé *hot* < *m-[q]ˤət ‘bite (v.)’: 287

和 hé *hwa* < *[ɢ]ˤoj ‘harmonious’: 266, 270, 271

禾 hé *hwa* < *[ɢ]ˤoj ‘growing grain’: 279

賀 hè *haH* < *m-kˤaj-s ‘congratulate’: 272

鶴 hè *hak* < *[g]ˤawk ‘crane’: 297

褐 hè *hat* < *[ɢ]ˤat ‘coarse cloth’: 44

雘 hè *howk* < *[g]ˤawk ‘high’: 297

嚇 hè *xaek* < *qʰˤ<r>ak ‘frighten’: 121, 175

赫 hè *xaek* < *qʰˤrak ‘red, fiery’: 103

黑 hēi *xok* < *m̥ˤək (dialect: *m̥ˤ- > *x*-) ‘black’: 42

亨 hēng *xaeng* < *qʰˤraŋ ‘penetrate’: 157; see also xiǎng < *xjangX*

恆 héng *hong* < *[g]ˤəŋ ‘constant’: 231

橫 héng *hwaeng* < *C.gʷˤraŋ ‘crosswise; horizontal’: 171

紅 hóng *huwng* < *gˤoŋ ‘pink’: 105

宏 hóng *hweang* < *[g]ʷˤ<r>əŋ ‘resounding; great’: 231

弘 hóng *hwong* < *[ɢ]ʷˤəŋ ‘vast’: 231

猴 hóu *huw* < *mə-gˤ(r)o ‘monkey’: 178

侯 hóu *huw* < *[g]ˤ(r)o ‘feudal lord’: 242

厚 hòu *huwX* < *Cə.[g]ˤ(r)oʔ ‘thick’: 189

后 hòu *huwX* < *ɢˤ(r)oʔ ‘sovereign; queen’: 105

逅 hòu *huwH*, see 邂逅 xièhòu < *heaH.huwH*

呼 hū *xu* < *qʰˤa ‘call out, shout’: 220; see also hù < *xuH*

芴 hū *xwot* < *m̥ˤut ‘careless; confused’: 111

搰 hú *hwot* < *[g]ˤut ‘dig out’: 158

虎 hǔ *xuX* < *qʰˤraʔ (W dialect: *qˤʰr- > r̥ˤ- > *x*-) ‘tiger’: 103

滸 hǔhǔ *xuX.xuX* < *qʰˤaʔ.qʰˤaʔ ‘sound of hewing wood’, also written 所所: 129; see also 許許 hǔhǔ < *xuX.xuX*

許許 hǔhǔ — *xuX.xuX* < *q^{hʕ}aʔ.q^{hʕ}aʔ ‘sound of hewing wood (Mao 165.3)’, also written 所所: 129; see also 許 xǔ < *xjoX*, 滸滸 hǔhǔ < *xuX.xuX*

沍 hù — *huH* < *N-q^{ʕ}aʔ-s ‘shut in, stop up’: 129

戶 hù — *huX* < *m-q^{ʕ}aʔ ‘door’: 129

戶 hù — *huX* < *m-q^{ʕ}aʔ ‘to stop, to check’: 129

呼 hù — *xuH* < *q^{hʕ}a-s ‘call out, shout’: 220; see also hū < *xu*

花 huā — *xwae* < *q^{whʕ}ra ‘flower (n.)’: 7, 83, 105, 379n5

華 huā — *xwae* < *q^{whʕ}ra ‘flower (n.)’ (now written “花”): 7, 83, 105, 379n5; see also huá < *hwae*

華 huá — *hwae* < *N-q^{whʕ}ra ‘flower (v.); flowery (adj.)’: 7, 83; see also huā < *xwae*

滑 huá — *hweat* < *Nə-g^{ʕ}rut ‘slippery’: 95, 174, 175, 215, 294

話 huà — *hwaejH* < *[g]^{wʕ}rat-s ‘speak; words’: 106, 272

輾 huà — *hwaeX* < *[g]^{ʕ}<r>orʔ (dialect: *-r > *-j) ‘turn around (as a wheel)’: 282; see also huàn < *hwanX*

踝 huà — *hwaeX* < *m-k^{ʕ}<r>o[r]ʔ ‘ankle’: 215, 282

畫 huà — *hweaH* < *C-g^{wʕ}rek-s ‘drawing (n.)’: 106, 171, 234; see also huà < *hweak*

繣 huà — *hweaH* < *m-q^{whʕ}rek-s ‘bind’: 83; see also huà < *xweak*

畫 huà — *hweak* < *g^{wʕ}rek ‘draw (v.)’: 106, 171, 233, 234; see also huà < *hweaH*

劃 huà — *hweak* < *g^{wʕ}rek ‘draw (v.)’: 106, 171

繣 huà — *xweak* < *q^{whʕ}rek ‘bind’: 83; see also huà < *hweaH* ‘bind’

化 huà — *xwaeH* < *q^{whʕ}<r>aj-s ‘transform’: 105, 269, 379n5

淮 huái — *hweaj* < *[ɢ]^{wʕ}rij ‘(name of a river)’: 289

懷 huái — *hweaj* < *[g]^{ʕ}ruj ‘bosom; embrace’: 293

壞 huài — *kweajH* < *[k]^{ʕ}<r>ujʔ-s ‘destroy’: 117; see also 壞 huài < *hweajH*

壞 huài — *hweajH* < *N-[k]^{ʕ}<r>ujʔ-s ‘be destroyed’: 117, 118, 215; see also 壞 huài < *kweajH*

讙 huān — *xjwon* < *q^{wh}ar ‘clamor, shout’: 261

懽 huān — *xwan* < *q^{whʕ}ar ‘rejoice; joyous’: 261

驩潛 Huānqián — *xwan.dzjem* < W. Hàn *x^{ʕ}war-dz[e]m (< OC *q^{whʕ}ar + *dz[o]m) ‘Khwārazm’ (region in Central Asia): 260–261; see also 潛 qián < *dzjem*

環 huán — *hwaen* < *C.ɢ^{wʕ}<r>en ‘ring (n.)’: 214, 234, 277, 278

還 huán — *hwaen* < *[ɢ]^{wʕ}<r>en ‘turn around; return’: 67; see also xuán < *zjwen*.

睘 huán — *hwaen* < *[ɢ]^{wʕ}<r>en ‘turn around, return’: 67

桓 huán *hwan* < *[ɢ]ʷˁar ‘pillar; martial-looking’ 258, 266; see also 烏桓 Wūhuán < *'u.hwan*

患 huàn *hwaenH* < *[g]ˁro[n]-s ‘calamity; distress’: 282

轘 huàn *hwanX* < *[g]ˁorʔ ‘turn around (as a wheel)’: 282; see also huà < *hwaeX*

荒 huāng *xwang* < *m̥ˁaŋ ‘wasteland; uncultivated land’: 152

煌 huáng *hwang*, see 敦煌 Dūnhuáng < *twon.hwang*

黃 huáng *hwang* < *N-kʷˁaŋ ‘yellow’: 81, 117, 118

墮 huī *xjwie* < *l̥oj (W dialect: *l̥- > *x*-) ‘destroy’: 280; see also duò < *dwaX*

煇 huī *xjw+j* < *qʷʰər ‘brilliant’: 253

虺 huī *xwoj* < *[r̥]ˁu[j] (W dialect: *r̥- > *x*-) ‘exhausted, weary’: 116; see also huǐ < *xjw+jX*

回 huí *hwoj* < *[ɢ]ʷˁəj ‘go around’: 285

烜 huǐ *xjweX* < *qʷʰarʔ (dialect: *-r > *-j) ‘sunlight’: 258

虺 huǐ *xjw+jX* < *ɾu[j]ʔ (W dialect: *r̥- > *x*-) ‘sound of thunder’: 116; see also huī < *xwoj*

會 huì *hwajH* < *m-kˁop-s ‘meeting; have a meeting’: 312, 399n63; see also kuài < *kwajH*, 阿會亘 ēhuìxuān < *'a.hwajH.sjwen*

慧 huì *hwejH* < *[ɢ]ʷˁe[t]-s ‘intelligent’: 276

穢 huì *'jwojH* < *qʷat-s ‘bad weeds; filth’: 272

喙 huì *tsyhwejH* < *t-l̥o[rʔ]-s ‘snout; to pant’: 33, 57, 165, 393n103; see also huì < *xjwojH*

隋 huì *xjwieH* < *l̥oj-s (W dialect: *l̥- > *x*-) ‘shred sacrificial meat’: 112, 280; see also tuǒ < *thwaX*

喙 huì *xjwojH* < *l̥o[rʔ]-s (W dialect:*l̥- > *x*-) ‘snout; to pant’: 57, 165; see also huì < *tsyhwejH*

醧 huì *xwojH* < *qʰʷˁuj-s ‘wash the face’: 101

賄 huì *xwojX* < *qʷʰˁəʔ ‘property, valuables’: 44, 229

昏 hūn *xwon* < *m̥ˁu[n] ‘dusk, dark’: 63, 64, 322

魂 hún *hwon* < *[m.]qʷˁə[n] ‘spiritual soul’: 288

活 huó *hwat* < *[g]ʷˁat ‘to live’: 271

獲 huò *hweak* < *m-qʷˁrak ‘catch (v.)’: 225

或 huò *hwok* < *[ɢ]ʷˁək ‘some; or’: 39–40, 230

屐 jī *gjaek* < *Cə.[g]rek ‘wooden sandal’: 232, 233

雞 jī *kej* < *kˁe ‘fowl, chicken’: 232

枅 jī *kej* < *[k]ˁer ‘crosspiece of wood on top of pillar’: 278; see also jiān < *ken*

激 jī *kek* < *[k]ˁewk ‘dam up (water)’: 299

基 jī *ki* < *k(r)ə ‘base (n.)’: 218, 229

飢 jī — *kij* < *Cə.k<r>ə[j] ‘hungry’: 187, 285
机 jī — *kijX* < *krəjʔ ‘small table, stool’: 285
羈 jī — *kje* < *kraj ‘bridle, halter’: 270
奇 jī — *kje* < *[k](r)aj ‘odd (number)’: 8, 379n7; see also qí < *gje*
饑 jī — *kj+j* < *kə[j] ‘famine’: 285
隮 jī — *tsej* < *[ts]ˢəj ‘ascend’: 285
鏚 jī — *tsej* < *[ts]ˢij ‘pickle (v.)’: 289
集 jí — *dzip* < *[dz][u]p ‘gather, collect’: 306, 309
疾 jí — *dzit* < *[dz]i[t] ‘sickness’: 290
及 jí — *gip* < *[m-k-]rəp ‘reach to’: 134, 140, 308
佶 jí — *git* < *[g]ri[t] ‘strong, healthy (horse)’: 290
亟 jí — *kik* < *k(r)ək ‘urgently’: 218
棘 jí — *kik* < *krək ‘thorns’: 230
枳 jí — *kik* < *krək ‘thorns’: 230
吉 jí — *kjit* < *C.qi[t] (*C.q- > *k-, escaping palatalization) ‘auspicious’: 290
即 jí — *tsik* < *[ts]ik ‘go to’: 239
揖 jí — *tsip* < *s.qrip (dialect: *tsr-* > *ts-*) ‘cluster together’: 137, 305, 389n59; see also yī < *'jip*
濈 jí — *tsrip* < *s.q<r>[i]p ‘crowded together’: 137, 389n59
己 jǐ — *kiX* < *k(r)əʔ ‘sixth heavenly stem’: 30–31, 382n17
幾 jǐ — *kj+jX* < *kəjʔ ‘few; how many’: 254
忌 jì — *giH* < *m-k(r)ək-s ‘warn; avoid’: 125
暨 jì — *gijH* < *[m-k-]rəp-s ‘reach to’: 134, 308
技 jì — *gjeX* < *[g]reʔ ‘skill’: 232
髻 jì — *kejH* < *kˢi[t]-s ‘hair knot, chignon’: 58, 291
寄 jì — *kjeH* < *C.[k](r)aj-s ‘entrust to’: 257
罽 jì — *kjejH* < *[k](r)[a][t]-s ‘a kind of woolen fabric’: 196
際 jì — *tsjejH* < *[ts][a]p-s ‘connection’: 311
祭 jì — *tsjejH* < *[ts]et-s ‘sacrifice’: 276, 311
家 jiā — *kae* < *kˢra ‘household’: 223, 399n60
加 jiā — *kae* < *kˢraj ‘add’: 269, 399n60
袂 jiā — *kaep* < *C.kˢ<r>ep ‘chopsticks’ (MC *-aep* is irregular; we would expect *-eap*): 126; see also jiā < *kep*
夾 jiā — *keap* < *kˢ<r>ep ‘press between’: 58, 117, 126, 314
袂 jiā — *kep* < *kˢep ‘chopsticks’ (*JDSW* 164): 126; see also jiā < *kaep*
甲 jiǎ — *kaep* < *[k]ˢr[a]p ‘first heavenly stem; fingernail’: 311
假 jiǎ — *kaeX* < *Cə.kˢraʔ ‘borrow; false’: 187
嫁 jià — *kaeH* < *s-kˢra-s ‘send (one’s daughter) as a bride’: 75, 136–137

監 jiān *kaem* < *[k]ˢram ‘inspect’: 107, 163, 313
姦 jiān *kaen* < *[k]ˢran ‘wicked(ness)’: 274
間 jiān *kean* < *kˢre[n] ‘interval’: 277; see also 間關 jiānguān < *kean. kwaen*
兼 jiān *kem* < *[k]ˢem ‘combine; at the same time’: 313
肩 jiān *ken* < *[k]ˢe[n] ‘shoulder (n.)’: 204, 277
枅 jiān *ken* < *[k]ˢer ‘crosspiece of wood on top of pillar’: 278; see also jī < *kej*
間關 jiānguān *kean.kwaen* < *kˢre[n].kˢro[n] ‘sound of a chariot’s linchpin (Ode 218.1)’: 214
減 jiǎn *keamX* < *kˢr[ə]mʔ ‘reduce’: 310
繭 jiǎn *kenX* < *kˢ[e][n]ʔ ‘cocoon’: 71
撙捥 jiǎnzhǎn *kjenX.trjenX* < *krenʔ.trenʔ grown ugly (?)’: 78
栫 jiàn *dzenH* < *[dz]ˢə[n]-s ‘to fence in’: 203
荐 jiàn *dzenH* < *N-tsˢə[n]-s ‘grass, herb; a second time’: 203, 204, 283, 288
件 jiàn *gjenX* < *[g]r[a][n]ʔ ‘item’: 274
諫 jiàn *kaenH* < *kˢranʔ-s ~ *kˢranʔ ‘admonish’: 259, 399n65
見 jiàn *kenH* < *[k]ˢen-s ‘see (v.)’: 54, 55, 58, 116, 201; see also xiàn < *henH* ‘appear’, xiàn < *henH* ‘cause to appear’
劍 jiàn *kjaemH* < *s.kr[a]m-s ‘sword’: 137
建 jiàn *kjonH* < *[k]a[n]-s ‘set up, establish’: 274
薦 jiàn *tsenH* < *Cə.tsˢə[r]-s ‘grass, fodder’: 186, 283, 393n105, 401n86
濺 jiàn *tsjenH* < *[ts][a][n]-s ‘splatter with water’: 274
箭 jiàn *tsjenH* < *[ts]en-s ‘arrow’: 100, 277
江 jiāng *kaewng* < *kˢroŋ ‘(Yángzǐ) river’: 215, 244
疆 jiāng *kjang* < *kaŋ ‘boundary’: 43
姜 jiāng *kjang* < *C.qaŋ ‘(a family name)’: 106, 385n28
匠 jiàng *dzjangH* < *s.baŋ-s ‘craftsman’: 142, 143
交 jiāo *kaew* < *[k]ˢraw ‘cross (v.)’: 296
膠 jiāo *kaew* < *[k]ˢriw ‘glue’: 300
教 jiāo *kaew* < *s.[k]ˢraw ‘teach’: 136, 137; see also jiào < *kaewH*
角 jiǎo *kaewk* < *C.[k]ˢrok ‘horn, corner’: 215, 243
覺 jiào *kaewH* < *kˢruk-s ‘awaken’: 55, 197, 249; see also jué < *kaewk*
教 jiào *kaewH* < *s.kˢraw-s ‘teaching; instruction’: 136, 137; see also jiāo < *kaew*
揭 jiē *gjot* < *m-[k]at ‘lift’: 58
湝 jiē *heaj* < *[g]ˢrəj ‘cold’: 289–290
街 jiē *kea* < *[k]ˢre ‘road crossing’: 232

喈 jiē *keaj* < *kˢrəj ‘cold’: 285, 289–290
階 jiē *keaj* < *kˢrij ‘steps, stairs’: 289
皆 jiē *keaj* < *kˢrij ‘all’: 213, 289
嗟 jiē *tsjae* < *tsAj ‘sigh; alas!’: 269, 270
接 jiē *tsjep* < *[ts][a]p ‘connect’: 311
截 jié *dzet* < *[dz]ˢet ‘cut, trim’: 400n77
傑 jié *gjet* < *N-[k]<r>at ‘remarkable; hero’: 271
桀 jié *gjet* < *N-[k]<r>at ‘remarkable; hero’: 58
竭 jié *gjet* < *N-[k](r)at ‘exhaust (v.); dry up’: 210
結 jié *ket* < *kˢi[t] ‘tie (v.)’: 58, 290, 291
袺 jié *ket* < *kˢi[t] ‘lift up the skirts’: 21
劫 jié *kjaep* < *k(r)ap ‘rob’: 153, 311, 312
跲 jié *kjaep* < *[k](r)op ‘stumble’: 311
節 jié *tset* < *tsˢik ‘joint’: 71, 100, 136, 239
犗 jiè *kaejH* < *[k]ˢ<r>at-s ‘castrate’: 272
界 jiè *keajH* < *kˢr[e][t]-s ‘boundary’: 276
芥 jiè *keajH* < *kˢr[e][t]-s ‘mustard plant’: 71, 102
誡 jiè *keajH* < *kˢrək-s ‘warn’: 125
借 jiè *tsjaeH* < *[ts]Ak-s ‘loan, borrow’: 226; see also jiè < *tsjek*
借 jiè *tsjek* < *[ts]Ak ‘loan, borrow’: 226; see also jiè < *tsjaeH*
金 jīn *kim* < *k(r)[ə]m ‘metal, bronze’: 101
今 jīn *kim* < *[k]r[ə]m ‘now’: 238
巾 jīn *kin* < *krən ‘kerchief’: 254, 284
矜 jīn *king* < *k-riŋ (dialect: *k-r- > *kr-, *-iŋ > *-ing*) ‘boastful’: 237, 238; see also jīn < *king* ‘pity (v.)’, qín < *gin*
矜 jīn *king* < *k-riŋ (dialect: *k-r- > *kr-, *-iŋ > *-ing*) ‘pity (v.)’: 237, 238; see also jīn < *king* ‘boastful’, qín < *gin*
筋 jīn *kj+n* < *C.[k]ə[n] ‘sinew’: 168, 288
斤 jīn *kj+n* < *[k]ər ‘axe; catty’: 253, 254, 255, 267
近 jìn *gj+nH* < *s-N-kərʔ-s ‘be near to (v.t.)’: 54, 118–119, 142, 387n42; see also jìn < *gj+nX*
近 jìn *gj+nX* < *N-kərʔ ‘near’: 118; see also jìn < *gj+nH*
莖 jīng *heang* < *m-k-lˢ<r>eŋ ‘stalk (n.)’: 192
經 jīng *keng* < *k-lˢeŋ ‘loom; regulate; norm’: 164, 192, 235
巠 jīng *keng* < *k.lˢeŋ ‘a vein of water (*Shuōwén*)’: 159, 163–164, 192
兢 jīng *king* < *k(r)əŋ ‘cautious’: 231
京 jīng *kjaeng* < *[k]raŋ ‘hill; capital city’: 43, 217, 227, 235
驚 jīng *kjaeng* < *kreŋ ‘be afraid’: 75, 232, 235
晶 jīng *tsjeng* < *tseŋ ‘bright, limpid’: 55
精 jīng *tsjeng* < *tseŋ ‘fine rice; pure’: 55

景 jǐng *kjaengX* < *C.qraŋʔ ‘bright; image’: 28, 45, 101, 168
井 jǐng *tsjengX* < *C.tseŋʔ ‘well (n.)’: 168
淨 jìng *dzjengH* < *m-tseŋ-s ‘cleanse (v.t.); *N-tseŋ-s ‘clean’: 55, 81
競 jìng *gjaengH* < *m-kraŋʔ-s ~ C-kraŋʔ-s ‘strive; compete’: 126
脛 jìng *hengH* < *m-kʰˤeŋ-s ‘leg, shank’: 58, 128
鏡 jìng *kjaengH* < *C.qraŋʔ-s ‘mirror’: 101, 168, 385n24
勁 jìng *kjiengH* < *keŋ-s (no palatalization before *-eŋ?) ‘strong’: 78
坰 jiōng *kweng* < *kʷˤeŋ ‘region distant from capital’: 235
囧 jiǒng *kjwaengX* < *k-mraŋʔ (dialect: *k.mr- > *kʷr-) ‘bright window’: 57, 152
丩 jiū *kjiw* < *k-riw (dialect: *k-r- > *kr-) ‘twist (v.)’: 137
樛 jiū *kjiw* < *k-riw (dialect: *k-r- > *kr-) ‘twist (v.)’: 301
摎 jiū *kjiw* < *k-riw (dialect: *k-r- > *kr-) ‘tie around, strangle’: 57
久 jiǔ *kjuwX* < *[k]ʷəʔ ‘a long time’: 119, 248
九 jiǔ *kjuwX* < *[k]uʔ ‘nine’: 31–32, 80, 155, 247, 248, 397n30, 398n55
韭 jiǔ *kjuwX* < *s.[k](r)uʔ ‘Allium’: 247
酒 jiǔ *tsjuwX* < *tsuʔ ‘wine’: 101, 247
舊 jiù *gjuwH* < *N-kʷəʔ-s ‘old’: 118, 119
臼 jiù *gjuwX* < *C.[g]ʷəʔ ‘mortar’: 123, 229
舅 jiù *gjuwX* < *[g](r)uʔ ‘mother’s brother’: 106, 123
車 jū *kjo* < *C.q(r)a ‘chariot’: 158, 224; see also chē < *tsyhae*
且 jū *tsjo* < *tsa ‘[final particle]’: 145; see also qiě < *tshjaeX*
局 jú *gjowk* < *N-kʰ(r)ok ‘bent, curved’: 120, 175
繘 jú *kjwit* < *C.qʷi[t] ‘well-rope’: 82, 290; see also yù < *ywit*
鵙 jú *kwek* < *kʷˤek ‘shrike’: 233
舉 jǔ *kjoX* < *C.q(r)aʔ ‘lift, raise’: 131, 168, 171
筥 jǔ *kjoX* < *[k]raʔ ‘round basket’: 158, 223
枸 jǔ *kjuX* < *[k](r)oʔ ‘(a kind of tree)’: 381n11
矩 jǔ *kjuX* < *[k]ʷ(r)aʔ ‘carpenter's square’: 381n11
鋸 jù *kjoH* < *k(r)a-s ‘saw (n.)’: 224
屨 jù *kjuH* < *k-ro-s ‘sandal, shoe’: 242
鞻 jù *kjuH* < *k-ro-s ‘sandal, shoe’: 242
足 jù *tsjuH* < *[ts]ok-s ‘replenish’: 244; see also zú < *tsjowk*
卷 juǎn *kjwenX* < *[k](r)o[n]ʔ ‘roll (v.)’: 118, 282
絹 juàn *kjwienH* < *[k]ʷen-s ‘a kind of silk stuff’: 277
絕 jué *dzjwet* < *[dz]ot ‘cut off’: 281
掘 jué *gjut* < *[g]ut ‘dig out (earth)’: 158
覺 jué *kaewk* < *kˤruk ‘be aware’: 197, 249; see also jiào < *kaewH*
矍 jué *kjwak* < *C.qʷ(r)ak ‘anxious look’: 225

蕨 jué — *kjwot* < *Cə.kot ‘bracken (a kind of edible fern)’: 186, 281
蹶 jué — *kjwot* < *kʷat ‘stumble, fall’: 210
訣 jué — *kwet* < *[k]ʷˁet ‘farewell words’: 276
決 jué — *kwet* < *[k]ʷˁet ‘open; decide’: 276
君 jūn — *kjun* < *C.qur ‘lord; ruler’: 82, 127
軍 jūn — *kjun* < *[k]ʷər ‘army; camp’: 253, 255
均 jūn — *kjwin* < *C.qʷi[n] ‘even, equal’: 127, 291, 388n50
鈞 jūn — *kjwin* < *C.qʷi[n] ‘potter’s wheel’: 127, 193, 388n50
菌 jùn — *gwinX* < *[g]runʔ ‘mushroom’: 294
開 kāi — *khoj* < *[k]ʰˁəj ‘to open (v.t.)’: 120, 175; see also kāi < *khoj* ‘to open (v.i.)’
開 kāi — *khoj* < *Nə-[k]ʰˁəj ‘to open (v.i.)’: 120, 174–175; see also kāi < *khoj* ‘to open (v.t.)’
愾 kài — *xj+jH* < *qʰəp-s ‘sigh; angry’: 308
坎 kǎn — *khomX* < *[k]ʰˁomʔ ‘pit’: 314, 399n57
贛 kǎn — *khomX* < *[k]ʰomʔ ‘(booming sound?)’: 250, 399n57
康 kāng — *khang* < *k-ɾˁaŋ ‘tranquil; at ease’: 166; see also tāng < *thang*
考 kǎo — *khawX* < *k-ɾˁuʔ ‘old; deceased father’: 166, 167
藹 kē — *khwa* < *kʷʰˁaj ‘great’: 271
渴 kě — *khat* < *Nə-[k]ʰˁat ‘thirsty’: 175
刻 kè — *khok* < *[kʰ]ˁək ‘cut, engrave’: 230
客 kè — *khaek* < *kʰˁrak ‘guest’: 225
牼 kēng — *heang* < *m-kʰˁ<r>eŋ ‘shank bone’: 58; see also kēng < *kheang*
牼 kēng — *kheang* < *kʰˁ<r>eŋ ‘shank bone’: 58, 128; see also kēng < *heang*
空 kōng — *khuwng* < *kʰˁoŋ ‘hollow, empty; hole’: 66; see also kǒng < *khuwngX*
空 kǒng — *khuwngX* < *kʰˁoŋʔ ‘hollow, empty; hole’: 75, 104; see also kōng < *khuwng*
恐 kǒng — *khjowngX* < *kʰ(r)oŋʔ ‘fear’: 244
口 kǒu — *khuwX* < *kʰˁ(r)oʔ ‘mouth’: 33, 242
苦 kǔ — *khuX* < *kʰˁaʔ ‘bitter’: 104, 222, 223
塊 kuài — *khweajH* < *[kʰ]ˁ<r>uj-s ‘clod, lump’: 293; see also kuài < *khwojH*
塊 kuài — *khwojH* < *[kʰ]ˁuj-s ‘clod; lump’: 293; see also kuài < *khweajH*
會 kuài — *kwajH* < *kˁop-s ‘calculate; calculation’: 312; see also huì < *hwajH*, 阿會亘 ēhuìxuān < *'a.hwajH.sjwen*
匡 kuāng — *khjwang* < *k-pʰaŋ ‘square basket’: 57, 151, 152, 158–159
筐 kuāng — *khjwang* < *k-pʰaŋ ‘square basket’: 158–159
曠 kuàng — *khwangH* < *[k-m̥]ˁaŋ-s ‘desolate, waste’: 152

窺 kuī — *khjwie* < *k^{wh}e ‘pry, spy (v.)’: 232
葵 kuí — *gjwij* < *g^{w}ij ‘mallow’: 108, 401n91
戣 kuí — *gwij* < *[g]^{w}rij ‘a kind of lance’: 289
頍 kuí — *gwij* < *[g]^{w}ru ‘cheek bone, bones of the face’: 247, 248
睽 kuí — *khwej* < *k^{whʕ}ij ‘diverging, extraordinary’: 289
闊 kuò — *khwat*, see 契闊 qìèkuò < *khet.khwat*
剌 là — *lat* < *mə.r^{ʕ}at (~ *C.r^{ʕ}at?) ‘wicked; spicy’: 134
來 lái — *loj* < *mə.r^{ʕ}ək (> *r^{ʕ}ə) ‘come’: 39–40, 110, 134, 147, 153, 179, 230–231, 312, 392n102
狸 lái — *loj* < *[r]^{ʕ}ə ‘kind of wild cat (pron. in Chén 陳 and Chǔ 楚 ap. *Fāngyán*)’: 162
賴 lài — *lajH* < *r^{ʕ}a[t]-s ‘depend on’: 196
籃 lán — *lam* < *k.r^{ʕ}am ‘basket’: 163, 313
藍 lán — *lam* < *[N-k.]r^{ʕ}am ‘indigo’: 54
婪 lán — *lom* < *[r]^{ʕ}[ə]m ‘to covet’: 122
懶 lǎn — *lanX* < *[N-kə.]r^{ʕ}anʔ ‘lazy’: 54, 192
琅邪 Lángyá — *lang.yae* < *[r]^{ʕ}aŋ.ɢ(r)A ‘name of a mountain in Shāndōng’: 131; see also 邪 xié < *zjae*, yé < *yae*
朗 lǎng — *langX* < *k.r^{ʕ}aŋʔ ‘bright’: 163
老 lǎo — *lawX* < *C.r^{ʕ}uʔ ‘old’: 144, 166–167, 172, 320
樂 lè — *lak* < *[r]^{ʕ}awk ‘to cure’; also ‘joy; enjoy’: 297; see also yào < *ngaewH*, yuè < *ngaewk*
羸 léi — *ljwe* < *[r]o[j] ‘emaciated; weak’: 252
雷 léi — *lwoj* < *C.r^{ʕ}uj ‘thunder’: 116
淚 lèi — *lwijH* < *[r][ə]p-s ‘tears (n.)’: 57, 134, 166
儽 lèi — *lwojH* < *[r]^{ʕ}uj-s ‘exhausted’: 116, 122
狸 lí — *li* < *p.rə ‘kind of wild cat (pron. west of the Hángǔ pass, ap. *Fāngyán*)’: 162; see also 貔狸 péilí < *bij.li*
黎 lí — *lij* < *C.r[ə][j] ‘pear tree, pear’: 110
犁 lí — *lij* < *[r][i]j ‘plow (n., v.)’: 91
李 lǐ — *liX* < *C.rəʔ ‘plum’: 96, 172
豊 lǐ — *lejX* < *[r]^{ʕ}ijʔ ‘ritual vessel’: 112
禮 lǐ — *lejX* < *[r]^{ʕ}ijʔ ‘propriety, ceremony’: 289
里 lǐ — *liX* < *(mə.)rəʔ ‘li (measure of distance); village’: 197
鯉 lǐ — *liX* < *mə-rəʔ ‘carp (n.)’: 33, 179
吏 lì — *liH* < *[r]əʔ-s ‘officer’: 144
力 lì — *lik* < *k.rək ‘strength’: 91, 163, 230
笠 lì — *lip* < *k.rəp ‘bamboo-splint hat’: 163
立 lì — *lip* < *k.rəp ‘stand (v.)’: 134, 166, 307, 386n30
粒 lì — *lip* < *p.rəp ‘grains of rice’: 307

離 lì — *ljeH* < *raj-s ‘reject’: 110
蠣 lì — *ljejH* < *mə-rat-s ‘stinging insect’: 179
蓮 lián — *len* < *k.[r]ˤe[n] ‘lotus fruit’: 163
憐 lián — *len* < *rˤiŋ ‘love; pity’: 238
簾 lián — *ljem* < *rem ‘bamboo curtain’: 110
倢 liàn — *ljenH* < *k.r[a]n-s ‘chick’: 163
孌 liàn — *ljwenX* < *[r]onʔ ‘beautiful’: 208–209, 395n16, 395n17
涼 liáng — *ljang* < *C.raŋ ‘cold’: 217, 235
梁 liáng — *ljang* < *raŋ ‘beam; bridge’: 111
兩 liǎng — *ljangX* < *p.raŋʔ ‘a pair’: 163, 217
獵 liè — *ljep* < *r[a]p ‘hunt’: 311
裂 liè — *ljet* < *[r]at ‘to cut, split’: 210
冽 liè — *ljet* < *C.r[a]t ‘cold, raw’: 172
臨 lín — *lim* < *(p.)rum ‘look down at’: 42
淋 lín — *lim* < *r[ə]m ‘water (v.)’: 110, 111
鱗 lín — *lin* < *C.r[ə][n] ‘scale of fish or reptile’: 91
稟 lǐn — *limX* < *p.rimʔ ‘rations’: 162; see also bǐng < *pimX*
凌 líng — *ling* < *p.rəŋ ‘ice’: 217; see also bīng < *ping*.
令 líng — *ljeng* < *riŋ ‘send (a person)’: 134, 237–238, 398n47, 398n48; see also lìng < *ljengH*
令 lìng — *ljengH* < *riŋ-s ‘issue a command’: 111, 217, 237–238, 398n47, 398n48; see also líng < *ljeng*
劉 liú — *ljuw* < *mə-ru ‘kill; surname’: 248
旒 liú — *ljuw* < *[r]u ‘pendants of banner, cap’: 248
流 liú — *ljuw* < *ru ‘flow (v.)’: 91, 111, 122
鏐 liú — *ljuw* < *[r]iw ‘fine gold’ (spelled as if it were MC “*ljiw*” in *JDSW* 85): 301
六 liù — *ljuwk* < *k.ruk ‘six’: 163
翏 liù — *ljuwH* < *[r]iw-s ‘flying high (no pre-Han exx.)’: 301
龍 lóng — *ljowng* < *[mə]-roŋ ‘dragon’: 112, 245
聾 lóng — *luwng* < *C.rˤoŋ ‘deaf’: 91
籠 lóng — *luwng* < *k.rˤoŋ ‘cage, coop’: 163
婁 lóu — *lju* < *[r]o ‘drag, trail (v.)’: 242
漏 lòu — *luwH* < *[Nə-r]ˤok-s ‘leak (v.)’: 110, 176
鹵 lǔ — *luX* < *rˤaʔ ‘salty (sc. land)’: 111, 320
魯 lǔ — *luX* < *r.ŋˤaʔ (dialect: > *r.ŋˤ- > *rˤ- > *l-*) ‘(place name)’: 52
陸 lù — *ljuwk* < *[r]uk ‘land (as opposed to water)’: 249
路 lù — *luH* < *Cə.rˤak-s ‘road’: 33, 185, 190
露 lù — *luH* < *p.rˤak-s ‘dew; disclose’: 163
鹿 lù — *luwk* < *mə-rˤok ‘deer’: 56, 179, 243

祿 lù — *luwk* < *(p.)rᶜok ‘blessing’: 243
縲 luán — *lwan* < *mə.rᶜo[n] ‘harness bells’: 217, 395n17
鑾 luán — *lwan* < *[m]ə.rᶜon ‘harness bells’: 282
孿 luán — *srjwenH* < *[s.r]on-s ‘twins’: 282; see also luán < *srwaenH*
孿 luán — *srwaenH* < *[s.r]on-s (MC *srj-* > *sr-*) ‘twins’: 282; see also luán < *srjwenH*
卵 luǎn — *lwaX* < *k.rᶜorʔ ‘egg’: 163, 283, 324; see also luǎn < *lwanX*
卵 luǎn — *lwanX* < *k.rᶜorʔ ‘egg’: 163, 283, 324; see also luǎn < *lwaX*
亂 luàn — *lwanH* < *[r]ᶜo[n]-s ‘disorder, rebellion’: 208, 209, 395n16, 395n17
綸 lún — *lwin* < *k.ru[n] ‘woof; twist a cord’: 294; see also guān < *kwean*
捋 luō — *lwat* < *[r]ᶜot ‘gather, pluck’: 21
籮 luó — *la* < *C.rᶜaj ‘hamper, basket (n.)’: 257, 273
羅 luó — *la* < *rᶜaj ‘a kind of net (on a handle?), bird net’: 269, 270
螺 luó — *lwa* < *k.rᶜoj ‘spiral, snail’: 163, 279, 280
落 luò — *lak* < *kə.rᶜak ‘fall (v.)’: 53, 185
呂 lǚ — *ljoX* < *[r]aʔ ‘spine; pitch-pipe’: 223
縷 lǚ — *ljuX* < *[r]oʔ ‘thread’: 144
律 lǜ — *lwit* < *[r]ut ‘law, rule (n.)’: 42; see also 不律 bùlǜ < *pjuw.lwit*
率 lǜ — *lwit* < *[r]ut ‘norm, standard’: 144; see also shuài < *srwijH*, shuài < *srwit*
麻 má — *mae* < *C.mᶜraj ‘hemp’: 92, 257, 266, 269
馬 mǎ — *maeX* < *mᶜraʔ ‘horse’: 110, 213
埋 mái — *meaj* < *m.rᶜə (dialect: *m.rᶜ- > *mᶜr-) ‘bury’: 179
霾 mái — *meaj* < *mᶜrə ‘whirlwind’: 229
買 mǎi — *meaX* < *mᶜrajʔ ‘buy’: 59, 110, 269, 320, 386n33
脈 mài — *meak* < *C.mᶜ<r>[i]k ‘vein’: 213, 240
賣 mài — *meaH* < *mᶜrajʔ-s ‘sell’: 59
麥 mài — *meak* < *m-rᶜək (dialect: *m-rᶜ- > *mᶜr-) ‘wheat’: 40, 134, 179, 230
蠻 mán — *maen* < *mᶜro[n] ‘southern foreigner’: 215, 282
滿 mǎn — *manX* < *mᶜ[o][n]ʔ ‘full’: 282
芒 máng — *mang* < *mᶜaŋ ‘awn, beard of grain’: 390n66
貓 māo — *maew* < *C.mᶜraw ‘cat’: 296
毛 máo — *maw* < *C.mᶜaw ‘hair’: 246, 296
矛 máo — *mjuw* < *m(r)u ‘a kind of lance’: 246–247
卯 mǎo — *maewX* < *mᶜruʔ ‘4th earthly branch’: 215, 248
貿 mào — *muwH* < *mru-s ‘barter (v.)’: 247, 248
梅 méi — *mwoj* < *C.mᶜə ‘plum tree’: 229

枚 méi — *mwoj* < *mˤəj ‘stem, branch’: 285
袂 mèi — *kwet* < *k.mˤet (dialect: *k.m- > *km- > *kw-) ‘sleeve’: 152, 162; see also mèi < *mjiejH*
袂 mèi — *mjiejH* < *k.met-s ‘sleeve’: 152, 162; see also mèi < *kwet*
妹 mèi — *mwojH* < *C.mˤə[t]-s ‘younger sister’: 287
門 mén — *mwon* < *mˤə[r] ‘gate, door’: 63, 284, 288
黽 měng — *meangX* < *mˤrəŋʔ ‘toad’: 133
孟 mèng — *maengH* < *mˤraŋ-s ‘eldest, great’: 111
迷 mí — *mej* < *mˤij ‘go astray’: 275, 401n91
麛 mí — *mej* < *m-ŋˤe ‘fawn; to hunt a young animal’: 133
麋 mí — *mij* < *mr[i]j ‘kind of deer’: 289
彌 mí — *mjieX* < *m-nə[r]ʔ ‘stop’: 133
米 mǐ — *mejX* < *(C.)mˤ[e]jʔ ‘millet or rice grains, dehusked and polished’: 172, 275
靡 mǐ — *mjeX* < *m(r)ajʔ ‘fall over’: 218
敉 mǐ — *mjieX* < *me[j]ʔ ‘achieve’: 275
瀰 mǐ — *mjieX* < *m.nerʔ ‘richly flowing stream’: 262, 400n70
汨 mì — *mek* < *m.nˤik ‘(name of a river)’: 240–241
密 mì — *mit* < *mri[t] ‘dense’: 205, 216, 290
蜜 mì — *mjit* < *mit ‘honey’: 205–206, 216, 290
眠 mián — *men* < *mˤi[n] ‘shut the eyes; sleep’: 204, 291
俛 miǎn — *mjenX* < *mr[a][n]ʔ ‘bend the head’: 274
勉 miǎn — *mjenX* < *mr[o][r]ʔ ‘make an effort’: 397n29
面 miàn — *mjienH* < *C.me[n]-s ‘face’: 96, 172
滅 miè — *mjiet* < *[m]et ‘destroy’: 143, 210, 275
緡 mín — *min* < *m-ru[n] (dialect: *m-r- > *mr-) ‘wrap around’: 294
銘 míng — *meng* < *mˤeŋ ‘inscription’: 69–70, 235
明 míng — *mjaeng* < *mraŋ ‘bright’: 57, 152
鳴 míng — *mjaeng* < *m.reŋ ‘cry (of birds or animals)’: 75, 216, 232
名 míng — *mjieng* < *C.meŋ ‘name’: 69–70, 216, 232, 235
命 mìng — *mjaengH* < *m-riŋ-s (dialect: *m-r- > *mr-) ‘command (n.)’: 134, 217, 237, 238, 396n28, 398n46, 398n48
謬 miù — *mjiwH* < *m-riw-s (dialect: *m-r- > *mr-) ‘lie, error < “twist the truth”’: 57, 300, 301
磨 mó — *ma* < *mˤaj ‘rub, grind’: 58, 92, 110, 257; see also mò < *maH*
磨 mò — *maH* < *mˤaj-s ‘grinding stone’: 58; see also mó < *ma*
莫 mò — *mak* < *mˤak ‘there is no X such that X…’: 226
墨 mò — *mok* < *C.mˤək ‘ink’: 42
沒 mò — *mwot* < *mˤut ‘to dive, drown, die’: 294
謀 móu — *mjuw* < *mə ‘plan (v.)’: 246

牡 mǔ *muwX* < *m(r)uʔ ‘male’: 248, 397n30
穆 mù *mjuwk* < *mriwk ‘harmonious, concord’: 249, 301
睦 mù *mjuwk* < *mriwk ‘harmonious, concord’: 249
墓 mù *muH* < *C.mˁak-s ‘grave (n.)’: 226
木 mù *muwk* < *C.mˁok ‘tree, wood’: 125
納 nà *nop* < *nˁ[u]p ‘bring or send in’: 58, 308, 309
乃 nǎi *nojX* < *nˁəʔ ‘then’: 72–73, 146, 147, 229
迺 nǎi *nojX* < *nˁərʔ ‘then’: 146
奈 nài *najH* < *nˁa[t]-s ‘cope with’: 197
難 nán *nan* < *nˁar ‘difficult’: 66, 110, 111, 112, 257, 258, 279
南 nán *nom* < *nˁ[ə]m ‘south’: 92, 310
內 nèi *nwojH* < *nˁ[u]p-s ‘inside’: 58, 115, 309
能 néng *nong* < *nˁə(ʔ) ‘able; ability’: 38–39, 382n24
麑 ní *mej* < *m-ŋˁe ‘fawn’: 56, 133
鬻 ní *nej* < *nˁer ‘pickled meat with bones in it’: 66, 279
尼 ní *nejH* < *nˁərʔ-s ‘to stop’: 147, 390n74; see also ní < *nejX*
尼 ní *nejX* < *nˁərʔ ‘to stop’: 147; see also ní < *nejH*
倪 ní *ngej* < *ŋˁe ‘young and weak’: 109, 133
柅 nǐ *nrijX* < *n<r>[ə]rʔ ‘a stopper for carriages’: 147
溺 nì *nek* < *nˁewk ‘to sink in water’: 299; see also niào < *newH*
逆 nì *ngjaek* < *ŋrak ‘go against’: 56, 148, 149, 225, 391n78
逆 nì *ngjaek* < *ŋrak ‘go against’: 80, 110, 130, 148, 225
刏 nì *nrit* < *n<r>[i]k ‘glue’: 80
昵 nì *nrit* < *n<r>ik ‘close, intimate’: 241
暱 nì *nrit* < *n<r>ik ‘close, intimate’: 241
年 nián *nen* < *C.nˁi[ŋ] ‘harvest; year’: 96, 172, 239
念 niàn *nemH* < *nˁim-s ‘think of’: 179, 304, 305, 310
尿 niào *newH* < *kə.nˁewk-s ‘urine’: 96, 184–185, 286, 299
溺 niào *newH* < *kə.nˁewk-s ‘urine’: 37, 96, 184–185, 286, 299; see also nì < *nek*
闑 niè *ngjet* < *ŋr[e]t ‘vertical post’: 275
聶 niè *nrjep* < *nrep ‘promise; whisper in one’s ear’: 185, 313
踂 niè *nrjep* < *n<r>ep ‘unable to walk’: 57, 80
躡 niè *nrjep* < *nrep ‘trample’: 185
凝 níng *nging* < *[ŋ](r)əŋ ‘freeze, coagulate’: 396n27
佞 nìng *nengH* < *nˁiŋ-s ‘clever’: 238–239
狃 niǔ *nrjuwX* < *Cə.n<r>uʔ ‘animal tracks; claws’: 115, 190
紐 niǔ *nrjuwX* < *n<r>uʔ ‘fastener’: 144
耨 nòu *nuwH* < *nˁok-s ‘weeding tool with short handle’: 390n71
虐 nüè *ngjak* < *[ŋ](r)awk ‘cruel’: 297

那 nuó — *na* < *nˢar ‘ample’: 257

儺 nuó — *na* < *nˢar ‘expel demons’: 258

藕 ǒu — *nguwX* < *C.ŋˢ(r)oʔ ‘lotus root’: 172, 392

拍 pāi — *phaek* < *mə-pʰˢrak ‘to strike’: 177

簰 pái — *bea* < *Cə.[b]ˢre ‘raft’: 86

排 pái — *beaj* < *[b]ˢrəj ‘push’: 285

畔 pàn — *banH* < *m-pʰˢan-s ‘bank between fields’: 55, 60

判 pàn — *phanH* < *pʰˢan-s ‘divide’: 55, 60, 61

旁 páng — *bang* < *[b]ˢaŋ ‘side; broad’: 227

摽 pāo — *phaew* < *pʰˢrew ‘cast aside’: 298; see also piāo < *phew*

袍 páo — *baw* < *m.[p]ˢu ‘long robe’: 55

貔 péi — *bij* < *[b]rə ‘kind of wild cat (pron. in northern Yān 燕 and Cháoxiǎn 朝鮮, ap. *Fāngyán*)’: 162, 391n89, 392n90; see also 貔狸 péilí < *bij.li*

貔狸 péilí — *bij.li* < *bə.rə ~ *phij.li* < *pʰə.rə ‘kind of wild cat (Jiāngnán pron. ap. Guō Pú, ca. 300 CE): 162, 392n90; see also 貔 péi < *bij*, 狸 lí < *li*

烹 pēng — *phaeng* < *[p.qʰ]ˢraŋ ‘boil (v.)’: 157

彭 péng — *baeng* < *C.[b]ˢraŋ ‘(place name)’: 227

篷 péng — *buwng* < *C.bˢoŋ ‘awning; sail’: 86

丕 pī — *phij* < *pʰrə ‘great’: 392n89

疲 pí — *bje* < *[b](r)aj ‘weary, exhausted’: 65

皮 pí — *bje* < *m-[p](r)aj ‘skin’: 65, 86, 269, 393n103

毗 pí — *bjij* < *[b]ij ‘assist; boastful’: 197, 401n91

貔 pí — *bjij* < *[b]ij ‘kind of wild cat’: 162

羆 pí — *pje* < *praj ‘brown-and-white bear’: 269–270

諀 pǐ — *phjieX* < *pʰe[r]ʔ ‘slander’: 278

諞 pián — *bjien* < *[m-pʰ]e[r] ‘insincere words’: 278; see also biàn < *bjienX*

平平 piánpián — *bjien-bjien* < *[b]en-[b]en ‘distinguish; punctilious’: 234

蹁躚 piánxiān — *ben.sen* < *bˢe[r].sˢe[r] ‘walk with difficulty (*Shuōwén*)’: 278

片 piàn — *phenH* < *pʰˢe[n]-s ‘half; partial’: 104

騙 piàn — *phjienH* < *phen(ʔ)-s ‘to fool, to cheat’: 104

摽 piāo — *phew* < *pʰˢew ‘strike down’: 298; see also pāo < *phaew*

瓢 piáo — *bjiew* < *(Cə.)[b]ew ‘gourd’: 298

貧 pín — *bin* < *[b]rə[n] ‘poor’: 216, 217, 288

品 pǐn — *phimX* < *pʰr[ə]mʔ ‘kind, class’: 42

牝 pìn — *bjijX* < *[b]irʔ (dialect: *-r > *-j) ‘female of animals’: 292; see also pìn < *bjinX*

牝 pìn — *bjinX* < *[b]irʔ ‘female of animals’: 292; see also pìn < *bjijX*

娉 pìn — *phjiengH* < *p.[ɻ]eŋ-s ‘inquire about (marriage)’: 167
瓶 píng — *beng* < *[b]ˤeŋ ‘bottle’: 86
馮 píng — *bing* < *[b]rəŋ ‘lean on’: 216
憑 píng — *bing* < *[b]rəŋ ‘lean on’: 216, 231
平 píng — *bjaeng* < *breŋ ‘even (adj.)’: 86, 88, 107, 123, 131, 234, 235
平 píng — *bjaeng* < *m-breŋ ‘make even’: 123, 131
婆 pó — *ba*, see 婆娑 pósuō < *ba.sa*
皤 pó — *ba* < *[b]ˤar ‘white, white-haired’: 259
婆娑 pósuō — *ba.sa* < *[b]ˤa[j].[s]ˤa[j] ‘saunter, dance’: 266
破 pò — *phaH* < *pʰˤaj-s ‘break (v.)’: 65, 257
剖 pōu — *phuwX* < *pʰˤ(r)oʔ ‘cleave, cut’: 242
仆 pū — *phuwH* < *pʰˤ(r)ok-s ‘fall prostrate’: 244
暴 pù — *buwk* < *m-pˤawk ‘expose to sun’: 297; see also bào < *bawH*
棲 qī — *sej* < *s-nˤər ‘bird’s nest’: 147, 391n75
妻 qī — *tshej* < *[tsʰ]ˤəj ‘consort, wife’: 147, 285, 391n75
戚 qī — *tshek* < *s.tʰˤiwk ‘relatives’: 301
緝 qī — *tship* < *[tsʰ][ə]p ‘hem (a garment)’: 303
齊 qí — *dzej* < *[dz]ˤəj ‘uniform, equal’: 58
懠 qí — *dzej* < *[dz]ˤ[i]j ‘angry’: 401n91
其 qí — *gi* < *gə ‘modal particle’: 53, 105
耆 qí — *gij* < *[g]rij ‘old’: 137, 216, 289, 290
祁 qí — *gij* < *[g]rij ‘(place name)’: 137, 216, 289, 290
騎 qí — *gje* < *C.g(r)aj ‘straddle; ride’: 170
奇 qí — *gje* < *N-k(r)aj ‘strange’: 269; see also jī < *kje*
祇 qí — *gjie* < *[k.d]e (dialect *k.d- > *g.d- > *g-, no palatalization) ‘earth spirit’: 161
旂 qí — *gj+j* < *C.[ɢ]ər ‘banner; flag’: 253, 254, 255
稽 qǐ — *khejX* < *[kʰ]ˤijʔ ‘bow the head to the ground’: 289
企 qǐ — *khjieX* < *kʰeʔ ‘stand on tiptoe’: 102
豈 qǐ — *khj+jX* < *C.qʰəjʔ ‘how’: 83
乞 qǐ — *khj+t* < *C.qʰət ‘beg, ask’: 169–170, 287
契 qì — *khejH* < *[kʰ]ˤet-s ‘script notches’: 137, 276; see also qiè < *khet*
泣 qì — *khip* < *k-ɟəp ‘weep’: 57, 134, 166
棄 qì — *khjijH* < *[kʰ]i[t]-s ‘throw away, abandon’: 78
氣 qì — *khj+jH* < *C.qʰəp-s ‘cloudy vapors’: 308; see also xì < *xj+jH*
气 qì — *khj+jH* < *C.qʰəp-s ‘(inhaled thing:) breath, air, vapors’: 170
訖 qì — *xj+jH* < *qʰə[t]-s ‘finish; rest’: 287
洽 qià — *heap* < *N-kˤ<r>[o]p ‘accord with’: 311, 312
愆 qiān — *khjen* < *C.qʰra[n] ‘exceed, err’: 169
千 qiān — *tshen* < *s.n̥ˤi[ŋ] ‘thousand’: 7, 51, 147, 148, 150, 239

諓 qiān — *tshjem* < *s.q^{h}[a]m (dialect: *s.q^{h}- > *tsh-*) ‘insincere, ingratiating’: 137; see also xiān < *sjem*

僉 qiān — *tshjem* < *s.q^{h}[a]m (dialect: *s.q^{h}- > *tsh-*) ‘all; many’: 137

遷 qiān — *tshjen* < *[ts^{h}]ar ‘move (v.)’: 401n82

前 qián — *dzen* < *[dz]^{ʂ}en ~ *m-dz^{ʂ}en ‘before’: 212, 277

潛 qián — *dzjem* < *[dz][o]m ‘go under water’: 261; see also 驩潛 Huānqián < *xwan.dzjem*

鉗 qián — *gjem* < *C.[g]<r>[e]m ‘pincers, tongs’: 313, 314

淺 qiǎn — *tshjenX* < [ts^{h}]e[n]ʔ ‘shallow’: 392n94

遣 qiǎn — *khjienX* < *[k]^{h}e[n]ʔ ‘send’: 78, 277

歉 qiàn — *kheamH* < *k^{hʂ}remʔ-s ‘deficient, modest’: 313

欠 qiàn — *khjomH* < *[k]^{h}(r)om-s ‘yawn’: 313, 314

羌 qiāng — *khjang* < *C.q^{h}aŋ ‘western tribes’: 106, 385n28

强 qiáng — *gjang* < *N-kaŋ ‘strong’: 227

磽 qiāo — *khaew* < *[C.q]^{hʂ}rew ‘stony soil’: 298

橋 qiáo — *gjew* < *[g](r)aw ‘bridge’: 106, 296

巧 qiǎo — *khaewX* < *[k^{h}]^{ʂ}ruʔ ‘artful’: 247

竅 qiào — *khewH* < *[k]^{hʂ}ewk-s ‘hole, opening’: 299

且 qiě — *tshjaeX* < *[ts^{h}]Aʔ ‘moreover’: 145, 223; see also jū < *tsjo*

鍥 qiè — *khet* < *k^{hʂ}et ‘cut; a sickle’: 275

竊 qiè — *tshet* < *[ts^{h}]^{ʂ}et ‘steal’: 275

切 qiè — *tshet* < *[ts^{h}]^{ʂ}i[t] ‘cut; urgent’: 290

契闊 qìèkuò — *khet.khwat* < *k^{hʂ}et.[k]^{hʂ}ot ‘hard-working (Ode 31.4)’: 214, 280; see also qì < *khejH*

親 qīn — *tshin* < *[ts^{h}]i[n] ‘close; parents’: 291

駸 qīn — *tsrhim* < *[ts^{h}]r[i]m, also MC *tshim* (MC *tsrh-* > *tsh-*) ‘gallop (Máo 162.5)’: 305, 310

矜 qín — *gin* < *griŋ ‘kind of lance’: 105, 238, 398n49; see also jīn < *king*

芹 qín — *gj+n* < *C.[ɢ]ər ‘cress’: 171, 255

寢 qǐn — *tshimX* < *[ts^{h}]imʔ ‘sleep’: 305, 310

輕 qīng — *khjieng* < *[k^{h}]eŋ ‘light (≠ heavy)’: 79, 102, 235

清 qīng — *tshjeng* < *ts^{h}eŋ ‘clear (adj.)’: 120, 139, 235

晴 qíng — *dzjeng* < *N-ts^{h}eŋ ‘to clear (of weather)’: 95, 120, 139

頃 qǐng — *khjwiengX* < *[k]^{wh}eŋʔ ‘interval, short while’: 235

秋 qiū — *tshjuw* < *ts^{h}iw ‘autumn; crop’: 104, 300, 301, 389n63

逑 qiú — *gjuw* < *g(r)u ‘come together; mate (n.)’: 105, 108

胠 qū — *khjaep* < *[k^{h}]<r>ap ‘armpit; right wing of an army’: 153

曲 qū — *khjowk* < *k^{h}(r)ok ‘to bend’: 120, 175, 243, 387n43

屈 qū — *khjut* < *[k^{h}]ut ‘bend, subdue’: 79, 294, 387n43

取 qǔ — *tshjuX* < *ts^{h}oʔ ‘take’: 242

去 qù — *khjoH* < *[k]^{h}(r)ap-s ‘depart’: 151, 153–154, 312, 391n83

闃 qù — *khwek* < *[k-m̥]^{ʕ}ik (dialect: *-ik > *-ek) ‘quiet’: 152

全 quán — *dzjwen* < *[dz]o[n] ‘complete (adj.)’: 282

泉 quán — *dzjwen* < *s-N-ɢ^{w}ar (we would expect *z-*) ‘spring, source’: 258

拳 quán — *gjwen* < *N-kro[n] ‘fist (< rolled-up hand)’: 118

犬 quǎn — *khwenX* < *[k]^{whʕ}[e][n]ʔ ‘dog’: 277

勸 quàn — *khjwonH* < *C.q^{wh}ar-s ‘encourage’: 170

缺 quē — *khwet* < *Nə-[k]^{whʕ}et ‘break; defective’: 175, 275, 276

殼 què — *khaewk* < *[k^{h}]^{ʕ}rok ‘hollow shell, hollow’: 244

卻 què — *khjak* < *[k]^{h}ak ‘decline, refuse’: 216

却 què — *khjak* < *[k]^{h}ak ‘decline, refuse’: 225

髯 rán — *nyem* < *nam ‘whiskers’: 110

然 rán — *nyen* < *[n]a[n] ‘so, thus; (adv suffix)’: 39, 259, 263

染 rǎn — *nyemX* < *C.n[a]mʔ ‘to dye’: 172

攘 ráng — *nyang* < *naŋ ‘steal; expel’: 149

壤 rǎng — *nyangX* < *naŋʔ ‘cultivated soil’: 111

仁 rén — *nyin* < *niŋ ‘kind’: 115, 148, 238–239

人 rén — *nyin* < *ni[ŋ] ‘(other) person’: 147, 148, 150, 211–212, 239, 386, 401n90

刃 rèn — *nyinH* < *nə[n]-s ‘edge of a blade’: 288

日 rì — *nyit* < *C.nik ‘sun; day’: 240–241

衵 rì — *nyit* < *nik ‘a lady′s clothes nearest to the body’: 241

榮 róng — *hjwaeng* < *[N-q^{w}]reŋ ‘glory, honor’: 216, 234, 235, 278; see also 榮觀 róngguàn < *hjwaeng.kwanH*

嶸 róng — *hweang*, see 崢嶸 zhēngróng < *dzreang.hweang*

頌 róng — *yowng* < *[ɢ](r)oŋ ‘appearance’: 182

容 róng — *yowng* < *[ɢ](r)oŋ ‘contain’: 28–29, 66, 182, 381n14, 383n7

宂 róng — *yowng* < *[ɢ](r)oŋ ‘contain’: 28

榮觀 róngguàn — *hjwaeng.kwanH* < *[N-q^{w}]reŋ.C.q^{wʕ}ar-s ‘imperial palace; walls and watchtowers’: 234, 278; see also 榮 róng < *hjwaeng*, 觀 guàn < *kwanH*

肉 ròu — *nyuwk* < *k.nuk ‘meat, flesh’: 92, 163

如 rú — *nyo* < *na ‘as, like, if’: 29

入 rù — *nyip* < *n[u]p ‘enter’: 76, 308, 309

瑞 ruì — *dzyweH* < *[d]or-s ‘jade tablet’: 283

若 ruò — *nyak* < *nak ‘agree’: 225

洒 sǎ — *sreaH* < *Cə.s<r>ərʔ-s ‘sprinkle’: 57

灑 sǎ — *sreaH* < *Cə.s<r>ərʔ-s (MC *srj-* > *sr-*) ‘sprinkle’: 57, 187; see also sǎ < *sreaX*, xǐ < *srjeX*, xǐ < *srjeH*

灑 să — *sreaX* < *Cə.s<r>ərʔ (MC *srj-* > *sr-*) ‘sprinkle’: 187, 396n23; see also să < *sreaH*, xǐ < *srjeX*, xǐ < *srjeH*

纚 să — *sreaX* < *sreʔ (MC *srj-* > *sr-*) ‘hair-band’: 232, 233; see also xǐ < *srjeX*

三 sān — *sam* < *s.rum (*sr-* > *s-*; influenced by 四 *s-?) ‘three’: 75

散 sàn — *sanH* < *mə-sᶜa[n]ʔ-s ‘scatter (v.t.)’: 177

桑 sāng — *sang* > *[s]ᶜaŋ ‘mulberry tree’: 390n66

喪 sāng — *sang* < *s-mᶜaŋ ‘mourning, burial’: 56, 143, 390n66; see also sàng < *sangH*

喪 sàng — *sangH* < *s-mᶜaŋ-s ‘lose; destroy’: 143; see also sāng < *sang*

搔 sāo — *saw* < *s-[ts]ᶜu ‘scratch (v.)’: 136

塞 sè — *sok* < *[s]ᶜək ‘stop up, block (v.)’: 230

色 sè — *srik* < *s.rək ‘color; countenance’: 150

嗇 sè — *srik* < *s.rək ‘reap’: 150

沙 shā — *srae* < *sᶜraj ‘sand’: 80, 101, 213

殺 shā — *sreat* < *s<r>at ‘kill’: 74, 214, 271, 272, 395n22, 396n23; see also shài < *sreajH*

釃 shāi — *srje* < *Cə.sre ‘to strain off wine’: 187

殺 shài — *sreajH* < *s<r>at-s ‘diminish’: 272, 395n22, 396n22; see also shā < *sreat*

潸 shān — *sraen* < *[s]ᶜra[n] ‘tears flowing’: 274

山 shān — *srean* < *s-ŋrar ‘mountain, hill’: 148, 214, 258, 395n23, 399n64

苫 shān — *syem* < *s.tem ‘thatch’: 315, 401n86

羶 shān — *syen* < *s.tan ‘smell of sheep’: 274

羴 shān — *syen* < *s.tan ‘smell of sheep’: 274, 321

壇 shàn — *dzyenX* < *[d]anʔ ‘leveled area’: 218; see also tán < *dan*

善 shàn — *dzyenX* < *[g]e[n]ʔ ‘good’: 77, 78, 277

傷 shāng — *syang* < *l̥aŋ ‘wound’: 166

商 shāng — *syang* < *s-taŋ ‘estimate; business; trader’: 56

上 shàng — *dzyangH* < *daŋʔ-s ‘top, above (n.)’: 188; see also shàng < *dzyangX* ‘ascend’, shàng < *dzyangX* ‘put up’

上 shàng — *dzyangX* < *Cə-daŋʔ ‘ascend’: 132, 188, 227; see also shàng < *dzyangX* ‘to put up’, shàng < *dzyangH*

上 shàng — *dzyangX* < *m-daŋʔ ‘to put up’: 132, 188; see also shàng < *dzyangX* ‘ascend’, shàng < *dzyangH*

餉 shàng — *syangH* < *n̥aŋ(ʔ)-s ‘give food; food’: 385n23

筲 shāo — *sraew* < *[s](ᶜ)rew ‘bamboo vessel’: 298

燒 shāo — *syew* < *[n̥]ew ‘burn’: 298, 299

稍 shào — *sraewH* < *[s](ᶜ)rew-s ‘gradually; rations’: 298, 395n23

削 shào — *sraewH* < *[sᶜ]rewk-s ‘zone near the capital’: 300; see also xiāo < *sjak* and xiào < *sjewH*

賒 shē — *syae* < *l̥A ‘trade on credit’: 115

奢 shē — *syae* < *s.tʰA ‘extravagant’: 138, 146, 224

折 shé — *dzyet* < *N-tet ‘bend (v.i.)’: 54, 117, 118, 275; see also dì < *dejH*, zhé < *tsyet*

蛇 shé — *zyae* < *Cə.lAj ‘snake’: 190, 257, 269, 270; see also 委蛇 wēiyí < *ʔjwe.ye*

舌 shé — *zyet* < *mə.lat ‘tongue’: 53, 88, 180, 271

社 shè — *dzyaeX* < *m-tʰAʔ ‘sacrifice to the spirit of the soil’: 128, 224, 388n51

攝 shè — *syep* < *kə.n̥ep ‘catch, gather up’: 96, 185–186, 311

設 shè — *syet* < *ŋ̊et ‘set up’: 29–30, 77, 78, 275

射 shè — *zyaeH* < *Cə.lAk-s ‘shoot; archer’: 226; also shè < *zyek*

射 shè — *zyek* < *Cə.lAk ‘hit with bow and arrow’: 190, 226; see also shè < *zyaeH*

參 shēn — *srim* < *srum ‘the constellation Orion’ (named for the three stars in Orion’s belt)’: 75; see also 參差 cēncī < *tsrhim. tsrhje*

詵 shēn — *srin* < *srər ‘numerous’: 255

身 shēn — *syin* < *n̥i[ŋ] ‘body; self’: 76, 115, 147, 148, 150, 211, 212, 239, 398n50

諗 shěn — *syimX* < *n̥imʔ ‘remonstrate’: 305, 310

哂 shěn — *syinX* < *n̥ərʔ ‘smile’: 147

腎 shèn — *dzyinX* < *Cə.[g]i[n]ʔ ‘kidney’: 77, 79, 189, 291

生 shēng — *sraeng* < *srjaeng* < *sreŋ ‘bear, be born; live’: 74–75, 99, 233, 235, 236, 381n9

升 shēng — *sying* < *s-təŋ ‘rise (v.)’: 56, 61, 93, 231

勝 shèng — *syingH* < *l̥əŋ-s ‘overcome; surpass’: 133

師 shī — *srij* < *srij ‘army’: 289, 401n91

蝨 shī — *srit* < *srik ‘louse’: 74, 101, 240, 398n51

施 shī — *sye* < *l̥aj ‘give, bestow’: 269

尸 shī — *syij* < *l̥əj ‘corpse’: 109, 115, 285–286, 385n26, 401n91

蓍 shī — *syij* < *s-kij ‘Achillea (?)’: 137

石 shí — *dzyek* < *dAk ‘stone’: 76, 107, 225, 226

十 shí — *dzyip* < *t.[g]əp ‘ten’: 79, 154, 160

識 shí — *syik* < *s-tək ‘know’: 135

食 shí — *zyik* < *mə-lək ‘eat’: 180, 230; see also sì < *ziH*

實 shí — *zyit* < *mə.li[t] ‘fruit; full’: 7, 164, 180, 290

使 shǐ — *sriH* < *s-rəʔ-s ‘envoy’: 144; see also shǐ < *sriX*

使 shǐ — *sriX* < *s-rəʔ ‘send; cause’: 144; also shǐ < *sriH*

屎 shǐ — *syijX* < *[qʰ]ijʔ ‘excrement’: 78, 103, 286, 385n26; see also xī < *xjij*

噬 shì *dzyejH* < *[d]e[t]-s ‘bite (v.)’: 276
是 shì *dzyeX* < *[d]eʔ ‘this’: 232
氏 shì *dzyeX* < *k.deʔ ‘clan’: 160–161
視 shì *dzyijX* < *gijʔ ‘look, see’: 56, 77, 105, 142
市 shì *dzyiX* < *C.[d]əʔ ‘market (n.)’: 171
世 shì *syejH* < *l̥ap-s ‘generation’: 109, 144
勢 shì *syejH* < *n̊et-s ‘circumstances, setting’: 29–30, 78, 275, 276
螫 shì *syek* < *[l̥]Ak ‘sting (v.)’: 226
釋 shì *syek* < *l̥Ak ‘wash rice’: 226
奭 shì *syek* < *[qʰ](r)Ak ‘red’: 103
襫 shì *syek* < *[qʰ](r)Ak ‘raincoat of straw’: 103
試 shì *syiH* < *l̥ək-s ‘test, try’: 93, 115
式 shì *syik* < *l̥ək ‘pattern’: 230
室 shì *syit* < *s.ti[t] ‘chamber; house’: 93, 291
示 shì *zyijH* < *s-gijʔ-s ‘show (v.)’: 56, 105, 142, 181
收 shōu *syuw* < *s-kiw ‘collect; harvest’: 137, 300
首 shǒu *syuwX* < *l̥uʔ ‘head’: 77, 93, 115, 184
手 shǒu *syuwX* < *n̥uʔ ‘hand’: 93, 115
守 shǒu *syuwX* < *s-tuʔ ‘keep, guard’: 139
授 shòu *dzyuwH* < *[d]uʔ-s ‘give; hand over’: 59
受 shòu *dzyuwX* < *[d]uʔ ‘receive’: 59
瘦 shòu *srjuwH* < *sru-s ‘lean (adj.)’: 247
獸 shòu *syuwH* < *s.tʰu(ʔ)-s ‘(wild) animal’: 139
疏 shū *srjo* < *sra ‘wide apart’: 192
疋 shū *srjo* < *sra ‘foot’: 150
舒 shū *syo* < *l̥a ‘slow, easy’: 93
書 shū *syo* < *s-ta ‘write’: 29, 93, 146, 224, 320
輸 shū *syu* < *l̥o ‘convey (v.); lose’: 29
叔 shū *syuwk* < *s-tiwk ‘third of four brothers’: 301
攄 shū *trhjo* < *r̥a ‘extend’: 116
秫 shú *zywit* < *m.lut ~ *mə.lut ‘glutinous millet’: 89, 133, 389n56
署 shǔ *dzyoH* < *m-taʔ-s ‘to place; position’: 61
屬 shǔ *dzyowk* < *N-tok ‘be attached to’: 117, 118, 243; see also zhǔ < *tsyowk*
數 shǔ *srjuX* < *s-roʔ ‘count (v.)’: 80, 144, 242, 243; see also shù < *srjuH*, shuò < *sraewk*
黍 shǔ *syoX* < *s-tʰaʔ ‘Panicum miliaceum (glutinous)’: 138–139
暑 shǔ *syoX* < *s-tʰaʔ ‘heat’: 138–139
樹 shù *dzyuH* < *m-toʔ-s ‘tree’: 95, 124, 125; see also shù < *dzyuX*

樹 shù — *dzyuX* < *m-toʔ ‘plant (v.); place upright’: 124, 125; see also shù < *dzyuH*

數 shù — *srjuH* < *s-roʔ-s ‘number (n.)’: 80, 144, 243; see also shǔ < *srjuX*, shuò < *sraewk*

恕 shù — *syoH* < *n̥a-s ‘indulgent’: 29

衰 shuāi — *srwij* < *sruj ‘diminish, decline’: 293; see also cuī < *tsrhjwe*

率 shuài — *srwijH* < *s-rut-s ‘lead (v.); commander’: 144; see also shuài < *srwit*

帥 shuài — *srwijH* < *s-rut-s ‘leader (of an army)’: 293

率 shuài — *srwit* < *s-rut ‘follow, go along’: 144, 293, 294; see also shuài < srwijH

蟀 shuài — *srwit*, see 蟋蟀 xīshuài < *srit.srwit*

雙 shuāng — *sraewng* < *[s]roŋ ‘a pair’: 244

霜 shuāng — *srjang* < *[s]raŋ ‘hoar-frost’: 196

誰 shuí — *dzywij* < *[d]uj ‘who’: 293

水 shuǐ — *sywijX* < *s.turʔ (dialect: *-r > *-j) ‘water; river’: 93, 97, 146, 253, 295, 324

帨 shuì — *sywejH* < *l̥ot-s ‘kerchief’: 150; see also shuì < *tshjwejH*

帨 shuì — *tshjwejH* < *s.l̥ot-s ‘kerchief’: 150; see also shuì < *sywejH*

説 shuì — *sywejH* < *l̥ot-s ‘exhort’: 281; see also shuō < *sywet*

順 shùn — *zywinH* < *Cə.lu[n]-s ‘follow; obey’: 165–166, 183

説 shuō — *sywet* < *l̥ot ‘speak, explain’: 281; see also shuì < *sywejH*

朔 shuò — *sraewk* < *s-ŋrak ‘first day of the month’: 56, 80, 148, 149, 225, 391n78

數 shuò — *sraewk* < *s-rok ‘frequently’: 144, 243; see also shǔ < *srjuX*, shù < *srjuH*

爍 shuò — *syak* < *r̥ewk (W dialect: *r̥- > *x-, palatalizing) ‘melt, infuse’: 78

絲 sī — *si* < *[s]ə ‘silk’: 90

私 sī — *sij* < *[s]əj ‘private’: 90, 285, 401n91

斯 sī — *sje* < *[s]e ‘this’: 262; see also 斯須 sīxū < *sje.sju*

斯 sī — *sje* < *[s]e ‘split (v.)’: 232; see also 斯須 sīxū < *sje.sju*

霹 sī — *sje* < *s[e]r ‘light rain’: 262; see also xiàn < *senH*

斯須 sīxū — *sje.sju* < *[s]e.[s]o ‘a short time’: 214; see also see also 斯 sī < *sje*

死 sǐ — *sijX* < *sijʔ ‘die (v.): 90, 289, 292’

四 sì — *sijH* < *s.li[j]-s ‘four’: 90

飼 sì — *ziH* < *s-m-lək-s ‘feed (v.)’: 230, 398n41

飤 sì — *ziH* < *s-m-lək-s ‘feed (v.)’: 230

食 sì — *ziH* < *s-m-lək-s ‘feed (v.)’: 230; see also shí < *zyik*
似 sì — *ziX* < *sə.ləʔ ‘resemble’: 183
巳 sì — *ziX* < *s-[ɢ]əʔ ‘sixth earthly branch’: 30–31, 382n17, 386n30
俟 sì — *zriX* < *s-[ɢ]rəʔ ‘wait’: 141
嵩 sōng — *sjuwng* < *[s]uŋ ‘high’: 250
松 sōng — *zjowng* < *sə.ɢoŋ ‘pine (n.)’: 181
搜 sōu — *srjuw* < *sru ‘search’: 247, 390n67
叟 sǒu — *suwX* < *s-ruʔ (dialect: MC *srj-* > *sr-* > *s-*) ‘old man’: 144–145, 167, 247, 248, 389n59
妻 sǒu — *suwX* < *s-ruʔ (dialect: MC *srj-* > *sr-* > *s-*) ‘old man’: 144, 247
傻 sǒu — *suwX* < *s-ruʔ (dialect: MC *srj-* > *sr-* > *s-*) ‘old man’: 144, 247
蘇 sū — *su* < *s-ŋˢa ‘revive’: 148–149, 391n78
肅 sù — *sjuwk* < *siwk ‘solemn, severe’: 249, 295, 301, 302
宿 sù — *sjuwk* < *[s]uk ‘spend the night’: 249; see also xiù < *sjuwH*
愬 sù — *suH* < *s-ŋˢak-s ‘complain, accuse’: 56
算 suàn — *swanH* < *[s]ˢorʔ-s ‘calculate; tally’: 283
綏 suí — *swij* < *s.nuj ‘comfort (v.)’: 293
隨 suí — *zjwe* < *sə.loj ‘follow’: 182, 252, 271
髓 suǐ — *sjweX* < *s-lojʔ ‘marrow’: 279
碎 suì — *swojH* < *[s-tsʰ]ˢu[t]-s ‘break’: 293
筍 sǔn — *swinX* < *s-qʷi[n]ʔ ‘bamboo sprouts’: 137
隼 sǔn — *swinX* < *[s]urʔ ‘hawk, falcon’: 253, 295
娑 suō — *sa*, see 婆娑 pósuō < *ba.sa*
縮 suō — *srjuwk* < *[s]ruk ‘shrink’: 249
所 suǒ — *srjoX* < *s-qʰ<r>aʔ ‘place (n.); that which’: 129, 140; see also 湑湑 hǔhǔ < *xuX.xuX,* 許許 hǔhǔ < *xuX.xuX*
他 tā — *tha* < *[ʟ]ˢaj (E. dialect:*[ʟ]ˢ- > *th-*) ‘another’: 269
獺 tǎ — *that* < *[ɾ]ˢat ‘otter’: 115, 134, 135; see also tǎ < *trhaet*
獺 tǎ — *trhaet* < *[m-ɾ]ˢat ‘otter’: 134, 135; see also tǎ < that
遝 tà — *dop* < *m-rˢəp ‘reach to; and’: 134, 308
眾 tà — *dop* < *m-rˢəp ‘reach to; and’: 133, 134, 308
灘 tān — *than* < *[ɳ]ˢar (E dialect: *[ɳ]ˢ- > *th-*) ‘foreshore’: 111, 112
歎 tān — *than* < *[ɳ]ˢar ‘to sigh’: 258, 260
嘽嘽 tāntān — *than-than* < *tʰˢar-tʰˢar ‘numerous’: 257
覃 tán — *dom* < *N.rˢ[o]m ‘extend, spread’: 386n31
彈 tán — *dan* < *Cə.dˢar ‘shoot pellets’: 189
壇 tán — *dan* < *[d]ˢan ‘altar’: 25; see also shàn < *dzyenX*
坦 tǎn — *thanX* < *[tʰ]ˢa[n]ʔ ‘level, at ease’: 113
炭 tàn — *thanH* < *[tʰ]ˢa[n]-s ‘charcoal, coal’: 104
湯 tāng — *thang* < *[ʟ]ˢaŋ ‘hot liquid’: 111, 114, 115, 166; see also tāng < *thang* ‘name of first Shāng ruler’

湯 tāng — *thang* < late OC *l̥ˤaŋ ‘name of first Shāng ruler’, from earlier *ɾ̥ˤaŋ: 166; see also tāng < *thang* ‘hot liquid’

康 tāng — *thang* < *ɾ̥ˤaŋ ‘name of first Shāng ruler’: 166; see also kāng < *khang*

唐 tāng — *thang* < *ɾ̥ˤaŋ ‘name of first Shāng ruler’: 166; see also táng < *dang*

糖 táng — *dang* < *C.lˤaŋ ‘sugar’: 109

唐 táng — *dang* < *[N-]rˤaŋ ‘exaggerate; great’: 166; see also tāng < *thang*

饕餮 tāotiè — *thaw.thet* < *[tʰ]ˤaw.[tʰ]ˤət ‘glutton’: 287

桃 táo — *daw* < *C.lˤaw ‘peach’: 109, 172, 246, 387n34

逃 táo — *daw* < *lˤaw ‘flee’: 109

縢 téng — *dong* < *lˤəŋ ‘tie; band’: 307

梯 tī — *thej* < *l̥ˤ[ə]j ‘stairs’: 115

剔 tī — *thek* < *l̥ˤek ‘cut (v.)’: 233; see also tì < *thejH*

啼 tí — *dej* < *C.lˤe ‘weep, howl’: 232

嘶 tí — *dej* < *C.lˤe ‘weep, howl’: 232

體 tǐ — *thejX* < *ɾ̥ˤijʔ ‘body; limbs’: 112, 115

剔 tì — *thejH* < *l̥ˤek-s ‘shave’: 234; see also tī < *thek*

吞 tiān — *then* < *l̥ˤən ‘(surname)’: 202, 283; see also tūn < *thon*

天 tiān — *then* < *l̥ˤi[n] ‘heaven’: 113–114, 291; see also xiān < *xen*

田 tián — *den* < *lˤiŋ ‘field; to hunt’: 33, 60, 109

殄 tiǎn — *denX* < *[d]ˤə[n]ʔ ‘cease; destroy’: 288

舔 tiǎn — *themX* < *l̥ˤ[i]mʔ ‘to lick, to lap’ (not in *GSR*): 113

條 tiáo — *dew* < *[l]ˤiw ‘arrange; branch (n.), shoot (n.)’: 109, 300

挑 tiǎo — *dewX* < *lˤewʔ ‘provoke’: 298

怗 tiē — *thep* < *[tʰ]ˤep ‘submit, peaceful’: 315

餮 tiè — *thet*, see 饕餮 tāotiè < *thaw.thet*

挺 tǐng — *thengX* < *l̥ˤeŋʔ ‘stand up straight’: 159

壬 tǐng — *thengX* < *l̥ˤeŋʔ ‘good (*Shuōwén*)’: 159, 164

通 tōng — *thuwng* < *l̥ˤoŋ ‘penetrate’: 56, 81, 150

銅 tóng — *duwng* < *[l]ˤoŋ ‘bronze, copper’: 36

桶 tǒng — *thuwngX* < *l̥ˤoŋʔ ‘bucket’: 36

頭 tóu — *duw* < *[m-t]ˤo ‘head’: 55, 124

屠 tú — *du* < *[d]ˤa ‘butcher (v.)’: 27

涂 tú — *du* < *lˤa ‘path’: 26, 27

土 tǔ — *thuX* < *tʰˤaʔ ‘earth’: 128, 223, 224, 276, 388n51

吐 tǔ — *thuX* < *tʰˤaʔ ‘eject from mouth, spit’: 220

吐 tù — *thuH* < *tʰˤaʔ-s ‘vomit’: 220

團 tuán — *dwan* < *C.[d]ˤon ‘round, plenty’: 25, 171

彖 tuàn — *thwanH* < *l̥ˤo[r]-s ‘running pig’: 165

推 tuī — *thwoj* < *tʰˤuj ‘push away’: 139, 293

隤 tuí *dwoj* < *N-rᶜuj ‘exhausted’: 122
蜕 tuì *thwajH* < *l̥ᶜot-s ‘exuviae of insects or reptiles’: 115, 197, 281; see also yuè < *ywet*
退 tuì *thwojH* < *n̥ᶜ[u]p-s ‘withdraw (≠ advance)’: 115, 309
吞 tūn *thon* < *l̥ᶜən ‘to swallow’: 113, 202, 283; see also tiān < *then*
焞 tūn *thwon* < *tʰᶜur ‘ample’: 255
屯 tún *dwon* < *[d]ᶜun ‘accumulate’: 294
拖 tuō *tha* < *l̥ᶜaj ‘draw, pull’: 270
脱 tuō *thwat* < *mə-l̥ᶜot ‘peel off’ ; 180, 197, 280, 281
沱 tuó *da* < *lᶜaj ‘flow (v.)’: 271
鼉 tuó *da ~ dan* < *[d]ᶜar ‘alligator’: 258
隋 tuǒ *thwaX* < *l̥ᶜojʔ ‘shred sacrificial meat’: 112; see also huì < *xjwieH*
橢 tuǒ *thwaX* < *l̥ᶜojʔ ‘oval’: 270, 279
污 wā *'wae* < *qʷᶜra ‘impure, vile’: 44
蛙 wā *'wae* < *qʷᶜre (MC *-ae* for *-ea*) ‘frog’: 55, 100, 127; see also wā < *'wea*, wā < *hwae,* wā < *hwea*
蛙 wā *'wea* < *qʷᶜre ‘frog’: 55, 100, 127; see also wā < *'wae,* wā < *hwae*, wā < *hwea*
蛙 wā *hwae* < *m-qʷᶜre (MC *-ae* for *-ea*) ‘frog’: 55, 100, 127; see also wā < *‘wae, wā* < *'wea, wā* < *hwea*
蛙 wā *hwea* < *m-qʷᶜre ‘frog’: 55, 100, 127; see also wā < *'wae, wā* < *‘wea,*wā < *hwae*
瓦 wǎ *ngwaeX* < *C.ŋʷᶜra[j]ʔ ‘roof tile’: 42, 172
外 wài *ngwajH* < *[ŋ]ʷᶜa[t]-s ‘outside’: 272
丸 wán *hwan* < *[ɢ]ʷᶜar ‘pellet; ball’: 400n69; see also 烏桓 Wūhuán < *'u.hwan*
晚 wǎn *mjonX* < *m[o][r]ʔ ‘late’: 397n29
婉 wǎn *'jwonX* < *[ʔ]o[n]ʔ ‘beautiful’: 208–209, 395n16
王 wáng *hjwang* < *ɢʷaŋ ‘king’: 59, 107, 159, 227; see also wàng < *hjwangH*
亡 wáng *mjang* < *maŋ ‘flee; disappear; die’: 56, 143, 227, 390n66
往 wǎng *hjwangX* < *ɢʷaŋʔ ‘go to’: 107, 159, 227
網 wǎng *mjangX* < *maŋʔ ‘net’: 269, 270
王 wàng *hjwangH* < *ɢʷaŋ-s ‘be king’: 59; see also wáng < *hjwang*
望 wàng *mjangH* < *maŋ-s ‘look at from a distance’: 110
威 wēi *'jw+j* < *ʔuj ‘awe-inspiring’: 101, 151, 293
微 wēi *mj+j* < *məj ‘small’: 284
委蛇 wēiyí *'jwe.ye* < *q(r)oj.laj ‘compliant, complaisant’: 270; see also 蛇 shé < *zyae*
為 wéi *hjwe* < *ɢʷ(r)aj ‘make, do, act as’: 83, 107, 121, 269

帷 wéi — *hwij* < *ɢʷrij ‘curtain’: 107, 289
惟 wéi — *ywij* < *ɢʷij ‘(copula); namely’: 78, 107
維 wéi — *ywij* < *ɢʷij (? < *ɢʷuj) ‘rope for tying’: 289
洧 wěi — *hwijX* < *[ɢ]ʷrəʔ ‘name of a river’: 228
偽 wěi — *ngjweH* < *N-ɢʷ(r)aj-s ‘false’: 83, 121
謂 wèi — *hjw+jH* < *[ɢ]ʷə[t]-s ‘say, tell, call’: 287
胃 wèi — *hjw+jH* < *[ɢ]ʷə[t]-s ‘stomach’: 287
畏 wèi — *ʔjw+jH* < *ʔuj-s ‘fear (v.); threaten’: 101, 151
未 wèi — *mj+jH* < *m[ə]t-s ‘eighth earthly branch’: 287
未 wèi — *mj+jH* < *m[ə]t-s ‘not yet’: 287
魏 wèi — *ngjw+jH* < *N-qʰuj-s ‘high’: 121
温 wēn — *ʔwon* < *ʔˤun ‘warm; gentle’: 100, 294
蚊 wén — *mjun* < *C.mə[r] ‘mosquito’: 172
文 wén — *mjun* < *mə[n] ‘ornate’: 287
聞 wén — *mjun* < *mu[n] ‘hear (v.)’: 8, 63, 64, 67, 251, 294, 322
翁 wēng — *ʔuwng* < *qˤoŋ ‘old man (Hàn?)’: 101
瓮 wèng — *ʔuwngH* < *qˤoŋ-s ‘earthen jar’: 28, 182, 381n14
蝸 wō — *kwae* < *k.rˤoj (dialect: *k.rˤ- > *kˤr-) ‘snail’: 279, 280
我 wǒ — *ngaX* < *ŋˤajʔ ‘we, I’: 65, 111, 256
擭 wò — *ʔwaek* < *qʷˤrak ‘catch (v.)’: 225
烏 wū — *ʔu* < *qˤa ‘crow, raven; black’: 262; see also 烏桓 Wūhuán < *ʔu.hwan*
屋 wū — *ʔuwk* < *qˤok ‘house; roof’: 33, 243
烏桓 Wūhuán — *ʔu.hwan* < W. Hàn *ʔˤa-ɦˤwar (< OC *qˤa + *[ɢ]ʷˤar) ‘Avars’, also written 烏丸: 262, 399n67, 400n69; see also 烏 wū < *ʔu*, 桓 huán < *hwan*, 丸 wán < *hwan*
無 wú — *mju* < *ma ‘not have’: 179, 223, 227, 242; see also wú < *mju* ‘(volitional prefix)’
無 wú — *mju* < *ma ‘(volitional prefix)’: 179, 392n100; see also wú < *mju* ‘not have’
無 wú — *mju* < *mo ‘don’t’ (late way of writing 毋 wú < *mju*, q.v.): 242
毋 wú — *mju* < *mo ‘don’t’ (later also written as 無 wú): 242
吾 wú — *ngu* < *ŋˤa ‘I, my’: 128, 130
舞 wǔ — *mjuX* < *k.m(r)aʔ ‘dance (v.)’: 164
五 wǔ — *nguX* < *C.ŋˤaʔ ‘five’: 46, 128, 130, 172, 388n52
午 wǔ — *nguX* < *[m].qʰˤaʔ ‘seventh earthly branch’: 46, 83, 128–130, 140, 388n52, 389n53; see also wǔ < *nguX* < *m-qʰˤaʔ ‘resist; crosswise’
午 wǔ — *nguX* < *[m].qʰˤaʔ ‘resist; crosswise’: 83, 130; see also wǔ < *nguX* ‘seventh earthly branch’
勿 wù — *mjut* < *mut ‘don’t’: 111, 294

物 wù — *mjut* < *C.mut ‘thing’: 205
牾 wù — *ŋguH* < *ŋˤak-s ‘go against; oppose’: 130
悟 wù — *ŋguH* < *ŋˤa-s ‘awake, realize’: 149
寤 wù — *ŋguH* < *ŋˤa-s ‘awake’: 149
惡 wù — *'uH* < *ʔˤak-s ‘hate (v.)’: 59, 226; see also è < *'ak*
兮 xī — *hej* < *gˤe ‘(final particle)’: 160–161
西 xī — *sej* < *s-nˤər ‘west’: 146–147, 255, 390n74, 401n82
錫 xī — *sek* < *s.lˤek ‘tin’: 149
息 xī — *sik* < *sək ‘breathe’: 263; see also 安息 Ānxī < *'an.sik*
膝 xī — *sit* < *s-tsik ‘knee’: 136, 239
昔 xī — *sjek* < *[s]Ak ‘in the past’: 225
吸 xī — *xip* < *qʰ(r)əp ‘inhale’: 170, 308
犧 xī — *xje* < *ŋ̊(r)a[j] ‘sacrificial animal’: 111
屎 xī — *xjij* < *[qʰ]ij (dialect: no palatalization) ‘moan’: 103, 286, 401n91; see also shǐ < *syijX*
希 xī — *xj+j* < *qʰəj ‘thin, sparse’: 103
夕 xī — *zjek* < *s-ɢAk ‘evening, night’: 64, 226
蟋蟀 xīshuài — *srit.srwit* < *srit.srut ‘cricket’: 290
騱 xí — *hej*, see 騑騱 diānxí < *ten.hej*
席 xí — *zjek* < *s-m-tAk ‘mat’: 61, 142, 226, 389
洗 xǐ — *sejX* < *[s]ˤərʔ ‘wash’: 57
徙 xǐ — *sjeX* < *[s]ajʔ ‘move (to)’: 267, 269
灑 xǐ — *srjeH* < *srərʔ-s ‘sprinkle’: 57, 187; see also xǐ < *srjeX,* sǎ < *sreaX*, sǎ < *sreaH*
灑 xǐ — *srjeX* < *srərʔ ‘sprinkle’: 1587, 396n23; see also xǐ < *srjeX,* sǎ < *sreaX,* sǎ < *sreaH*
纚 xǐ — *srjeX* < *sreʔ ‘hair-band’: 232, 233; see also sǎ < *sreaX*
豨 xǐ — *xj+jX* < *qʰəjʔ ‘swine’: 103
綌 xì — *khjaek* < *[k]ʰrak ‘coarse kudzu cloth’: 216
舃 xì — *sjek* < *s.qʰAk ‘slipper, shoe’: 140, 397n40
舃 xì — *tshjak* < *s.qʰak (dialect: *s.qʰ- > *tsh-*, *-ak > *-jak*) ‘slipper, shoe’: 140
虩 xì — *xjaek* < *qʰrak ‘fear’: 103
氣 xì — *xj+jH* < *qʰət-s ‘to present food’: 169; see also qì < *khj+jH*
鞎 xiá — *haet* < *[g]ˤrat ‘wheel-axle cap with linch-pin’: 271
狹 xiá — *heap* < *N-kˤ<r>ep ‘narrow’: 117, 118, 126, 213, 311, 314, 388n48
峽 xiá — *heap* < *N-kˤ<r>ep ‘mountain pass (not in pre-Qín texts?)’: 82
黠 xiá — *heat* < *[g]ˤri[t] ‘shrewd’: 290
下 xià — *haeH* < *m-gˤraʔ-s ‘descend’: 131, 197; see also xià < *haeX*

下 xià *haeX* < *gˢraʔ ‘down’: 105, 131, 197; see also xià < *haeH*

夏 xià *haeX* < *[ɢ]ˢraʔ ‘great’: 121

躚 xiān *sen*, see 蹁躚 piánxiān < *ben.sen*

先 xiān *sen* < *sˢər ‘first’: 218, 255; see also xiàn < *senH*

諓 xiān *sjem* < *s.qʰ[a]m ‘insincere, ingratiating’: 137; see also qiān < *tshjem*

鮮 xiān *sjen* < *[s][a]r ‘fresh; good’: 262, 400n70; see also Xiānbēi < *sjen.pjie*

天 xiān *xen* < *l̥ˢi[n] (W Hàn-time dialect: *l̥ˢ- > *xˢ-) ‘heaven’: 113–114; see also tiān < *then*

鮮卑 Xiānbēi *sjen.pjie* < *s[a]r.pe ‘Xiānbēi’: 261–262, 399n67; see also 鮮 xiān < *sjen*, 卑 bēi < *pjie*

鹹 xián *heam* < *Cə.[g]ˢr[o]m ‘salty’: 107

咸 xián *heam* < *[g]ˢr[ə]m ‘all; everywhere’: 154

瞷 xián *hean* < *m-[k]ˢ<r>en ‘spy on, watch’: 58

賢 xián *hen* < *[g]ˢi[n] ‘worthy’: 201, 291

險 xiǎn *xjaemX* < *qʰr[a]mʔ ‘precipitous, dangerous’: 103

顯 xiǎn *xenX* < *qʰˢenʔ ‘display, manifest’: 113

陷 xiàn *heamH* < *[ɢ]ˢromʔ-s ‘fall into a pit’: 314

臽 xiàn *heamH* < *[ɢ]ˢromʔ-s ‘small pit’: 314

限 xiàn *heanX* < *[g]ˢrə[n]ʔ ‘obstacle, limit’: 288

見 xiàn *henH* < *m-[k]ˢen-s ‘cause to appear, introduce’: 55; see also xiàn < *henH* ‘appear’, jiàn < *kenH*

見 xiàn *henH* < *N-[k]ˢen-s ‘appear’: 54; see also xiàn < *henH* ‘cause to appear, introduce’, jiàn < *kenH*

現 xiàn *henH* < *N-[k]ˢen-s ‘appear’: 116, 118

霰 xiàn *senH* < *sˢ[e]r-s ‘sleet’: 262

霙 xiàn *senH* < *sˢ[e]r-s ‘sleet’: 262; see also sī < *sje*

先 xiàn *senH* < *sˢər-s ‘go first’: 201; see also xiān < *sen*

憲 xiàn *xjonH* < *qʰar ‘law; model; rule’: 257

羨 xiàn *zjenH* < *s-N-qa[r]-s ‘covet, desire’: 191–192

箱 xiāng *sjang* < *C.[s]aŋ ‘box (of a carriage)’: 169

襄 xiāng *sjang* < *s-naŋ ‘remove’: 149

香 xiāng *xjang* < *qʰaŋ ‘fragrance’: 102, 403

夅 xiáng *haewng* < *m-kˢru[ŋ] (? < *-[u]m) ‘submit’: 250

降 xiáng *haewng* < *m-kˢru[ŋ] (? < *-[u]m) ‘submit’: 215, 250

祥 xiáng *zjang* < *s.gaŋ ‘auspicious’: 141

饟 xiǎng *syang* < *n̥aŋ ‘bring food to’: 111

亨 xiǎng *xjangX* < *qʰaŋʔ ‘sacrificial offering’: 157; see also hēng < *xaeng*

巷 xiàng *haewngH* < *C.[g]ˤroŋ-s ‘lane, street’: 171
象 xiàng *zjangX* < *s.[d]aŋʔ ‘elephant’: 141
鴞 xiāo *hjew*, see 鴟鴞 chīxiāo < *tsyhij.hjew*
簫 xiāo *sew* < *sˤiw ‘pan-pipe’: 295, 300
削 xiāo *sjak* < *[s]ewk ‘scrape, pare’: 295, 299, 300; see also xiào < *sjewH* and shào < *sraewH*
宵 xiāo *sjew* < *[s]ew ‘night, evening’: 295, 298
斆 xiào *haewH* < *m-kˤruk-s ‘teach’: 59
嘯 xiào *sewH* < *sˤiw(k)-s ‘to wail’: 302
削 xiào *sjewH* < *[s]ewk-s ‘scrape, pare’: 300; see also xiāo < *sjak* and shào < *sraewH*
孝 xiào *xaewH* < *qʰˤ<r>uʔ-s ‘filial’: 103
楔 xiē *set* < *s.qˤet ‘wedge put in teeth of corpse’: 137
歇 xiē *xjot* < *qʰat ‘cease, rest (v.)’: 44, 210, 271
協 xié *hep* < *[ɢ]ˤep ‘in harmony’: 304
擷 xié *het* < *m-[k]ˤi[t] ‘tuck in skirts (v.)’: 21
挾 xié *hep* < *m-kˤep ‘grasp’: 58, 126, 311, 314; see also xié < *tsep*
挾 xié *tsep* < *S-kˤep ‘grasp’: 314; see also xié < *hep*
脅 xié *xjaep* < *qʰ<r>ep ‘flank, side of the body’: 103, 311
邪 xié *zjae* < *sə.ɢA ‘awry’: 131, 132, 182; see also yé < *yae*, 琅邪 Lángyá < *lang.yae*
寫 xiě *sjaeX* < *s-qʰAʔ ‘depict’: 140, 224
蟹 xiè *heaX* < *m-kˤreʔ ‘crab’: 125
卸 xiè *sjaeH* < *s-qʰA(ʔ)-s ‘to unload’: 140
褻 xiè *sjet* < *s-ŋet ‘garment next to the body’: 275
泄 xiè *sjet* < *s-lat ‘leak, ooze’: 144, 271; also *yejH* < *lat-s ‘leak, ooze’: 272
謝 xiè *zjaeH* < *sə-lAk-s ‘decline, renounce’: 71, 182
邂逅 xièhòu *heaH.huwH* < *[g]ˤre-s.[g]ˤro-s ‘carefree (Odes 94.1–2, 118.2)’: 214, 242
欣 xīn *xj+n* < *qʰər ‘rejoice’: 171
囟 xìn *sinH* < *[s]ə[r]-s ‘fontanel’: 401n82
信 xìn *sinH* < *s-ni[ŋ]-s ‘truthful’: 147–148, 150
星 xīng *seng* < *s-tsʰˤeŋ ‘star’: 139, 146
興 xīng *xing* < *qʰ(r)əŋ ‘lift, rise’: 307
兄 xiōng *xjwaeng* < *m̥raŋ ‘elder brother’: 111
熊 xióng *hjuwng* < *C.[ɢ]ʷ(r)əm ‘bear (n.)’: 195, 218, 309, 310, 314, 386n30
修 xiū *sjuw* < *s-liw ‘adorn’: 300
羞 xiū *sjuw* < *s-nu ‘shame’: 144
休 xiū *xjuw* < *qʰ(r)u ‘rest (v.)’: 103

朽 xiǔ *xjuwX* < *q^{h}(r)uʔ ‘rot, decay’: 57
繡 xiù *sjuwH* < *[s]iw(k)-s ‘embroider’: 302
宿 xiù *sjuwH* < *[s]uk-s ‘ “mansion” of the zodiac (where the moon is found on successive nights)’: 249; see also sù < *sjuwk*
須 xū *sju*, see 斯須 sīxū < *sje.sju*
戌 xū *swit* < *s.mi[t] ‘eleventh earthly branch’: 143–144
訏 xū *xju* < *q^{wh}(r)a ‘great’: 44
徐 xú *zjo* < *sə.la ‘walk slowly’: 183
許 xǔ *xjoX* < *q^{h}(r)aʔ ‘place (n.)’: 129, 389n53; see also hǔ < *xuX*
蓄 xù *trhjuwk* < *q^{h}<r>uk ‘store (v.)’: 103, 250
畜 xù *xjuwk* < *q^{h}uk ‘nourish’; also *xjuwH* < *q^{h}uk-s ‘domestic animal’: 61, 103, 156, 249, 250; see also chù < *trhjuwk*, *trhjuwH*
淢 xù *xwik* < *m̥(r)ik ‘channel; moat: 240’
洫 xù *xwik* < *m̥(r)ik ‘channel; moat: 240’
侐 xù *xwik* < *m̥(r)ik ‘still, quiet: 152, 240’
緒 xù *zjoX* < *s-m-taʔ ‘arrange in order’: 61
宣 xuān *sjwen* < *s-q^{w}ar ‘spread (v.)’: 137, 222, 258, 261
亘 xuān *sjwen* < *s-[q]^{w}ar ‘turn around’: 258; see also 阿會亘 ēhuìxuān < *'a.hwajH.sjwen*
翾 xuān *xjwien* < *q^{wh}en ‘fly about’: 214
諠 xuān *xjwon* < *q^{wh}ar ‘clamor, shout’: 170, 261
呟 xuān *xjwon* < *q^{wh}ar ‘clamor, shout’: 170, 261
喧 xuān *xjwon* < *q^{wh}ar ‘clamor, shout’: 170, 261
玄 xuán *hwen* < *[ɢ]^{wʕ}i[n] ‘dark’: 291
還 xuán *zjwen* < *s-ɢ^{w}en ‘turn around, return; agile’: 67, 214; see also huán < *hwaen*
癬 xuǎn *sjenX* < *[s]arʔ ‘ringworm’: 267
晅 xuǎn *xjwonX* < *q^{wh}arʔ ‘to dry in the sun’: 258
烜 xuǎn *xjwonX* < *q^{wh}arʔ ‘to dry in the sun’: 258; see also huī < *xjw+j*
選 xuàn *sjwenH* < *[s]o[n]ʔ-s ‘even, orderly’: 208, 209, 395n16
絢 xuàn *xwenH* < *q^{whʕ}i[n]-s ‘ornate, decorated’: `27
旋 xuàn *zjwenH* < *s-ɢ^{w}en-s ‘whorl of hair on the head’: 141, 182
學 xué *haewk* < *m-k^{ʕ}ruk ‘study; imitate’: 55, 59, 215
鷽 xué *'aewk* < q^{ʕ}ruk ‘(a kind of bird)’: 56, 127; see also xué < *haewk*
鷽 xué *haewk* < *m-q^{ʕ}ruk ‘(a kind of bird)’: 56, 127; see also xué < *'aewk*
穴 xué *hwet* < *[ɢ]^{wʕ}i[t] ‘cave, pit’: 290
威 xuè *xjwiet* < *m̥et ‘extinguish, destroy’: 143, 275
血 xuè *xwet* < *m̥^{ʕ}ik ‘blood’: 152, 240
熏 xūn *xjun* < *q^{h}u[n] ‘smoke (v.); vapor, odor’: 251, 395n16

壎 xūn *xjwon* < *q^{h}o[n] ‘ocarina’: 282, 395n16
馴 xún *zwin* < *sə.lu[n] ‘docile; gradually’: 183
旬 xún *zwin* < *s-N-q^{w}i[n] ‘ten-day cycle’: 127, 193
訓 xùn *xjunH* < *l̥u[n]-s (W dialect: *l̥- > *x*-) ‘instruct’: 165–166, 183
厭 yā *'jiep* < *ʔep ‘press (v.)’: 304, 311; see also yān < *'jiem*
牙 yá *ngae* < *m-ɢ^{ʂ}<r>a ‘tooth’: 83, 131–132
涯 yá *ngea* < *ŋ^{ʂ}rar ‘river bank; limit’: 51, 148
崖 yá *ngea* < *ŋ^{ʂ}rar ‘river bank; limit’: 148, 391n76
厓 yá *ngea* < *ŋ^{ʂ}rar ‘river bank; limit’: 148
邪 yá *yae*, see 琅邪 Lángyá < *lang.yae*; see also xié < *zjae*
雅 yǎ *ngaeX* < *N-ɢ^{ʂ}raʔ ‘proper, refined’: 121
軋 yà *'eat* < *q^{ʂ}rət ‘crush’: 287
淹 yān *'jem* < *ʔ(r)om ‘submerge, soak’: 313
厭 yān *'jiem* < *ʔem ‘contented (adj.)’: 58, 313; see also yā < *'jiep*
焉 yān *hjen* < *[ʔ]a[n] ‘(3p locative pronoun)’: 263, 389n62; see also yān < *'jen*
焉 yān *'jen* < *ʔa[n] ‘how’: 389n62; see also yān < *hjen*
炎 yán *hjem* < *[ɢ]^{w}(r)am ‘burn, blazing’: 313, 314, 386n30, 389n62
顏 yán *ngaen* < *C.ŋ^{ʂ}rar ‘face, forehead’: 148, 172
嚴 yán *ngjaem* < *ŋ(r)am ‘stern, majestic’: 313
檐 yán *yem* < *Cə.ɢam ‘eaves’: 188, 313
鹽 yán *yem* < *[ɢr][o]m ‘salt (n.)’: 107, 386n31
巘 yǎn *ngjenX* < *ŋ(r)ar(ʔ) ‘hill; hilltop’: 148, 258; see also yǎn < *ngjonX*
巘 yǎn *ngjonX* < *ŋ(r)ar(ʔ) ‘hill; hilltop’: 148, 258; see also yǎn < *ngjenX*
衍 yǎn *yenX* < *N-q(r)anʔ ‘overflow’: 169
燕 yàn *'enH* < *ʔ^{ʂ}e[n]-s ‘swallow (n.)’: 100
饜 yàn *'jemH* < *ʔ<r>em-s ‘satiated’: 58, 100
猒 yàn *'jiemH* < *ʔem-s ‘satisfaction’: 304
彥 yàn *ngjenH* < *ŋrar-s ‘adornment’: 148
央 yāng *'jang* < *ʔaŋ ‘center (n.)’: 44, 101
羊 yáng *yang* < *ɢaŋ ‘sheep’: 27, 77, 106, 141, 189, 385n28
陽 yáng *yang* < *laŋ ‘bright’: 27, 166
昜 yáng *yang* < *laŋ ‘bright’: 106, 111, 166
癢 yǎng *yangX* < *Cə.ɢaŋʔ ‘itch’: 188–189
腰 yāo *'jiew* < *ʔew ‘waist’: 100, 298, 299
堯 yáo *ngew* < *[ŋ]^{ʂ}ew ‘high’: 298
葯 yào *'aewk* < *[q]^{ʂ}rewk ‘iris leaves’: 298
約 yào *'jiewH* < *[q]ewk-s ‘bond, agreement (n.): 299’; see also yuē < *'jak*
樂 yào *ngaewH* < *[ŋ]^{ʂ}rawk-s ‘cause to rejoice’: 297; see also lè < *lak*, yuè < *ngaewk*

藥 yào *yak* < *m-r[e]wk ‘medicinal plant’: 78
曜 yào *yewH* < *lewk-s ‘shine’: 300
邪 yé *yae* < *[ɢ](r)A ‘(interrogative particle)’: 223; see also xié < *zjae*, 琅邪 Lángyá < *lang.yae*
也 yě *yaeX* < *lAjʔ ‘(final particle)’: 269
爇 yè *hjep* < *[ɢ]ʷ(r)[a]p ‘shine, gleam’: 311, 312
謁 yè *ʼjot* < *qat ‘go to visit’: 44
夜 yè *yaeH* < *[ɢ]Ak-s ‘night’: 106, 226
葉 yè *yep* < *l[a]p ‘leaf’: 77, 144
伊 yī *ʼjij* < *ʔij ‘this’: 289
揖 yī *ʼjip* < *qip ‘bow (v.), salute’: 137, 305, 308, 389n59; see also jí < *tsip*
一 yī *ʼjit* < *ʔi[t] ‘one’: 101, 135, 290
衣 yī *ʼj+j* < *ʔ(r)əj ‘clothes’: 59, 101, 264–265, 285; see also yì < *ʼj+jH*
宜 yí *ngje* < *ŋ(r)aj ‘proper; should’: 65–66
沂 Yí *ngj+j* < *[ŋ]ər (< uvular) ‘(mountain and river in Shāndōng)’: 267
蛇 yí *ye*, see 委蛇 wēiyí < *ʼjwe.ye*; see also shé < *zyae*
移 yí *ye* < *laj ‘move (v.)’: 164, 321
夷 yí *yij* < *ləj ‘foreigner (especially to the east)’: 115, 285–286, 401n89, 401n90
夷 yí *yij* < *ləj ‘level, peaceful’: 109, 285, 401n89
遺 yí *ywij* < *[ɢ](r)uj ‘leave; reject’: 101
鉯 yí *ziX* < *sə.ləʔ ‘handle of plow or sickle’: 56
矣 yǐ *hiX* < *qəʔ (atonic) ‘(final particle)’: 141, 389n62
乙 yǐ *ʼit* < *qrət ‘second heavenly stem’: 80, 138, 287
椅 yǐ *ʼjeX* < *Cə.q(r)ajʔ ‘chair’: 187
倚 yǐ *ʼjeX* < *Cə.q(r)ajʔ ‘lean on’: 187
蟻 yǐ *ngj+jX* < *m-qʰəjʔ ‘ant’: 83
已 yǐ *yiX* < *ɢ(r)əʔ ‘cease; already’: 27, 31, 107, 141, 386n30
以 yǐ *yiX* < *ləʔ ‘take, use’: 27, 56, 183, 325
意 yì *ʼiH* < *ʔ(r)ək-s ‘thought (n.)’: 230
懿 yì *ʼijH* < *[ʔ]<r>ik-s ‘repress’: 240`
抑 yì *ʼik* < *[ʔ]ik ‘rub, repress’: 240
臆 yì *ʼik* < *ʔ(r)ək ‘bosom’: 100
憶 yì *ʼik* < *ʔ(r)ək ‘remember’: 230
縊 yì *ʼjieH* < *q[i]k-s ‘strangle’: 58
益 yì *ʼjiek* < *q[i]k (dialect: *-ik > *-ek) ‘increase’: 233
衣 yì *ʼj+jH* < *ʔ(r)əj-s ‘wear (v.t.)’: 59; see also yī < *ʼj+j*
挹 yì *ʼjip* < *qip ‘suppress’: 304
鷁 yì *ngek* < *m-ɢˤek ‘kind of aquatic bird’: 233

義 yì — *ngjeH* < *ŋ(r)aj-s ‘duty; justice’: 65–66
劓 yì — *ŋgjejH* < *ŋ<r>[a][t]-s ‘cut off the nose’: 272
藝 yì — *ngjiejH* < *ŋet-s (dialect: no palatalization?) ‘cultivation, art, skill’: 276, 277
埶 yì — *ngjiejH* < *ŋet-s (dialect: no palatalization?) ‘to plant’: 29–30, 78, 384n10
刈 yì — *ŋgjojH* < *ŋa[t]-s ‘mow, cut’: 272
易 yì — *yeH* < *lek-s ‘easy’: 110, 149, 234; see also yì < *yek*
亦 yì — *yek* < *ɢ(r)Ak ‘also’: 27, 107
譯 yì — *yek* < *lAk ‘interpret’: 27
易 yì — *yek* < *lek ‘change; exchange’: 51, 149, 233, 234; see also yì < *yeH*
异 yì — *yiH* < *ɢ(r)ək-s ‘different’: 107, 386n30
翼 yì — *yik* < *ɢʷrəp (dialect: *-p > *-k) ‘wing’: 107, 386n30
翌 yì — *yik* < *ɢʷrəp (dialect: *-p > *-k) ‘next day’: 386n30
翊 yì — *yik* < *ɢʷrəp (dialect: *-p > *-k) ‘next day’: 386n30
役 yì — *ywek* < *ɢʷek ‘war expedition; service’: 107
音 yīn — *'im* < *[q](r)əm ‘sound, tone’: 307, 310
陰 yīn — *'im* < *q(r)um ‘dark’: 310
駰 yīn — *'in* < *ʔ<r>i[n] ‘gray and white horse’: 291
愔 yīn — *'jim* < *[q]im ‘mild, peaceful’: 304, 310
因 yīn — *'jin* < *ʔi[n] ‘rely on’: 101, 291
殷 yīn — *'j+n* < *ʔər ‘(dynastic name)’: 264–265
銀 yín — *ngin* < *ŋrə[n] ‘silver’: 110, 288
淫 yín — *yim* < *N.r[ə]m ‘excess; licentious’: 122
尹 yǐn — *ywinX* < *m-qurʔ ‘govern; governor’: 82, 127
蔭 yìn — *'imH* < *mə-q<r>[u]m-s ‘shade’: 177
印 yìn — *'jinH* < *[ʔ]iŋ-s ‘seal’: 240
膺 yīng — *'ing* < *[q](r)əŋ ‘breast(plate); oppose’: 307
迎 yíng — *ngjaeng* < *ŋraŋ ‘go to meet’: 214
蠅 yíng — *ying* < *m-rəŋ ‘fly (n.)’: 77, 133, 324
營 yíng — *yweng* < *[ɢ]ʷeŋ ‘demarcate, encamp’: 78, 216
影 yǐng — *'jaengX* < *qraŋʔ ‘shadow (n.)’: 28, 45, 101, 168, 385n24
永 yǒng — *hjwaengX* < *[ɢ]ʷraŋʔ ‘long (time)’: 45, 227
幽 yōu — *'jiw* < *[ʔ](r)iw ‘dark; secluded’: 300
游 yóu — *yuw* < *[N-]ru ‘float, swim’: 122
斿 yóu — *yuw* < *[N.]ru ‘pendants of a banner’: 122
有 yǒu — *hjuwX* < *[ɢ]ʷəʔ ‘have, exist’: 21, 38–39, 44, 106, 155, 218, 228, 382n27, 286n30
酉 yǒu — *yuwX* < *N-ruʔ ‘tenth earthly branch’: 77
囿 yòu — *hjuwH* < *[ɢ]ʷək-s ‘park, garden’: 44; see also yòu < *hjuwk*
囿 yòu — *hjuwk* < *[ɢ]ʷək ‘park, garden’: 230; see also yòu < *hjuwH*

佑 yòu *hjuwH* < *[ɢ]ʷəʔ-s ‘assist’: 332
右 yòu *hjuwX* < *[ɢ]ʷəʔ ‘right hand’: 155
于 yú *hju* < *ɢʷ(r)a ‘go; at’: 44, 45, 107, 227, 260; see also 單于 chányú < *dzyen.hju*
魚 yú *ngjo* < *[r.ŋ]a ‘fish (n.)’: 24, 52, 149
隅 yú *ngju* < *ŋ(r)o ‘angle, corner’: 242
娛 yú *ngju* < *ŋʷ(r)a ‘rejoice’: 223
餘 yú *yo* < *la ‘remains; surplus’: 145
余 yú *yo* < *la ‘1sg. (prob. a polite form)’: 26, 183`\
輿 yú *yo* < *m-q(r)a ‘vehicle, carriage; carry on shoulders’: 158, 224
愉 yú *yu* < *lo ‘enjoy’: 29
雨 yǔ *hjuX* < *C.ɢʷ(r)aʔ ‘rain’: 224
圄 yǔ *ngjoX* < *m-qʰ<r>aʔ ‘prison’: 130
語 yǔ *ngjoX* < *ŋ(r)aʔ ‘speak’: 197, 223, 388n52; see also yù < *ngjoH*
與 yǔ *yoX* < *m-q(r)aʔ ‘give; for; and’: 83, 124, 131, 132, 168, 171; see also yù < *yoH*
芋 yù *hjuH* < *[ɢ]ʷ(r)a-s ‘taro (Colocasia antiquorum?)’: 108, 224
域 yù *hwik* < *[ɢ]ʷrək ‘territory’: 230
汩 yù *hwit* < *[ɢʷ]rət ‘flow; go fast’: 287
郁 yù *'juwk* < *qʷək ‘stately, elegant’: 44
語 yù *ngjoH* < *ŋ(r)aʔ-s ‘tell’: 197; see also yǔ < *ngjoX*
獄 yù *ngjowk* < *[ŋ]rok ‘lawsuit; prison’: 243
禦 yù *ngjoX* < *m-qʰ(r)aʔ ‘withstand, hinder, stop; oppressive’: 129, 130, 388n52
御 yù *ngjoX* < *m-qʰ(r)aʔ ‘ward off, withstand’: 388n52
馭 yù *ngjoH* < *[ŋ](r)a-s ‘drive a chariot’: 388n52
與 yù *yoH* < *ɢ(r)aʔ-s ‘participate in’: 77, 107; see also yǔ < *yoX*
欲 yù *yowk* < *ɢ(r)ok ‘desire (v.)’: 107
昱 yù *yuwk* < *ɢʷrəp ‘next day’ (dialect *-əp > *-up > *-uk): 386n30
煜 yù *yuwk* < *ɢʷrəp ‘shine, gleam’: 386n30
鬻 yù *yuwk* < *m-quk ‘nourish’: 61, 156; see also zhōu < *tsyuwk*
聿 yù *ywit* < *[m-]rut ‘writing stylus or brush (pron. in Chǔ 楚 ap. *Shuōwén*; E. Hàn)’: 43, 162
繘 yù *ywit* < *N.qʷi[t] ‘well-rope’: 82; see also jú < *kjwit*
淵 yuān *'wen* < *[ʔ]ʷʕi[ŋ] ‘abyss’: 211–212
圜 yuán *hjwen* < *ɢʷ<r>en ‘round’: 78, 141, 214, 277, 389n62, 395n21
圓 yuán *hjwen* < *ɢʷ<r>en ‘round’: 78, 141, 214, 389n62, 395n21
園 yuán *hjwon* < *C.ɢʷa[n] ‘garden’: 170, 274
垣 yuán *hjwon* < *[ɢ]ʷar ‘wall’: 137, 258, 261
原 yuán *ngjwon* < *N-ɢʷar ‘spring, source; origin’: 258
原 yuán *ngjwon* < *N-ɢʷar ‘high plain (n.)’: 266

遠 yuǎn *hjwonX* < *C.ɢʷanʔ ‘far’: 67, 252, 259, 394n16, 395n21
院 yuàn *hjwenH* < *ɢʷra[n]-s ‘wall around a courtyard’: 78, 108, 274
約 yuē *'jak* < *[q](r)ewk ‘bind (v.), make an agreement’: 299; see also yào < *'jiewH*
樂 yuè *ngaewk* < *[ŋ]ˁrawk ‘music’: 297; see also lè < *lak*, yào < *ngaewH*
月 yuè *ngjwot* < *[ŋ]ʷat ‘moon, month’: 64, 271
刖 yuè *ngwaet* < *[ŋ]ʷˁ<r>at ‘amputate a foot’: 271
籥 yuè *yak* < *lewk ‘flute; key; tube’: 299
蜕 yuè *ywet* < *lot ‘exuviae of insects or reptiles’: 109; see also tuì < *thwajH*
雲 yún *hjun* < *[ɢ]ʷə[n] ‘cloud’: 284, 288
員 yún *hjun* < *[ɢ]ʷə[n] ‘(a particle)’: 38–40, 284, 382n26
云 yún *hjun* < *[ɢ]ʷə[r] ‘say’: 38–40, 382n25, 382n27, 389n62
筠 yún *hwin* < *[ɢ]ʷri[n] ‘rind of bamboo’: 216, 291
匀 yún *ywin* < *[N-q]ʷi[n] ‘even, uniform’: 127, 216, 291, 388n50
隕 yǔn *hwinX* < *[ɢ]ʷrə[n]ʔ ‘fall down’: 288
韻 yùn *hwinH* < *[m-qʷ]<r>i[n]-s ‘harmony; rhyme’: 127, 193, 388n50, 393n107
愠 yùn *'junH* < *ʔun-s ‘anger, angry’: 294
雜 zá *dzop* < *[dz]ˁ[u]p ‘mixed’: 309
載 zài *dzojH* < *[m-ts]ˁəʔ-s ‘load on a vehicle (v.t.)’: 127; see also zài < *tsojH*
在 zài *dzojX* < *[dz]ˁəʔ ‘be at, be present’: 202–203, 284, 394n7
載 zài *tsojH* < *[ts]ˁəʔ-s ‘be conveyed in a vehicle’: 127; see also zài < *dzojH*
再 zài *tsojH* < *[ts]ˁə(ʔ)-s ‘twice; a second time’: 203
簪 zān *tsom* < *Cə.tsˁ[ə]m ‘hairpin’: 186
繅 zǎo *tsawX* < *mə-tsˁawʔ ‘bleach; wash’: 95, 177, 982
早 zǎo *tsawX* < *Nə.tsˁuʔ ‘early’: 88, 95, 174, 247
譟 zào *sawH* < *C.sˁaw-s ‘shout’: 169
燥 zào *sawX* < *C.sˁawʔ ‘dry’: 169
澤 zé *draek* < *lˁrak ‘marsh; moisture’: 109
責 zé *tsreak* < *s-tˁrek ‘demand payment’: 80, 98, 136, 233, 234; see also zhài < *tsreaH*
賊 zéi *dzok* < *k.dzˁək ‘injure; murderer, bandit’: 37, 95, 97, 153, 160
增 zēng *tsong* < *s-tˁəŋ ‘increase’: 59, 136, 192, 231
甑 zèng *tsingH* < *S-təŋ-s ‘boiler for steaming rice’: 61, 136, 321
柤 zhā *tsrae* < *tsˁra ‘kind of fruit tree’: 223
札 zhá *tsreat* < *s-qˁrət ‘strip (n.), tablet’: 80, 138, 287
摘 zhāi *treak* < *tˁrek ‘pluck (v.)’: 233

齋 zhāi — *tsreaj* < *ts^{ɾ}r[ə]j ‘purify oneself’: 285, 286
宅 zhái — *draek* < *m-t^{ɾ}<r>ak ‘residence’: 225
責 zhài — *tsreaH* < *s-t^{ɾ}rek-s ‘debt’: 80, 136; see also zé < *tsreak*
債 zhài — *tsreaH* < *s-t^{ɾ}rek-s ‘debt’: 80, 97, 136, 234
瘵 zhài — *tsreajH* < *[ts](^{ɾ})re[t]-s ‘suffer; distress’: 276
占 zhān — *tsyem* < *tem ‘prognosticate’: 313, 315
展 zhǎn — *trjenX* < *tren? ‘roll over; unfold’: 277
搌 zhǎn — *trjenX*, see jiǎnzhǎn < *kjenX.trjenX*
輾轉 zhǎnzhuǎn — *trjenX.trjwenX* < *tre[n]?.tro[n]? ‘toss and turn (Odes 1.2, 145.3)’: 214
襢 zhàn — *trjenX* < *tra[n]? ‘to bare’: 274
張 zhāng — *trjang* < *C.traŋ ‘draw a bow’: 227
啁 zhāo — *traew* < *t^{ɾ}riw ‘twitter, noise’: 300
朝 zhāo — *trjew* < *t<r>aw ‘morning’: 55; see also cháo < *drjew*
爪 zhǎo — *tsraewX* < *[ts]^{ɾ}<r>u? ‘claw’: 136, 215, 247
叉 zhǎo — *tsraewX* < *[ts]^{ɾ}<r>u? ‘claw’: 136
沼 zhǎo — *tsyewX* < *taw? ‘pool’: 296
濯 zhào — *draewH* < *l^{ɾ}rewk-s ‘wash clothes’: 300; see also zhuó < *draewk*
櫂 zhào — *draewH* < *l^{ɾ}rewk-s ‘oar’: 109
趙 zhào — *drjewX* < *[d]rew? ‘(surname)’: 298
罩 zhào — *traewH* < *t^{ɾ}rawk-s ‘covering basket’: 297
遮 zhē — *tsyae* < *tA ‘to cover’: 224
謫 zhé — *dreak* < *m-t^{ɾ}rek ‘blame, punish’: 80; see also zhé < *treak*
蟄 zhé — *drip* < *[d]rip ‘hibernate; cluster’: 305, 309
慴 zhé — *nep* < *t-n^{ɾ}[i]p ‘afraid’: 57, 162; see also zhí < *tsyip*
輒 zhé — *tep* < *t-n^{ɾ}ep ‘paralysed, unable to move’: 57
謫 zhé — *treak* < *C.t^{ɾ}rek ‘blame (v.)’: 136, 168; see also zhé < *dreak*
耟 zhé — *trjep* < *t-nrep ‘hanging ears (used as N.Pr.)’: 80
慴 zhé — *tsyep* < *t-nep ‘to fear’: 313
折 zhé — *tsyet* < *tet ‘bend; break (v.t.)’: 54, 117, 276; see also dì < *dejH*, shé < *dzyet*
者 zhě — *tsyaeX* < *tA? ‘(nominalizing particle)’: 138, 223, 224, 320, 397n36
赭 zhě — *tsyaeX* < *tA? ‘red earth; red pigment’: 223
貞 zhēn — *trjeng* < *treŋ ‘divine (v.)’: 235
蓁 zhēn — *tsrin* < *[ts]ri[n] ‘luxuriant’: 291
榛 zhēn — *tsrin* < *tsri[n] ‘hazel’: 80
鍼 zhēn — *tsyim* < *t.[k]əm ‘needle’: 154
針 zhēn — *tsyim* < *t.[k]əm ‘needle’: 154

箴 zhēn — *tsyim* < *t.[k]əm ‘needle’: 37, 71, 79, 97, 153, 154
振 zhēn — *tsyin* < *tər ‘numerous; majestic’: 255
真 zhēn — *tsyin* < *ti[n] ‘true, real’: 76, 97, 99, 291
鎮 zhèn — *trinH* < *t<r>i[n]-s ‘press down’: 80
正 zhēng — *tsyeng* < *C.teŋ ‘first (month)’: 97, 98, 168; see also zhèng < *tsyengH*
烝 zhēng — *tsying* < *təŋ ‘to rise (of steam); steam (v.t.)’: 56, 60, 136, 321
崢嶸 zhēngróng — *dzreang.hweang* < *[dz]ˤreŋ.[ɢ]ʷˤreŋ ‘high, precipitous’: 235
整 zhěng — *tsyengX* < *teŋʔ ‘arrange; orderly’: 43
正 zhèng — *tsyengH* < *teŋ-s ‘correct (adj., v.)’: 235; see also zhēng < *tsyeng*
知 zhī — *trje* < *tre ‘know’: 232
枝 zhī — *tsye* < *ke ‘branch (of tree)’: 77, 79
支 zhī — *tsye* < *ke ‘branch (of tree), limb’: 77, 79, 140, 232
觶 zhī — *tsye* < *tar ‘ritual vessel’: 258
隻 zhī — *tsyek* < *tek ‘single’: 98, 99
之 zhī — *tsyi* < *tə ‘(3p object pronoun; attributive particle)’: 53
脂 zhī — *tsyij* < *kij ‘fat, grease’: 77, 216
直 zhí — *drik* < *N-t<r>ək ‘straight’: 117, 118, 230
執 zhí — *tsyip* < *[t]ip ‘seize’: 308, 309, 131
慴 zhí — *tsyip* < *t-nip (dialect: *t-n- > *t-) ‘afraid, to fear’: 57, 162; see also zhé < *nep*
躑躅 zhízhú — *drjek.drjowk* < *[d]rek.[d]rok ‘stamp the feet’: 233, 243
紙 zhǐ — *tsyeX* < *k.teʔ ‘paper’: 37, 97, 98, 153, 156, 161
旨 zhǐ — *tsyijX* < *kijʔ ‘fine-tasting’: 77, 289
指 zhǐ — *tsyijX* < *mə.kijʔ ‘finger; point’: 79
砥 zhǐ — *tsyijX* < *tijʔ ‘whetstone’: 289
止 zhǐ — *tsyiX* < *təʔ ‘foot; stop’: 157, 158, 229
治 zhì — *driH* < *lrə-s ‘regulate, arrange’: 229
置 zhì — *triH* > *trək-s ‘put, place; set upright’: 117
滯 zhì — *drjejH* < *[d]r[a][t]-s ‘obstruct’: 272
致 zhì — *trijH* < *t<r>i[t]-s ‘(cause to arrive): transmit’: 291
窒 zhì — *trit* < *[t]ri[t] ‘stop up (v.)’: 290
椔 zhì — *tsrit* < *[ts]rik ‘comb’: 239
炙 zhì — *tsyaeH* < *tAk-s ‘roast, broil’: 99; see also zhì < *tsyek*
瘈 zhì — *tsyejH* < *ke[t]-s ‘mad (dog)’: 77, 276
炙 zhì — *tsyek* < *tAk ‘roast, broil’: 226; see also zhì < *tsyaeH*
至 zhì — *tsyijH* < *ti[t]-s ‘arrive’: 291
質 zhì — *tsyit* < *t-lit ‘substance, solid part’: 164, 290
中 zhōng — *trjuwng* < *truŋ ‘center’: 60, 250, 306; see also zhòng < *trjuwngH*
鐘 zhōng — *tsyowng* < *toŋ ‘bell’: 244

妐 zhōng	*tsyowng* < *t-qoŋ ‘father-in-law’: 57, 79
終 zhōng	*tsyuwng* < *tuŋ ‘end’: 51, 250
種 zhǒng	*tsyowngX* < *k.toŋʔ ‘seed’: 47, 53, 71, 76, 153, 156
腫 zhǒng	*tsyowngX* < *toŋʔ ‘swell, swollen; tumor’: 58, 118
重 zhòng	*drjowngX* < *N-t<r>oŋʔ ‘heavy’: 58, 118; see also chóng < *drjowng*
仲 zhòng	*drjuwngH* < *N-truŋ-s ‘middle (of brothers)’: 60, 95
中 zhòng	*trjuwngH* < *truŋ-s ‘hit the center’: 60; see also zhōng < *trjuwng*
周 zhōu	*tsyuw* < *tiw ‘cycle; all around’: 300
鬻 zhōu	*tsyuwk* < *t-quk ‘rice gruel’: 156; see also yù < *yuwk*
肘 zhǒu	*trjuwX* < *t-[k]<r>uʔ ‘elbow’: 31–32, 57, 80, 155, 247, 399n55
箒 zhǒu	*tsyuwX* < *[t.p]əʔ ‘broom’: 79
帚 zhǒu	*tsyuwX* < *[t.p]əʔ ‘broom’: 79, 156, 391n87
騶 zhòu	*dzrjuwH* < *N-ts^{r}roʔ-s ‘fast-running’: 242
咮 zhòu	*trjuwH* < *t^{r}<r>ok-s ‘beak’: 244, 396n25
縐 zhòu	*tsrjuwH* < *[ts]^{r}ro-s ‘wrinkles’: 242, 396n25
祝 zhòu	*tsyuwH* < *[t]uk-s ‘to curse’: 249; see also zhù < *tsyuwk*
豬 zhū	*trjo* < *tra ‘pig’: 223
株 zhū	*trju* < *tro ‘tree root, stem’: 396n25
誅 zhū	*trju* < *tro ‘punish; kill’: 396n25
諸 zhū	*tsyo* < *ta ‘many’: 320
朱 zhū	*tsyu* < *to ‘red’: 242
躅 zhú	*drjowk*, see 躑躅 zhízhú < *drjek.drjowk*
逐 zhú	*drjuwk* < *[l]riwk ‘pursue’: 301
燭 zhú	*tsyowk* < *tok ‘torch’: 76
拄 zhǔ	*trjuX* < *t<r>oʔ ‘prop up, support (v.)’: 55, 124, 125
屬 zhǔ	*tsyowk* < *tok ‘to assemble, attach’: 117; see also shǔ < *dzyowk*
煮 zhǔ	*tsyoX* < *[t]aʔ ‘boil, cook’: 29, 223
渚 zhǔ	*tsyoX* < *taʔ ‘islet’: 223, 397n36
箸 zhù	*drjoH* < *[d]<r>ak-s ‘chopsticks’: 224
紵 zhù	*drjoX* < *mə.draʔ ‘ramie; flax’: 95, 178
住 zhù	*drjuH* < *dro(ʔ)-s ‘stop (v.)’: 80, 108
柱 zhù	*drjuX* < *m-t<r>oʔ ‘pillar’: 55, 89, 124
著 zhù	*trjoH* < *t<r>ak-s ‘place (n.); visible’: 61; see also zhuó < *trjak*
祝 zhù	*tsyuwk* < *[t]uk ‘pray, recite’: 249; see also zhòu < *tsyuwH*
髽 zhuā	*tsrwae* < *[ts]^{r}roj ‘hair knot for mourning’: 279
專 zhuān	*tsywen* < *ton ‘exclusively’: 282
轉 zhuǎn	*trjwenX* < *mə-tronʔ ‘turn around, transfer’: 282
轉 zhuǎn	*trjwenX*, see 輾轉 zhǎnzhuǎn < *trjenX.trjwenX*

傳 zhuàn *drjwenH* < *N-tron-s ‘what has been transmitted’: 282; see also chuán < *drjwen*

追 zhuī *trwij* < *truj ‘pursue’: 293

墜 zhuì *drwijH* < *m.lru[t]-s ‘fall down’: 133

準 zhǔn *tsywinX* < *turʔ ‘water level’: 295

卓 zhuō *traewk* < *tᵏrawk ‘high; splendid’: 99, 297

濯 zhuó *draewk* < *lᵏrewk ‘wash’: 299, 300; see also zhào < *draewH*

濁 zhuó *draewk* < *[N-tᵏ]rok ‘muddy’: 81

斲 zhuó *traewk* < *Cə.tᵏrok ‘chop, cleave’: 186

啄 zhuó *traewk* < *mə-tᵏ<r>ok ‘to peck’: 243, 244

著 zhuó *trjak* < *t<r>ak ‘to place’: 61, 99, 142, 225; see also zhù < *trjoH*

斫 zhuó *trjwejH* < *trot-s ‘stitch (n.?)’: 281

斮 zhuó *tsrjak* < *[ts]rak ‘to cut off’: 225

茁 zhuó *tsrjwet ~ tsrweat* < *s-[k]rot ‘sprout (v.)’: 281

斫 zhuó *tsyak* < *tak ‘cut, hack’: 320

資 zī *tsij* < *[ts]ij ‘property, means of living’: 90, 401n91

緇 zī *tsri* < *[ts]rə ‘black’: 229

姊 zǐ *tsijX* < *[ts][i]jʔ ‘older sister’: 90

字 zì *dziH* < *mə-dzə(ʔ)-s ‘breed, love (v.); character’: 88, 90, 178

自 zì *dzijH* < *s.[b]i[t]-s ‘to follow; from’: 142

自 zì *dzijH* < *s.[b]i[t]-s ‘self (adv.)’: 90, 142

宗 zōng *tsowng* < *[ts]ᵏuŋ ‘ancestral temple’: 250

走 zǒu *tsuwX* < *[ts]ᵏoʔ ‘run’: 242

族 zú *dzuwk* < *[dz]ᵏok ‘clan’: 243

足 zú *tsjowk* < *[ts]ok ‘sufficient’: 244; see also zú < *tsjowk* ‘foot’, jù < *tsjuH*

足 zú *tsjowk* < *[ts]ok ‘foot’: 243; see also zú < *tsjowk* ‘sufficient’, jù < *tsjuH*

卒 zú *tswit* < *[ts]ut ‘finish, die’: 293, 294; see also zú < *tswot*

卒 zú *tswot* < *[ts]ᵏut ‘soldier’: 294; see also zú < *tswit*

觜 zuǐ *tsjweX* < *[ts]ojʔ ‘beak’: 392n92

罪 zuì *dzwojX* < *[dz]ᵏujʔ ‘crime, offense’: 293

最 zuì *tswajH* < *[ts]ᵏot-s ‘collect; most’: 281

醉 zuì *tswijH* < *Cə.tsu[t]-s ‘drunk (adj.)’: 186, 293

遵 zūn *tswin* < *[ts]u[n] ‘follow (a road)’: 294

尊 zūn *tswon* < *[ts]ᵏu[n] ‘honor (v.)’: 294

座 zuò *dzwaH* < *[dz]ᵏo[j]ʔ-s ‘seat (n.)’: 197

坐 zuò *dzwaX* < *[dz]ᵏo[j]ʔ ‘sit’: 197, 279, 394n7

{ NOTES }

Chapter 1

1. Although their alphabetic scripts reflect phonology in a relatively direct way, Latin, Greek, and Sanskrit must also be reconstructed, in a sense. Using any written text presupposes a reconstruction of what its written symbols stand for, which is not always transparent even with alphabetic scripts.

2. We adopt the term "Kra-Dai" proposed by Ostapirat (2000) in place of the traditional "Tai-Kadai," since to Thai speakers, "Tai-Kadai" evidently sounds unintentionally funny, meaning something like "Tai, or whatever" (Montatip Krishnamra, p.c.).

3. For clarity, we will use "text" to refer to a linguistic entity represented in one or more physical documents, and "document" to refer to a physical object that represents a text. Thus the *Shījīng* is a pre-Qín text, but only fragments of it exist in extant pre-Qín documents.

4. Karlgren did publish a slightly revised version as *Grammata serica recensa* (hereafter: *GSR*), largely responding to Chao (1941), but there were no essential changes.

5. The use of the character 化 huà < *xwaeH* < *q^{wh§}<r>aj-s 'transform' as a phonetic element to write 華 huā < *xwae* < *q^{wh§}ra 'flower (n.)' reflects the Hàn-time merger of OC *-raj and *-ra in syllables with pharyngealized onsets; it illustrates the fact that the standard script established in Hàn sometimes reflects Hàn-time phonology rather than Old Chinese phonology. See the discussion in section 2.3 below. Note that we write "化 huà < *xwaeH,*" as if the standard Mandarin form *huà* was a direct descendant of the MC form *xwaeH*. Strictly speaking, neither standard Mandarin nor any other spoken variety of Chinese can be descended from Middle Chinese, because, as discussed below, we do not believe that the information in Middle Chinese written sources accurately represents one single spoken dialect. In the majority of cases, the Mandarin form can be predicted from the Middle Chinese form, but even this tendency has many exceptions. However, since our primary focus is Old Chinese rather than Mandarin or Middle Chinese, for convenience and conciseness we continue to use the "<" notation after modern Mandarin forms, even when (as often happens) the Mandarin reflex is not what would be predicted.

6. Cf. Proto-Tai *m.lec D 'grain' (Pittayaporn 2009), *ml/ret D in Fang-kuei Li's reconstruction (Li 1977:93, 269). Note: the Old Chinese coda could be either *-t or *-k; we indicate this uncertainty by writing *mə.li[t], with square brackets around the *t.

7. Some users of preliminary versions of our reconstruction have found reconstructions such as 奇 jī < *[k](r)aj cumbersome and confusing, and have wished for a simpler, more user-friendly notation. In our view, the visual awkwardness of our notation is compensated for by its relative faithfulness in representing our degree of confidence in different elements of reconstructed forms; and it is a reminder that our knowledge is necessarily incomplete. But for users of our

system who deem it appropriate for some purposes or some audiences, a simplified notation can be generated by (1) removing all parentheses and what is inside them, and (2) omitting square brackets. In this simplified notation, the reconstruction of 奇 jī becomes *kaj instead of *[k](r)aj. For serious philological or comparative research, however, the full, less user-friendly version is more realistic and is to be preferred.

8. Except in cases where the author is well known under a romanized name in English-language publications, we write all Chinese and Japanese personal names with surname first, as here.

Chapter 2

1. The main exception is that the position of a syllable in the rhyme tables can sometimes clarify an ambiguous fǎnqiè spelling found elsewhere. (On fǎnqiè spellings see the discussion in the text of this chapter.)

2. In the *Guǎngyùn*, the píngshēng section is divided into two parts, shàng píng 上平 'upper píng' and xià píng 下平 'lower píng', but this is simply for convenience, since there are more words in the píng tone than in any of the other tone categories. This has no connection to the later tonal split between upper píng or yīnpíng 陰平 (corresponding to tone 1 of Mandarin) and lower píng or yángpíng 陽平 (corresponding to tone 2).

3. The method of establishing equivalence classes by linking fǎnqiè spellings together was first used by Chén Lǐ 陳澧 (1810–1882) in his *Qièyùn kǎo*《切韻考》([1842] 1995). It was later used by Karlgren in his reconstruction of "Ancient Chinese" (our Middle Chinese).

4. Some remarks on notation: we use the McCune-Reischauer romanization for Korean, with phonetic transcription in the International Phonetic Alphabet; we use the Hepburn romanization for Japanese. For Vietnamese, we give the standard Quốc ngữ orthography, with phonetic transcription in the International Phonetic Alphabet. The Vietnamese initial *đ-* (IPA [ɗ]) is known to result from a sound change [t] > [ɗ] within Vietnamese; see Ferlus (1992:115). Numbers indicate tones in the system devised by Yuen Ren Chao, with 5 representing the highest pitch and 1 the lowest. For Vietnamese, we represent tone categories in a conventional system of letters and numbers: in early loanwords from Chinese, which we cite frequently, the letters A, B, C, and D regularly correspond to the píng, shǎng, qù, and rù categories of Middle Chinese respectively, except that Vietnamese tone A sometimes corresponds to Middle Chinese qùshēng. The numerals "1" and "2" after the letters represent upper- and lower-register tones respectively. (In the Sino-Vietnamese layer of vocabulary, systematically borrowed during the Táng dynasty [618–907], the B and C tone categories are reversed, so that tone B corresponds to Middle Chinese qùshēng, and tone C to shǎngshēng.) The fact that 德 dé 'virtue' and 得 dé 'obtain', both MC *tok*, have different pronunciations in both Sino-Korean and Sino-Vietnamese probably results from their having been borrowed from Chinese at different times.

5. Unless otherwise specified, Middle Chinese forms are based on the *Guǎngyùn* (Yú Nǎiyǒng 2000).

6. Unless otherwise specified, quotations from Chinese classical texts are from the online *Hàn jí diànzǐ wénxiàn zīliàokù* (Zhōngyāng yánjiū yuàn 2013).

7. Jerry Norman and W. South Coblin (1995) have criticized the excessive reliance on Middle Chinese written sources in Chinese historical linguistics. When it comes to dialectology, we completely agree with their critique: Middle Chinese cannot be used as a surrogate for the

data found in modern dialects, nor is it even a suitable framework, we believe, for investigating modern dialect history, where what is relevant is how the dialects are related to each other, not how each individually is related to the Middle Chinese system. But when reconstructing the earlier history of Chinese, the Middle Chinese sources, although not sufficient in themselves, provide crucial evidence that is available nowhere else.

8. We put quotation marks around "retroflex" and "palatal" here because the choice of terms suggests a particular phonetic interpretation or reconstruction, which is probably correct for some but not all varieties of Middle Chinese. (Southern varieties seem not to have distinguished MC *tr-* from MC *t-*, for example; see Pulleyblank 1984:168.) But like the category "division-II," these terms too can be defined distributionally, without reference to any particular phonetic interpretation of Middle Chinese or to the rhyme tables. In our notation, the "retroflex" initials are those written with an -r- (mnemonic for retroflexion), and the "palatals" are those written with a *-y-* (mnemonic for palatal articulation). These notations can easily be mapped onto other phonetic interpretations if desired.

9. There is one important exception to this principle: some of the words with *Tsr-* initials and division-III finals changed during the Middle Chinese period to division-II finals; e.g., 生 shēng is spelled as MC *srjaeng* (division III) in the Wáng Rénxù version of the *Qièyùn*, but later was spelled as MC *sraeng* (division II). From the point of view of Old Chinese, words like this are type B, in spite of the division-II final. See the discussion in section 4.1.1.

10. The *Guǎngyùn* and the *Qièyùn* differ slightly in the names and arrangement of their rhymes, but it is conventional to use those of the *Guǎngyùn*. In some respects, however, our notation is more consistent with the arrangement of the *Qièyùn* than with that of the *Guǎngyùn*; for example, the *Guǎngyùn* puts 波 bō 'wave' in the 戈 Gē rhyme as if it had the final *-wa*, but the Wáng Rénxù has only one rhyme 歌 Gē, corresponding to the *Guǎngyùn*'s 歌 Gē and 戈 Gē, and the fǎnqiè spelling of 波 indicates MC *pa* rather than "*pwa*"; so in our notation we write 波 as *pa*, following the *Qièyùn*, not "*pwa*" as the *Guǎngyùn* implies.

11. The conditions for the partial merger are that OC *-a merged with *-o after nonpharyngealized labial or labialized initials: thus 斧 fǔ < *p(r)aʔ 'axe' merged with 府 fǔ < *p(r)oʔ 'repository' as MC *pjuX*, and 矩 jǔ < *[k]^{w}(r)aʔ 'carpenter's square' merged with 枸 jǔ < *[k](r)oʔ '(a kind of tree)' as MC *kjuX*; see section 5.4.1.1.

12. The formula turns out to be this: if a rhyme group contains n words, then there are $2^{n-1} - n - 1$ ways of dividing it into two rhyme groups (assuming that each rhyme group should contain at least two words).

13. Criteria for deciding whether a given set of rhyme data does or does not support a given hypothesis are discussed in Baxter (1992:97–128). Both the relative frequency of the two groups being tested and the length of the rhyme sequences involved must be taken into account.

14. If the basic meaning of 瓮 wèng < *q^{ʕ}oŋ-s 'earthen jar' was 'container', perhaps 容 róng < *[ɢ](r)oŋ 'contain' is etymologically related; another possible reconstruction would be 容 róng < *N-q(r)oŋ, at least in intransitive uses.

15. Karlgren simply projected MC *sy-* back to Old Chinese, reconstructing *śi̯at. Baxter (1992:786) reconstructed "*h(l)jet" as a kind of default; in our current notation this would correspond to *l̥et or *q^{h}et. Zhèngzhāng reconstructs *hljed (2003:458).

16. The example on the left is from the Guōdiàn version of "Zī yī" 《緇衣》(strip 17, *GD* 18); the one on the right is from the Shànghǎi Museum text "Kǒngzǐ *Shī* lùn"《孔子詩論》(strip 10, *SB* 1:22).

17. The examples of 已 jǐ are from the Guōdiàn document "Yǔ cóng sān"《語叢三》(strip 5, *GD* 97) and "Jìng jiàn nèi zhī"《競建內之》 (strip 2, *SB* 5.19); the examples of 巳 sì are from the Guōdiàn version of "Zī yī" 《緇衣》(strip 20, *GD* 18) and "Kǒngzǐ *Shī* lùn"《孔子詩論》(strip 5, *SB* 1.17).

18. The notation *<r> indicates that we believe the *-r- is an infix. This infix is often found in words for things that come in groups of more than one; see section 3.3.2.6 below.

19. The Mǐn word for 'field' is often identified with 塍 chéng < *zying* 'ridge between fields', but Norman suggests that the etymon may instead be 層 céng < *dzong* 'layer, level', "so named because most fields in [Fújiàn] are terraced" (1996:31). We agree: the Mǐn word reconstructs as pMǐn *dzhən A, based on Yǒng'ān /tsʰī 2/ and Gàizhú /tsʰẽ 2/ (Norman 1981:58; Dèng Xiǎngzhāng 2007:370), both central Mǐn dialects that distinguish between pMǐn *dzh- and *džh-. Both the Mǐn initial *dzh- and the final *-ən appear to correspond better to 層 MC *dzong* than to 塍 MC *zying*.

20. There is also a significant sub-layer of early loanwords that shows the Vietnamese *ngang-huyền* tones (A) for Chinese qùshēng.

21. As mentioned above in note 2 of Chapter 1, we use "Kra-Dai," the name suggested by Ostapirat (2000), in preference to "Tai-Kadai," as the name of this family.

22. Li (1977) has Proto-Tai initial *hm- corresponding to Pittayaporn's *q.m-.

23. The works of Shèn Dào, or Shènzǐ 慎子, survive only in quotations such as this; for details see Thompson (1979). The passage occurs in chapter 12 of the *Xúnzǐ*, "Fēi shí'èr zǐ" 《非十二子》.

24. The nasal coda in *nong*, the Middle Chinese reading of 能 néng, is probably secondary: the word rhymes as *-əʔ in Ode 220.2 and possibly in Ode 257.10.

25. Although we tentatively reconstruct 云 yún with a coda *-r for Old Chinese because of rhyme evidence (Odes 192.12, 199.1), it is reasonable to assume that Yáng Liàng was quoting a version of Shèn Dào that was written after this *-r had changed to [n].

26. In other contexts the character 員 is also read yuán < MC *hjwen* in modern Chinese, which is now the more commonly encountered pronunciation.

27. These include "云命 yún mìng" for "有命 yǒu mìng" in the biography of the Eastern Hàn scholar Féng Yǎn 馮衍 in the *Hòu Hàn shū*《後漢書》, cited by Wú Chāngyíng 吳昌瑩 ([1873] 1956), and two cases of 云補 yún bǔ for 有補 yǒu bǔ, literally 'to have a patch', that is, to make a contribution to knowledge. At least one form of 補 bǔ had a nasal prefix, as shown by pHM *mpjaX 'mend, patch' (see section 4.5.5.1). Both examples are from biographies in the *Hòu Hàn shū*《後漢書》 by Fàn Yè 范曄 (398–446), in passages purporting to represent documents of the Eastern Hàn dynasty (25–220). These interpretations are from Yáng Shùdá (1954, cited in Yú Mǐn 1992:68) and the Qīng scholar Wú Chāngyíng 吳昌瑩 (cited in Yú Mǐn 1992:67).

Chapter 3

1. There is one exception: as noted earlier (chapter 2, note 9), a sound change was going on in the Middle Chinese period by which some division-III words with *Tsr-* initials shifted to division II: from an Old Chinese point of view, these are type-B syllables.

2. By "Northern Mǐn," we mean the dialects designated as "Mǐnběi 閩北" by Chén Zhāngtài and Lǐ Rúlóng (1991)—that is, the dialect group that includes Jiànyáng 建陽, Jiàn'ōu 建甌, and other dialects that show a systematic "softening" contrast in syllable onsets, not found in

other varieties of Mǐn. In an older terminology, the Mǐn dialects were divided into only two groups: "Northern Mǐn" (Mǐnběi 閩北), typified by Fúzhōu, and "Southern Mǐn" (Mǐnnán 閩南), typified by Xiàmén. In the newer terminology, five subgroups are identified: along the coast, Fúzhōu is now assigned to the Eastern Mǐn group (Mǐndōng 閩東), Xiàmén still belongs to Southern Mǐn, and between them is the Pú-Xiān 莆仙 group (including Pútián 莆田 and Xiānyóu 仙遊). In the interior are Northern Mǐn and Central Mǐn (Mǐnzhōng 閩中). See Lǐ Rúlóng and Chén Zhāngtài (1991) for details.

3. Baxter (1992) used capital letters to mark apparently unpredictable cases of velar palatalization.

4. Baxter (1992) represented this vowel as a "barred-i" *ɨ, which had the disadvantage of being both unfamiliar to nonspecialists and easy to confuse with ordinary *i. Starostin (1989) wrote this vowel as *ə, as we do here. Zhèngzhāng (2003 and elsewhere) writes it as *ɯ.

5. Syllabic stops occur in Berber (Dell and Elmedlaoui 1985) and other languages.

6. We write *S- instead of *s- to mark the irregular initial development: from *s-təŋ we would expect MC *sying*, as in example (148). For this notation, see section 4.4.3.1.

7. The character 容 was originally not 宀 plus 谷, as the *Shuōwén* says, but rather 穴 plus 公; the elements 厶 and 口 were often interchanged (Hé Línyí 1998:410). Karlgren, not recognizing this, treated 容 as a separate phonetic element (*GSR* 1187a). The *Shuōwén* also records a gǔwén 古文 'ancient character' for {容}, composed of 宀 plus 公 (*SWGL* 3236a). See Sagart and Baxter (2009).

Chapter 4

1. Zhèngzhāng cited examples from Drung (Chinese Dúlóng 獨龍, ISO 639–3 code "duu"); Starostin cited examples from Mizo (= Lushai, ISO 639–3 code "lus"). These correspondences to Chinese types A and B may well be valid; but even if they are, they do not necessarily mean that the Old Chinese distinction was also one of vowel length. See our discussion in section 2.7 on the role of Tibeto-Burman evidence in reconstructing Old Chinese.

2. Our notation differs from Norman's, however: he indicated pharyngealization by an apostrophe before the initial consonant, while we use the IPA symbol "ˤ" (U+02E4, "MODIFIER LETTER SMALL REVERSED GLOTTAL STOP") as the last element of the onset but before medial *-r- (if present), as in the bottom row of Table 4.2.

3. The most widely reported acoustic effects of pharyngealized ("emphatic") consonants on the following vowel in spoken Arabic are raising of F1 and lowering of F2 (Shar and Ingram 2010 and references therein). Raising of F1 is indicative of vowel lowering.

4. Jakobson argued that from a phonological point of view, the Arabic uvular consonants q- and ḥ- [ħ] are pharyngealized velars ([1957] 1971:515–518). By Hàn times, the original Old Chinese uvulars would have disappeared; see section 4.3.

5. This is the *Chūnqiū* passage as quoted in the *Gōngyáng zhuàn*; in the received version of the *Chūnqiū*, the text is the same, except that the duke's consort is referred to as "Jìng Yíng 敬嬴" instead of Qīng Xióng 頃熊.

6. In his discussion of these terms, Zhōu Zǔmó concludes that 內 nèi refers to 洪音 hóngyīn 'broad sounds' and 外 wài to 細音 xìyīn 'thin sounds', terms that generally correspond to type-A and type-B syllables, respectively. He also cites examples to show that 緩氣 huǎnqì '[spoken with] slow breath' and 急氣 jíqì '[spoken with] fast breath' are generally used in the same way.

7. Since this change happened after the original Old Chinese uvulars had changed to the various "laryngeals" 喉音 *hóuyīn* of Middle Chinese, there was no merger between the original uvulars and the ones from original pharyngealized velars: for example, *q- had already become [ʔ] before *kˤ- became [q].

8. In the orthography of Alexandre de Rhodes's dictionary (1651), from which modern Vietnamese orthography developed, orthographic *gi-* (now pronounced [z] in Hanoi) probably represented a voiced palatal fricative, following the spelling conventions of Portuguese; nothing velar is implied by the letter *g-*.

9. A second much more recent palatalization of velars before palatal vowels occurred in many modern dialects, including Modern Standard Chinese, e.g., 金 MC *kim* > jīn [tɕin 1] 'gold', 缺 MC *khwet* > quē [tɕʰyɛ 1] 'break; defective'. This change is outside the scope of our discussion here.

10. The failure of *ŋ- to palatalize to *ny-* in 埶 *ŋet-s > *ngjiejH* > yì 'to plant' is unexplained, but it is worth noting that the *Guǎngyùn* has no such syllable as "*nyejH*," which would be the expected result.

11. To be sure, there have been some attempts to go beyond this traditional approach; see footnote 19 below.

12. The early Chinese loans in Vietnamese (probably borrowed before the breakup of Proto-Vietic) should not be confused with the Sino-Vietnamese layer of character readings from Chinese, which were introduced during the Táng dynasty (618–907) and which have little direct relevance for Old Chinese reconstruction. Unless otherwise indicated, none of our Vietnamese examples are from the Sino-Vietnamese stratum.

13. Here and below, Jiànyáng 建陽 data are from Norman (1971, 1973, 1974a, 1981, 1982, 1986, 1991, and 1996); Jiàn'ōu 建甌 data are from Norman (1973, 1981, 1986, and 1996); Shíbēi 石陂 data are from Norman (2000) and Akitani (2004); Hépíng 和平 data are from Norman (1995).

14. Jiàn'ōu tone 3 and Hépíng tone 4 are accompanied by glottal constriction, indicated here by [ˀ].

15. We thank Katia Chirkova for valuable information on cluster devoicing in Tibetan dialects.

16. Here and below, Proto-Hmong-Mien (pHM), Proto-Hmongic (pHmong), and Proto-Mienic (pMien) reconstructions are from Ratliff (2010) unless otherwise noted.

17. Liándūncūn 連墩村 data are from Norman (2002); Méixiàn data are from Norman (1989) and Běijīng dàxué (2003).

18. Fúzhōu 福州 data are from Féng Àizhēn (1998); Xiàmén 廈門 (Amoy) data are from Douglas (1899); Wǎxiāng data are from Wǔ Yúnjī and Shěn Ruìqīng (2010). The Fúzhōu forms in square brackets do not follow the stated correspondences and are presumably literary pronunciations.

19. The only other systematic attempts we know of to incorporate such distinctions in an Old Chinese reconstruction are Benedict (1976, 1987) and Starostin (1989). Benedict (1987:46) proposed to derive Norman's pMĭn *-k- and *-g- from "Proto-Chinese" (PC) *s-k- and *s-g-; he drew Norman's pMĭn *gh- from PC *g-, and Norman's pMĭn *g- from PC *C + g-. Starostin projected parts of Norman's Proto-Mĭn reconstruction back into Old Chinese: he reconstructed pMĭn *b- and *bh- as Old Chinese *b- and *bh-, for example; he also projected Norman's voiceless resonants back to Old Chinese (1989:59–65). He did not attempt to account for the Mĭn softened initials. Where MC *sy-* shows connections with OC *t-, Starostin regarded MC *sy-* as a dialect variant of MC *tsy-*, the regular reflex of OC *t- (1989:159–160). Pulleyblank

(1973) suggested that Norman's Proto-Mǐn voiced aspirates could reflect Old Chinese voiceless aspirates preceded by a prefix *ɦ-; thus OC *ɦpʰ- > Norman's pMǐn *bh-, but he offered no further evidence or arguments.

20. For Kra-Dai, see especially Ostapirat (2000) and Pittayaporn (2009); for Hmong-Mien, see Ratliff (2010); for Austroasiatic, especially Vietic or Viet-Muong, see Ferlus (1982, 1996, 1997).

21. The hypothesis that a presyllabic element was responsible for spirantization in Vietnamese was first suggested by Haudricourt (1965) who attributed it to an r- prefix, and later expanded at about the same time by Ferlus (1976) and Thompson (1976).

22. We are grateful to Michel Ferlus for helpful discussions on these points and for extensive assistance with data from Vietic languages. Unless otherwise noted, our examples from Vietic languages other than Vietnamese were provided by Ferlus.

23. Unfortunately, very few words with Old Chinese voiceless nasals seem to have been borrowed into Hmong-Mien. A possible example treating OC *n̥- as pHM *hn- is 餉 *n̥aŋ(ʔ)-s > *syangH* > shàng 'give food; food'; cf. pHM *hnrəaŋH 'rice (cooked)'. But the semantics are not straightforward.

24. In Sagart and Baxter (2009), we proposed that the shift from uvulars to Middle Chinese velars was conditioned by *loosely attached* presyllables. But that view has had to be modified because of examples like 鏡 *kjaengH* > jìng 'mirror'. That 鏡 jìng had initial *q- is supported by the related word 影 *qraŋʔ > *'jaengX* > yǐng 'shadow (n.)'. The spirantized initial in VN *gương* [ɣɯʌŋ A1] 'mirror' shows that 鏡 *kjaengH* had a preinitial in Old Chinese (see section 4.2.2.1). But if 鏡 *kjaengH* were from OC *Cə.qraŋ-s, we would expect softened *-k- in Proto-Mǐn; and in fact the Proto-Mǐn initial for 'mirror' is *k-, as shown by Jiànyáng /kiaŋ 5/ and Jiàn'ōu /kiaŋ 5/. (Proto-Mǐn *-k- should go to zero in Jiàn'ōu and possibly in Jiànyáng). Proto-Mǐn *k- is, however, compatible with OC *C.q-: 鏡 *C.qraŋʔ-s > *kjaengH* is thus the only reconstruction compatible with all the evidence. Similarly, 公 *C.qˤoŋ > *kuwng* > gōng 'father; prince', 價 *C.qˤ<r>aʔ-s > *kaeH* > jià 'price' and 改 *C.qˤəʔ > *kojX* > gǎi 'change (v.)' are reconstructed with a uvular initial because of xiéshēng and/or etymological evidence, and with a tightly attached cluster because they have Proto-Mǐn *k- rather than softened *-k-.

25. VN *được* [ɗɯʌk D2] 'obtain, get' has the expected initial but has an unexplained low-register tone. The final is also unexpected: in early loans, VN *-ươc* [ɯʌk] generally seems to correspond to OC *-ak (as in *thước* [tʰɯʌk D1] 'meter' for 尺 *tʰAk > *tsyhek* > chǐ 'foot (measure)'). For 德 *tˤək > *tok* > dé 'virtue' (which is homonymous with 得 *tˤək > *tok* > dé 'obtain' in Old Chinese as far as we can tell), Vietnamese has *đức* [ɗɯk D1], with the expected reflexes.

26. Contrary to Karlgren (*GSR* 561), 尸 *l̥əj > *syij* > shī 'corpse' is not a phonetic in 屎 *[qʰ]ijʔ > *xijʔ > *syijX* > shǐ 'excrement'; see section 5.5.5.1.

27. This comparison and the supporting material are drawn from Norman (2006:136).

28. Karlgren assigned 羊 yáng, 羌 qiāng, and 姜 jiāng to three different phonetic series (*GSR* 732, 712, and 711), but the *Shuōwén* says that 羊 yáng is phonetic in both 羌 qiāng and 姜 jiāng (*SWGL* 1571b, 5521a).

29. The picture is complicated by the fact that pMǐn initial *∅- and *ɦ- are difficult to distinguish from each other in Norman's reconstruction. According to Norman, their segmental reflexes are the same, except that Jiànyáng sometimes has /h/ instead of zero as the reflex of *ɦ-. The only other way to distinguish them is that *∅- is supposed to have the same tonal reflexes as voiced resonants like *m-, while *ɦ- has the same tonal reflexes as softened voiced initials like *-b-. But according to Norman (1974a), the only unambiguous difference in

the tonal behavior of these two types is that in Jiànyáng, tone *A syllables with initial *Ø- or *m- should go to tone 2, while those with initial *ɦ- or *-b- should go to tone 9; also, *Ø- in tone *B sometimes goes to tone 3 in the four dialects discussed (Fúzhōu, Xiàmén, Jiànyáng, and Yǒng'ān), while *ɦ- would not (Norman 1974a:29–32). Additional research on Mǐn dialects is needed to resolve these issues (see section 6.4).

30. The case of {翼} 'wing' is especially complex because of the unusual xiéshēng connections and possible dialect variation involved; the reconstruction that best accounts for all the evidence seems to be *ɢʷrəp. The uvular initial is supported by the phonetic 異 *ɢ(r)ək-s > *yiH* > yì 'different', which is also written as 异 (though not in pre-Qín documents, as far as we know), with the phonetic 已 *ɢ(r)əʔ > *yiX* > yǐ 'cease; already' (not distinguished in the early script from 巳 *s-[ɢ]əʔ > *ziX* > sì 'sixth earthly branch'). But 'wing' is also written as 翌, with the phonetic 立 *k.rəp > *lip* > lì 'stand (v.)', supporting a prevocalic *-r- and suggesting that the final MC *-k* was originally *-p. Moreover, in oracle-bone inscriptions, the graph for 'wing' is used consistently (with or without 日 rì 'day' added) to write {昱} yù < *yuwk* 'next day', later also written as 翊 and 翌 (Zhào Chéng 1988:230–231). Here MC *yuwk* 'next day' could regularly represent an earlier *ɢ(r)uk, but again, the phonetic 立 suggests that there was a prevocalic *-r- and that the MC *-k* is from an earlier *-p. Note that in the early script, the graph 立 is used not only for {立} lì < *lip* < *k.rəp 'stand (v.)', but also for {位} wèi < *hwijH* 'standing, position', for which the only viable reconstruction (given the Middle Chinese form and the phonetic 立) seems to be *ɢʷrəp-s. Now we assume that {位} wèi < *hwijH* 'standing, position' is etymologically related to {立} lì < *lip* < *k.rəp 'stand (v.)', but we know of no regular morphological process that would connect MC *lip* and *hwijH*. Rather, we conjecture that 位 *[ɢ]ʷrəp-s > *hwijH* > wèi 'standing, position' is a contraction of something like *ɢʷəʔ-rəp-s, where the first syllable *ɢʷəʔ may be 有 yǒu < *hjuwX* < *[ɢ]ʷəʔ (normally 'have, exist'), and the second syllable is a form of the root of {立} lì < *lip* < *k.rəp > *lip* 'stand (v.)'. (The function of 有 yǒu as a prefix is poorly understood, but it is found in such expressions as "有商 yǒu Shāng" for the Shāng 商 dynasty.)

If we reconstruct {翼} *yì* < *yik* 'wing' as *ɢʷrəp, then the dialect change of final labials to velars (section 5.7), along with plausible assimilations and dissimilations, could produce the Middle Chinese forms involved: e.g., *ɢʷrəp > *ɢrəp > *ɢrək > *yik* for {翼} 'wing', and *ɢʷrəp > *ɢʷrup > *ɢrup > *ɢruk > *yuwk* for {昱} 'next day'. Note that 昱 is also phonetic in 煜 *ɢʷrəp > *yuwk* > yù 'shine, gleam', also read MC *hip* according to the *Guǎngyùn;* MC *hip* would be the regular reflex of *ɢʷrəp. (It is necessary to reconstruct *ɢʷ- in order to account for MC *h-* here, as in 炎 *[ɢ]ʷ(r)am > *hjem* > yán 'burn, blazing' and 熊 *C.[ɢ]ʷ(r)əm > *hjuwng* > xióng 'bear (n.)'; the development of 'bear' is similar but not identical to that assumed for 昱 *ɢʷrəp > *yuwk* > yù 'the next day'.) In the earliest documents, the phonetic 立 (representing either {立} or {位}) is not used for either 'wing' or 'next day'; perhaps it became a suitable phonetic for *[ɢ]ʷrəp only after *ɢʷəʔ-rəp-s 'standing, position' had contracted to *ɢʷrəp-s.

31. Although the graph 鹽 for 'salt' supports the reconstruction of *-r-, it occurs rather late, being first attested in the Qín strips from Shuìhǔdì 睡虎地. Earlier forms for 'salt' resemble 覃 *N.rˤ[o]m > *dom* > tán 'extend, spread' (Jì Xùshēng 2010:867); hence our conjecture that the original vowel may be *o.

32. OC *r(ˤ)- thus corresponds to Norman's Proto-Mǐn *l-. However, it is possible that this lateral reflex actually developed after the breakup of the Mǐn branch as a result of a sound change spreading from the central regions.

33. For the reconstruction of *-aj in 買 *mˤraj ʔ > *meaX* > mǎi 'buy', see the discussion in section 5.5.2.1.

34. Most varieties of Mienic have an initial velar-lateral cluster in this word, e.g., Mun /kla:ŋ 2/ (Lǎnjīn 覽金 dialect), but this does not necessarily reflect a velar onset in Old Chinese: it could have originated as an attempt to represent an onset like [dl] in the donor variety of Chinese, from original *lr-; cf. /tlaŋ 2/ in the Mien dialect of Xiēzi 楔子 township, Hékǒu 河口 Yáo autonomous county, Yúnnán province (Wáng and Máo 1995:349). Similarly, cf. pHM *ɢlæw for 桃 *C.lˤaw > *daw* > táo 'peach', Xiēzi Mien /tlau 2/.

35. That there was a dialect development of OC *l̥(ˤ)- > MC *x-* was originally pointed out by Pulleyblank (1962–1963:117–118), where his *θ- corresponds to our *l̥(ˤ)-.

36. The text is quoted from Dien (1957:285), whose translation is adapted here. The *Kǎo shēng*《考聲》mentioned is the *Kǎo shēng Qièyùn*《考聲切韻》, a work on pronunciation by Zhāng Jiǎn 張戩 of the Táng dynasty, frequently cited by Huílín.

37. The treatment of final *-r as *-n* in 漢 *n̥ˤar-s > *xanH* is also characteristic of interior dialects, as opposed to coastal dialects, where we have evidence of *-r > *-j; see section 5.5.1.

38. Starostin (1989) did reconstruct Old Chinese *mh-, *nh-, etc., where Norman (1973) reconstructed them for Proto-Mǐn, which may be one of the reasons he chose to reconstruct *sm-, *sn-, etc. where we reconstruct voiceless resonants like *m̥(ˤ)- and *n̥(ˤ)-.

39. Proto-Hmongic tone *C is the regular reflex of pHM syllables with final *-k in tone *D; see Downer (1967:590), Ratliff (2010:31).

40. In Ratliff's reconstruction (2010:86–106), Proto-Mienic glottalized voiced stops reflect earlier prenasalized voiceless stops; thus pMien *ʔgʷ- < pHM *ŋkʷ- or *ɴqʷ-. The notation "*NKʷ-"- means that the onset could be either *ŋkʷ- or *ɴqʷ-, but there is not enough evidence to choose between them.

41. Treating these pairs as intransitive roots with voiced initials, devoiced by the causative *s- prefix (Mei 2012), is not an open option, since we show in section 4.4.3.3 that *s- assimilates in voicing to a following obstruent (Sagart and Baxter 2012).

42. Rục /tŋkɛŋ/ evidently reflects the qùshēng variant *gj+nH* of 近 jìn, because of the *huyền* tone (A2) in the corresponding Vietnamese form *gần* 'near'. Chinese qùshēng regularly corresponds to the *ngang* (A1) and *huyền* (A2) tones in one early layer of Chinese loanwords to Vietnamese.

43. Ratliff compares pHmong *ŋkhuw D 'crooked' with 曲 *kʰ(r)ok > *khjowk* > qū 'to bend, bent', but as she points out, the Hmongic tone in *ŋkhuw D 'crooked' points to Proto-Hmong-Mien final *-p or *-t, not *-k (2010:87n). Perhaps the Proto-Hmongic form represents a form of 屈 qū < *khjut* < *[kʰ]ut 'bend, subdue': either *Nə-[kʰ]ut (which would also produce MC *khjut*) or a hypothetical Chinese intransitive form *N-[kʰ]ut > *gjut* 'bent' that is not reflected in Middle Chinese written sources (as far as we know).

44. The developments described in Table 4.35 are those of Xiàmén for syllables with OC nonpharyngealized *b (or *b- < *N.p-) in the onset. In other varieties of Mǐn, the tonal developments vary: for example, in Fúzhōu, syllables with tone *C (qùshēng) with Norman's voiced aspirate initials (e.g., *bh- < OC *m.p-) have tone 5 (upper qùshēng), not tone 6 (lower qùshēng) as might be expected (Norman 1974a). Also, at some positions of articulation, the segmental reflexes for pharyngealized and nonpharyngealized onsets may be different in Proto-Mǐn. For instance, OC *m.k- becomes Norman's pMǐn *gh-, but OC *m.kˤ- becomes his pMǐn *ɣ-; see examples (476), (477), and (478). Note that Norman's Proto-Mǐn *b-, *bh-, and *-b- types (as well as his *-p-) all become voiceless aspirates in Shàowǔ (Norman 1974b, 1982) and in the closely related Hépíng 和平 dialect (Norman 1995). This suggests that these dialects never underwent the first devoicing (in stage 4 of Table 4.35), but only the second devoicing (in stage 6).

45. The tone *A in Proto-Kra and the tone category in Proto-Hmong-Mien would normally correspond to Chinese píngshēng; we have no explanation for this discrepancy.

46. The *Jīngdiǎn shìwén* gives the reading MC *kop* for 合 in several passages, e.g., in the expression 合巹 héjǐn < *kop-kj+nX* 'to drink from cups made from splitting a single gourd', part of the marriage ceremony described in *Lǐ jì: Hūn yì* 《禮記・昏義》(*JDSW* 217).

47. The *Guǎngyùn*'s reading *kaep* is irregular; we would expect *keap*. The reading *kep* is from *Jīngdiǎn shìwén* (*JDSW* 164).

48. Another possible Proto-Mǐn reconstruction for 狹 xiá 'narrow' is *ap D, with initial *∅-; as noted earlier, Norman's *ɦ and *∅ are often difficult to distinguish, especially if forms are missing for crucial dialects.

49. Proto-Mǐn may have overlapped in time with Early Middle Chinese and may contain a layer of early Middle Chinese loanwords. We have already seen an apparent instance of layering in the Proto-Mǐn treatment of OC *l- (section 4.3.4).

50. The standard traditional character for yùn 'rhyme' is "韻," which has the reading *hjunH* in the *Guǎngyùn*; if we relied on this evidence alone, we would be led to reconstruct the word as "*ɢʷə[n]-s." But earlier *Qièyùn* manuscripts give instead the reading *hwinH*, and "韻" is a late character. The word {韻} was earlier written as "均," which leads to the reconstruction *[m-qʷ]<r>i[n]-s; {韻} is also written as 韵, now used as the simplified form. The reconstruction *[m-qʷ]<r>i[n]-s makes etymological sense, connecting {韻} to a root meaning 'even' or perhaps 'cyclical' (as in the other forms in example (489)), with an *<r> infix indicating repetition, and an *m- prefix that here can be interpreted as deriving an instrumental noun (section 3.3.2.2): "that by which something is made harmonious or even." (We know of no clear cases of the word being used to mean 'rhyme' as such in pre-Qín documents.) Jì Xùshēng says that the graph 匀 originally depicted a potter's wheel, {鈞} *C.qʷi[n] > *kjwin* > jūn 'potter's wheel' (2010:741).

51. In Baxter (1992:755, 793), 土 tǔ < *thuX* < *tʰˁaʔ was erroneously reconstructed with a lateral *hl- (which would be *l̥ˁ- in the present reconstruction). As pointed out by Sagart (1993b:256), the *dzy-* in 社 shè < *dzyaeX* indicates an Old Chinese alveolar, not a lateral.

52. The earliest such example we know of is that the Guōdiàn bamboo-strip version of the text "Wǔxíng" 《五行》(late fourth century BCE) has the character 語 yǔ < *ngjoX* < *ŋ(r)aʔ (normally 'speak') for 禦 yù < *ngjoX* < *m-qʰ(r)aʔ in a widely quoted line from Ode 260.5: 不畏彊禦 bú wèi qiáng yù 'He does not fear the strong and the oppressive' (*GD* 33, 150). In quotations of this line in received texts, the word is generally written as 御 *m-[qʰ](r)aʔ > *ngjoX* > yù 'ward off; withstand' (related to 'oppressive'). From the context and the way the line is quoted in received texts, it appears that 'oppressive' (which we reconstruct with a uvular) is the original meaning. If this analysis is correct, then the writing of 'oppressed' with 語 yǔ in the Guōdiàn "Wǔ xíng" suggests that the change of *m-qʰ- > *ŋ- had already happened by the late fourth century in the Chǔ area.

However, several other alleged examples of the interchange of 五 and 午, cited by Bái Yúlán (2008:104–105), appear to be flawed. For example, a graphic element sometimes interpreted as 午 wǔ over 又 yòu is actually, according to Lǐ Jiāhào (2004), an early graph for {鞭} *pe[n] > *pjien* > biān 'whip (n.)', used as a phonetic element to write {辯} *[b]reŋʔ > *bjenX* > biàn 'distinguish, dispute (v.)' on strip 9 of the Shànghǎi Museum text "Mín zhī fùmǔ" 《民之父母》(*SB* 2.25, 2.168) and as a semantic element in early forms of {馭} *[ŋ](r)a-s > *ngjoH* > yù 'drive a chariot' (which is sometimes written with 五 wǔ as phonetic in the bamboo strips from the tomb of Zēng Hóu Yǐ 曾侯乙, late fifth century BCE). Although {馭}yù < *[ŋ](r)a-s 'drive

a chariot' is often written with the character 御 yù < *m-[qʰ](r)aʔ in received texts, the words {御} yù 'ward off' and {馭}yù 'drive a chariot' are not confused in earlier texts and appear to be unrelated (Dài Jiāxiáng 1995, quoted in *GG* 2.525–526).

53. Karlgren (1942–1946, gloss 1872) also gives examples where 所 is also used for 許 in the meaning 'quantity'*qʰ(r)aʔ > *xjoX* > xǔ, further supporting the connection of 午 *[m].qʰˤaʔ > *nguX* with uvulars.

54. The *r in the Proto-Hmong-Mien form is unexplained; the Middle Chinese division-IV chóngniǔ final *-jij* normally indicates the absence of prevocalic *-r-.

55. This form is reconstructed on the basis of Mǐn; there is no reading corresponding to *m-[d]ˤuk-s in the Middle Chinese written sources. If there were, we would expect it to be "*dawH.*" However, pMǐn *-əu usually corresponds to MC *-uw*, not *-aw*.

56. MC *zywit* for 秫 shú reflects a variant form *mə.lut; see section 4.5.2.4.

57. For the irregular loss of final *-k in 'come' (probably attributable to the restressing of an unstressed variant), see Baxter (1992:330) and section 5.4.2.2.

58. One possibility is that our *s.t- > MC *sy-* was actually *sə.t-, while our *S.t- > MC *ts-* was actually OC *s.t-. A dialectal distinction is another possibility. This is similar to our use of a capital *A to mark forms with *a whose reflexes are still unexplained; this *A is not intended as a seventh vowel (see sections 5.4.1.1, 5.4.1.2, and 5.5.2.1).

59. For 揖, Karlgren gives the Middle Chinese pronunciations *tsip* and *tsrip* for 'to cluster together, to crowd (Shī)', which is the same word as 濈 *s.q<r>[i]p > *tsrip* > jí 'crowded together'. This is based on a single annotation in the *Jīngdiǎn shìwén*, for the line "螽斯羽，揖揖兮" ('The wings of the locusts, they are in crowds') in Ode 5.3 (*JDSW* 54); the only pronunciation given for 揖 in the *Guǎngyùn* is MC *'jip*. The reading *tsip* probably represents a variety of Middle Chinese in which *tsr-*, *tsrh-*, etc. had merged with *ts-*, *tsh-*, etc. (as with 叟 *s-ruʔ > *srjuwX* > *suwX* > sǒu 'old man'); see note 68 for a similar example.

60. "讀若汝南人寫書之寫" (*SWGL* 4026a).

61. The Middle Chinese initial *zr-* is generally not recognized in traditional phonology, because in the *Guǎngyùn* it was not distinguished from *dzr-*. The fact that there was a contrast *dzr- ≠ zr-* parallel to *dz- ≠ z-* and *dzy- ≠ zy-* was first revealed by the fǎnqiè spellings in the manuscript of the Wáng Rénxù 王仁煦 version of the *Qièyùn*, discovered in the Former Palace Museum in Běijīng in the late 1940s; see Baxter (1992:39, 56–57).

62. The MC initial in 矣 yǐ < *hiX* (traditional name: 喻三 Yù sān = 云 Yún) is rare except before a rounded vowel or semivowel (as in 云 *[ɢ]ʷə[r] > *hjun* > yún 'say' or 圜 ~ 圓 *ɢʷ<r>en > *hjwen* > yuán 'round'), because the normal source of this initial is OC *ɢʷ-. Another exception to this pattern is 焉 *[ʔ]a[n] > *hjen* > yān '(3p locative pronoun)', which like 矣 yǐ is a sentence-final particle: when 焉 yān occurs sentence-initially, it is read as *ʔa[n] > *'jen* > yān 'how' with an initial glottal stop. In these cases we suspect that the MC *h(j)-* initial is the reflex of initial *q- or *ʔ- in an unstressed syllable. (Other cases of MC *h(j)-* without a following rounded vowel or semivowel are the result of dissimilation, probably from [ɦʷ] from original *ɢʷ-, as in 炎 *[ɢ]ʷ(r)am > *ɦʷ(r)am > *ɦ(r)am > *hjem* > yán 'burn, blazing'; see section 5.7.)

63. Norman (1986:381) reconstructed pMǐn *džh- rather than *dzh- in 席 xí 'mat', on the basis of Central Mǐn dialects that have initial /š/, but some cases of /š/ in Central Mǐn, including this one, appear to be secondary: for example, the Gàizhú 蓋竹 dialect of Shāxiàn 沙縣 has /tʃʰiu 1/ for 秋 *tsʰiw > *tshjuw* > qiū 'autumn; crop', pMǐn *tshiu A (Norman 1974a:32, 1981:41; Dèng Xiǎngzhāng 2007:362).

64. MC *bjijH* could reflect *-j-s, *-t-s, or *-p-s, but except in the southeast, modern Chinese forms reflect a form with *-t (which would correspond to MC "*bjit*"), excluding the first possibility.

65. A character with the shape 鼻, composed of 自 zì and 畀, does occur in Shāng inscriptions, but it is apparently a place name, not the common noun {鼻} bí 'nose' (Qiú Xīguī 1992:95–96).

66. Mei (2012:8) has questioned the role of 亡 wáng as phonetic in 喪 sāng on the grounds that in Shāng oracle inscriptions, according to Yú Xǐngwú (1979:75–77), {喪} sāng is written with the character 桑 *[s]^{ʕ}aŋ > *sang* > sāng 'mulberry tree', without the element 亡 *maŋ. While this is true, 亡 *maŋ does appear in the character for {喪} in early bronze inscriptions (where Yú Xǐngwú characterizes it as a phonetic element). The fact that 亡 *maŋ is a phonetic element is further supported by the fact that in the Shànghǎi Museum texts, the word sāng 'mourning, burial' in the expression 喪服 sāngfú 'mourning clothes' is written with 歹 dǎi 'bad' on the left, and 芒 máng, MC *mang* < *m^{ʕ}aŋ 'awn of grain', on the right. 歹 dǎi 'bad' is clearly signific, and 芒 *m^{ʕ}aŋ can only be the phonetic (*SB* 4:183). Note that 芒 *m^{ʕ}aŋ is a type-A word, like 喪. For details, see Sagart and Baxter (2012).

67. The expression 叟叟 sōusōu 'soaked' rhymes as *-u in Ode 245.7; 搜 sōu (meaning disputed) rhymes as *-u in Ode 299.7.

68. The merger of MC *Tsr-* with *Ts-* is indicated by many alternate fǎnqiè spellings in the *Jīngdiǎn shìwén* and characterizes many Chinese dialects today; for example, in standard Mandarin, MC *tsy-* and *tsr-* both usually correspond to [tʂ], but some varieties of Mandarin, as well as Gàn, Hakka, and certain Xiāng 湘 dialects regularly have [ts] for MC *tsr-*, even though they have a contrasting retroflex [tʂ] for MC *tsy-* (Sagart 1993a:133–134; Coblin 2011:38–65).

69. We write square brackets around the *l in 鋤, 鉏 *s-[l]<r>a and 除 *[l]<r>a to indicate uncertainty about the main syllable initial: it could either be *l or something more complex. For example, *s-m-l<r>a and *m-l<r>a are also possible, with the *m- prefix typically indicating volitional action (see the discussion of Mǐn reflexes below).

70. If the *-r- in *[l]<r>a really is the infix, as we suppose, it suggests that more than one thing is being removed or that the removal is somehow distributed, and this is indeed frequently the case with 除 chú in early texts.

71. The *Shuōwén*'s definition (*SWGL* 6289a) uses the word 薅 *q^{hʕ}u > *xaw* > hāo 'weed (v.)' (which occurs as a colloquial term in Mǐn dialects, e.g., Xiàmén /k^{h}au 1/). Duàn Yùcái explains the gloss 'what is used in weeding while standing' by saying that "in ancient times weeding was done in a sitting position; the tool used was called a 槈 nòu [< *nuwH* < *n^{ʕ}ok-s]; it had a short handle" (古薅艸坐為之，其器曰槈 [nòu], 其柄短); see Duàn Yùcái ([1815] 1981:707).

72. For the reconstruction of 'window', see section 4.4.3.5.

73. Some Northern Mǐn dialects show softened initials for {鋤} 'hoe (n.)': Zhènqián /ty 9/, Wǔfū /ly 9/ (Norman 1996:34), Shíbēi /dy 2/ (Akitani 2004:81; Akitani's tone 2 corresponds to Norman's tone 9), implying pMǐn *-dy A; this would be consistent with Xiàmén /ti 2/ 'hoe (n.)'. Proto-Mǐn *-dy A would be the regular reflex of OC *Cə.l<r>a or *Cə-m-l<r>a (see section 3.1.4). But when Northern Mǐn softened initials correspond to Middle Chinese voiced obstruents, they are sometimes secondary (see Table 4.14), so further study is needed.

74. Since we do not regard *-ʔ as a synchronic suffix in Old Chinese, the root *n^{ʕ}ər in 西 *s-n^{ʕ}ər may be related to, but is not synchronically the same as, the root 尼 *n^{ʕ}ərʔ > *nejX* > ní 'to stop'. But it is interesting that a similar mismatch occurs in 東 *t^{ʕ}oŋ > *tuwng* > dōng 'east', which we relate to 動 *[Cə-m-]t^{ʕ}oŋʔ > *duwngX* > dòng 'move' but which otherwise has an unexpected píngshēng tone; see Sagart (2004).

75. The interpretation of the graph 妻 for qī < *tshej* 'wife' is disputed, but in any case it is apparently not a phonetic compound, and its onset is difficult to reconstruct with confidence: one possibility is *s.l̥ˤ- (see Sagart 1999c:173). The earliest example of the character 棲 MC *sej* used to write 'nest' recorded by Jì Xùshēng is from the Qín site Shuìhǔdì 睡虎地 (2010:865), so it is probably a late character introduced from Qín.

76. "山崖也、產生物也" (Hǎo Yìxíng et al. 1989:1015).

77. The unusual correspondence of MC *-aewk* to OC *-ak, generally regarded as irregular, results from the change *Tsrj- > Tsr-*, which affected some varieties of Middle Chinese; see sections 4.1.1 and 5.4.1.2.

78. "朔：月一日始蘇 [*su* < *s.ŋˤa] 也。从月、屰聲。" (*SWGL* 2995a).

79. MC *'jw+j* and *'jw+jH* could also reflect initial uvular *q-, but in that case we would expect to find the words written with the phonetic 貴 *kuj-s > *kjw+jH* > guì 'precious; expensive', which seems to be the usual way to write velar- or uvular-initial syllables with OC *-uj.

80. We are grateful to Lái Guólóng 來國龍 for helpful discussion on this point. We regard the traditional use of 歸 guī < *kjw+j* < *[k]ʷəj 'return (v.)' to gloss 鬼 guǐ < *kjw+jX* < *k-ʔujʔ 'ghost' as a sound gloss based on folk etymology, probably from Hàn times or later, postdating the diphthongization of *-uj to *-wəj (see section 5.5.7). The connection is not implausible from a semantic point of view, but since the two words have different rhymes in Old Chinese (*-əj vs. *-uj), they are unlikely to have had a common origin. The earliest examples of this gloss that we know of appear in the *Shuōwén* (*SWGL* 4058a, 100 CE) and in *Lièzǐ* 《列子》, most of which probably dates from no earlier than the third century CE (Barrett 1993:299–301; Graham 1960–1961).

81. We do not know any examples of onsets with preinitials *p, *t, and *k and main initial *s(ˤ)-, i.e., *k.s(ˤ)-, *p.s(ˤ)-, *t.s(ˤ)-; nor do we know any examples of onsets with two alveolar obstruents such as *t-t, *t-d, *t-dz.

82. The character 廢, with the phonetic 發 *Cə.pat > *pjot* > fā 'fly forth, send forth', reflects the change of *-p-s to *-t-s. We know of no occurrences of this character in pre-Qín documents.

83. Although the reading 去 qǔ < *khjoX* is absent in recent modern dictionaries, it is in the *Guǎngyùn* and is frequently indicated in *Jīngdiǎn shìwén*.

84. The expected reflex of OC *t.g- in Norman's Proto-Mǐn would be *džh-; we suspect that the pronunciation with *dž- reflects borrowing from a non-Mǐn dialect.

85. A form like *tə.kuʔ would normally evolve to a softened initial in Mǐn, giving zero in Northern Mǐn dialects such as Jiànyáng and Jiàn'ōu, but Jiàn'ōu has /kiu 3/ for 'nine', which is inconsistent with OC *tə.kuʔ—unless this word, like 'ten', does not belong to the inherited layer of Mǐn.

86. The similarity of 'nine' and 'elbow' in Sino-Tibetan may point to the practice of counting to ten on the hand and arm, where 'nine' sometimes associates with the elbow, as in certain Papuan languages of New Guinea such as Foe (Rule 1993; Franklin 2001), where 'elbow' and 'nine' are the same word.

87. Proto-Mienic *ʔɟæu C < pHM *nc- could reflect 帚 *[t.p]əʔ 'broom' with a nasal prefix and a change of tone category.

88. Pittayaporn (2009:160) reconstructs Proto-Tai *Ç.dwiːŋ, in which he says that the *-w- is 'speculative'.

89. The Middle Chinese pronunciation *bij* for 貊 is from the *Jíyùn* (Dīng Dù [1039] 1985) and implies OC *brə. The annotations to the *Fāng yán* by Guō Pú 郭璞 say that it is pronounced like

丕 pī < *phij* < *pʰrə ‘great’, but we suspect that this is a textual error for the place name 邳 MC *bij* (sometimes written as 丕 pī), which is given as a homonym of 貉 in the *Jíyùn*.

90. As mentioned in the previous note, the pronunciation MC *bij* for 貉 would normally reflect OC *brə, but we suppose that here Guō Pú’s notation “ 貉狸” for the Jiāngnán pronunciation in his time was intended to represent disyllabic *bə.rə rather than “*brə.rə.”

91. The hyphen in Ratliff’s reconstruction for the last item indicates the presence in Proto-Hmong-Mien of a loosely attached preinitial. We would expect pHM *kl- rather than Raliff’s *-r. The reason for this irregularity is not known.

92. Until recently, it was not clear whether the Proto-Mǐn initial in ‘mouth’ was *tsh- or *tšh-, because Yǒng’ān, the Central Mǐn dialect that Norman largely relied on to distinguish these positions of articulation, uses a different word for ‘mouth’ (/tse 3/, the regular reflex of 觜 *[ts]ojʔ > *tsjweX* > zuǐ ‘beak’, which became the colloquial word for ‘mouth’ in Mandarin and other dialects). But Dèng Xiǎngzhāng (2007:363) reports that Gàizhú 蓋竹, another central Mǐn dialect, has /tʃʰyi 5/ for ‘mouthful’, which points to pMǐn *tšh-.

93. Recall that MC *tsyhwejH* stands by convention for *tsyh-* plus *-jwejH*; see section 2.1.2.3.

94. If *-rʔ and/or *-nʔ became *-t in the Chǔ area, for example, this would explain why {淺} *[tsʰ]e[n]ʔ > *tshjenX* > qiǎn ‘shallow’ is written with a character composed of 水 shuǐ ‘water’ plus 察 *[tsʰ]ˁret > *tsrheat* > chá ‘examine’ on strip 46 of the Guōdiàn version of the text “Wǔ xíng” 《五行》, which also exists in a silk version from Mǎwángduī (see Qiú Xīguī’s comments in *GD* 154, note 63).

95. Recall that Proto-Mǐn *ɣ- also behaves like a voiced aspirate in Norman’s system.

96. We might expect pHM “*hŋʷ-,” but Ratliff does not reconstruct such an onset (2010:30).

97. For 藕 ǒu < *C.ŋˁ(r)oʔ ‘lotus root’, Běijīng dàxué (1993) gives /ŋɛu 3/ as a literary pronunciation and /ŋɛu 1/ as the colloquial pronunciation in Méixiàn. But it is possible that the labels should be reversed: according to the pattern described in Norman (1989:334–335), we would expect that words with initials corresponding to pMǐn *ŋh- should go to tone 3 and that those corresponding to pMǐn *ŋ- should go to tone 1; and that the former are more likely to be from the colloquial layer.

98. The phonetic realization of preinitial *Nə is uncertain. As a loosely attached preinitial it presumably contained a central vowel; the testimony of Hmong-Mien indicates a nasal element, but whether that element took the form of a consonant or of nasality on the vowel is uncertain; if a consonant, that consonant’s place of articulation is also uncertain. Example (725) below may indicate that *Nə was phonetically [ŋ].

99. We regard the aspiration in the Proto-Hmong-Mien initial as a by-product of the evolution out of an original fricative, although lack of parallels makes this difficult to verify.

100. “無念，念也.”

101. “勿念，勿忘也” (Hǎo Yìxíng et al. 1989:146) *Ěr yǎ* is a collection of glosses from perhaps the third century BCE.

102. The verb 來 lái ‘come’ rhymes in some (perhaps early) parts of the *Shījīng* with *-ək (e.g., Odes 203.4, 242.1, 263.6) but in other parts with *-ə. Our interpretation is that this common verb had a variant in unstressed position that lost the coda *-k; the rhymes with *-ə represent a restressing of this unstressed form (as modern English *it* comes from Middle English and Old English *hit*). See Baxter (1992:337–338) and section 5.4.2.2.

103. Xiàmén /tun 2/ and Cháozhōu /tuŋ 2/ ‘lip’ appear to reflect pMǐn *d-; the failure of OC *d- to palatalize in a type-B syllable is unexplained. It is not certain that the Jiàn’ōu form /œyŋ 3/

with softened initial is colloquial; the colloquial word for ‘lip’ in Jiàn’ōu is /tsʰy 5 pʰyɛ 6/ ‘skin of the mouth’, interpreted in Lǐ Rúlóng and Pān Wèishuǐ (1998:35) as 喙皮, i.e., pMǐn *tšhyi C bhye A ‘mouth skin’.

104. The character composed of 木 mù and 公 is attested in the late fourth century BCE, as part of a place name in the “Boat tally of Qǐ, the lord of È” (鄂君啟舟節); see *GG* 5.811–812.

105. We think this Jiànyáng form corresponds to 薦; Norman (1996:26) compares it instead to 苫 shān ‘straw mat’. For discussion see example (1106) in section 5.5.5.

106. Data are from Douglas (1899), Norman (1996), Cài Jùnmíng (1976), and Féng Àizhēn (1998).

107. For the reconstruction 韻 *[m-qʷ]<r>i[n]-s, see example (489) and note 50 in section 4.4.2.1.

Chapter 5

1. It is difficult and perhaps of secondary importance to assign priority for the idea of a six-vowel system. Baxter’s teacher Nicholas C. Bodman was working on a six-vowel reconstruction already in the early 1970s, but it was not fully worked out at that time; solutions to some of the problems were proposed in Baxter (1977). Baxter, Starostin, and Zhèngzhāng Shàngfāng were at first isolated from each other by the Cold War, the Cultural Revolution, and Sino-Soviet hostility, and they developed their reconstructions independently—except that they were all strongly influenced by Li (1971) and by Jaxontov and his rounded-vowel hypothesis. Baxter and Zhèngzhāng first met in 1982 in Beijing; Baxter and Starostin had corresponded briefly but first met in Ann Arbor in 1987 (at which time the manuscript for Starostin 1989 was already complete). All three were astonished at the striking similarities of their reconstructions.

2. There is nothing essential in this decision, but the phonological changes from Old to Middle Chinese turn out to be easier to formulate if we write “*-ij” rather than “*-i,” while there is no such consideration for *-u.

3. Baxter (1992:182–183) also allowed *-ʔ after voiceless stop codas to account for apparent alternations in Middle Chinese between shǎngshēng words and rùshēng words with final *-k, but we exclude this possibility here.

4. This describes the main developments to Middle Chinese, but developments were probably different in different dialects. In some dialects final *-s may have simply been lost, without the loss of a preceding voiceless stop (possibly after the change of *-p-s to *-t-s). Such a development could be responsible for the Mandarin pronunciations of 鼻 bí ‘nose’, which is qùshēng in Middle Chinese (*bjijH*) and in some southern dialects, but which imply a rùshēng pronunciation like MC *bjit*.

5. These are the same consonants that Huáng Kǎn 黃侃 (1886–1935) identified as the “nineteen initials of ancient pronunciation” (gǔ shēng shíjiǔ niǔ 古聲十九紐), which he regarded as simplest and most basic, based on their distribution in the Middle Chinese system; see Wáng Lì (1985:348–351).

6. Although reconstructing five vowels plus *-ŋ seems to us the most natural way to account for the syllables considered so far, it would be possible to reduce the number of vowels by increasing the number of types of codas (or onsets). For example, if we recognized *-ŋʷ and *-ɲ as additional codas, we could reduce the number of vowels to two (*a and *ə) by writing

*-aŋ^{w} instead of *-oŋ, *-əŋ^{w} instead of *-uŋ, and *-aɲ instead of *-eŋ. This is essentially the move made in Pulleyblank (1977–1978), which uses only the two vowels *a and *ə. Although Pulleyblank's reconstruction is not typologically impossible, we see no reason to prefer it, unless there are other reasons for preferring a small vowel system. Moreover, in his two-vowel system, in order to account for the rhyme distinctions observed among finals that we reconstruct with the coda *-n, it would be necessary to add labialized *-n^{w} and palatalized *-n^{j} to the set of codas, with "*-an^{w}" corresponding to our *-on, and "*-an^{j}" corresponding to our *-en, and so forth; and similarly for the codas *-t, *-m, and *-p.

7. The "Younger Xú" version of the *Shuōwén* (see Boltz 1993:435–436) adds 此與坐同意 "This is the same rationale as with 坐 zuò 'to sit'," that is, 土 tǔ 'earth' is a component of 在 zài for the same reason as in 坐 zuò, apparently to indicate the notion of location or being at a place.

8. Incidentally, removing *ia and *iə from the vowel system explains a number of distributional gaps in both Karlgren's and Li's reconstructions: in both reconstructions, there are syllables like "*Kian" but no syllables like "*Kiang," and no explanation of why they should be absent. In the six-vowel system, Karlgren and Li's *Kian is *K^{ɕ}en > *Ken*, parallel to the velar-final *K^{ɕ}eŋ > *Keng*, and there is no such gap.

9. The Chinese terms are *chóngniǔ sānděng* 重紐三等 and *chóngniǔ sìděng* 重紐四等.

10. The table is somewhat simplified so as to focus on the most important differences among the reconstructions; in fact, the reconstructions in a single row do not always correspond to each other one-to-one. For example, MC *Tan* is reconstructed as *Tan, *Tân, and *Tan by Baxter-Sagart, Karlgren, and Li, respectively, in agreement with the first row, But MC *Pan* is reconstructed as *P^{ɕ}an or *P^{ɕ}on by Baxter-Sagart, as *Pwân by Karlgren, and as *Pan by Li; MC *Kwan* is reconstructed as *K^{wɕ}an or *K^{ɕ}on by Baxter-Sagart, as *Kwân by Karlgren, and as *Kwan by Li.

11. Actually, the Old Chinese rhymes do not match the *Qièyùn* rhymes exactly; for example, the 之 Zhī rhyme group includes not only the words of the *Qièyùn*'s 之 Zhī rhyme but also some words of the 脂 Zhī rhyme.

12. See Baxter (1992) for detailed arguments. In a few cases (the rhymes with labial codas), there are not enough rhyme examples to yield a statistically significant result, but we have no reason to think that syllables with labial codas were based on a different vowel system from the rest of the language.

13. Karlgren's translation (1950:68–69) is "Lo! how handsome, the clear forehead how beautiful; / when dancing he is in counting [i.e., "perfectly follows the rhythm of the music"]; / when shooting he pierces (the target); / his four arrows succeed one another in a regular sequence, / so as to prevent (disorder:) violation of the rules." This translation of the fifth line follows the emendation of 反 fǎn to 變 biàn; Karlgren also offers a translation of this line that follows the Máo text: "his four arrows (revert =) all come (one after the other) to the same place."

14. We have not attempted to give reconstructions in Pulleyblank's system (1977–1978), for which full reconstructions are not available. However, in his system, all the words, including the problematic fifth line, would have the rhyme *-an.

15. Nothing, that is, except the fact that 反 fǎn, a shǎngshēng word, appears to rhyme with qùshēng words. But although the *Shījīng* rhymes generally tend to agree with the tone categories of Middle Chinese, there are many exceptions, and tone mismatches like this are quite common.

16. The *Shījīng* rhymes involving 反 fǎn are not all regular, but it rhymes twice with 遠 yuǎn < *hjwonX* < *C.g^{w}anʔ 'far', which itself rhymes repeatedly with words that can only

be reconstructed with *-a[n] (89.1, 158.2, 165.5, 169.3, 223.2, 254.1). The Middle Chinese finals of 變 *ljwenX*, 選 *sjwenH*, and 亂 *lwanH* all point to *-o[n]; 婉 *'jwonX* rhymes as *-o[n] in 94.1, 102.3, and 151.4; 貫 *kwanH* rhymes in 199.7 with 壎 xūn < *xjwon* < *q^ho[n] 'ocarina', whose phonetic component indicates a rounded vowel (熏 xūn < *xjun* < *q^hu[n] 'smoke (v.); vapor, odor').

17. While 變 *pro[n]-s does not rhyme elsewhere in the *Shījīng*, it is written with the same phonetic element as 孌 liàn < *ljwenX* < *[r]onʔ 'beautiful' in line 1, and words with this phonetic 絲 luán < *lwan* < *mə.r^{s}o[n] 'harness bells' rhyme consistently as *-o[n] (in 42.2, 102.3, 147.1, 151.4, and 261.6). Finally, 變 *pro[n]-s 'change (v.)' could well be related etymologically to 亂 luàn < *lwanH* < *[r]^{s}o[n]-s 'disorder, rebellion'.

18. Translation (adapted from D. C. Lau 1963): "Without what makes it clear, heaven might split; / without what makes it settled, earth might fly away; / without what makes them spiritually active, the spirits might come to rest; / without what fills them, the valleys might dry up; / without what gives them life, the myriad beings might be annihilated; / without what makes them noble and high, dukes and kings might fall."

19. The traditional requirement that the *Qièyùn*'s 元 Yuán rhyme (*-jon*, *-jwon*) should rhyme with 痕 Hén (*-on*) and 桓 Huán (*-won*) is our rationale for writing all three with "*-on*" in our Middle Chinese notation. Although the three are separate rhymes in the *Qièyùn*, they are put adjacent to each other, which probably indicates that they did rhyme in some dialects. They were subsequently marked as tóngyòng 同用 "usable interchangeably," and all three were combined as the rhyme "十三元" (number 13, Yuán) in the *Píngshuǐ yùn* 平水韻 rhyme standard that came to be used for regulated verse. In most dialects, however, MC *-j(w)on* (元) came to rhyme with *-j(w)en* (仙) and *-(w)en* (先) as something like [ien] or [yen]; so in order to rhyme correctly, poets had to simply look up or memorize which cases of [ien] and [yen] in their own speech had come from the 元 Yuán rhyme of the *Qièyùn* and which had come from 仙 Xiān or 先 Xiān. The 元 Yuán rhyme in the *Píngshuǐ yùn* thus acquired the name "gāisǐ shísān Yuán 該死十三元" ('the damned number 13 Yuán'); see Wáng Lì (1988:128).

20. The only innovations regarding *r in the current reconstruction involve the reconstruction of initial *r- preceded by certain preinitials, and of *-r in coda position; see sections 4.4, 4.5, and 5.5.1.

21. It appears that in the early script, the same phonetic elements were used to write both syllables of the form *ɢ^{w}en (e.g., 圜, 圓 yuán < *hjwen* < *ɢ^w<r>en 'round') and syllables of the form *ɢ^{w}an (e.g., 遠 yuǎn < *hjwonX* < *C.ɢ^{w}anʔ 'far'); see Qiú Xīguī (1985). Later, the forms with 目 mù 'eye' on top came to be used for front-vowel syllables like *ɢ^{w}en, and the forms without 目 mù for syllables like *ɢ^{w}an.

22. Although the Middle Chinese reading *srjet* itself is not certainly attested in the Middle Chinese sources, it can be inferred from the fact that for the qùshēng form 殺 shài < *s<r>at-s, the *Jīngdiǎn shìwén* repeatedly gives both *sreajH* and *srjejH* (in some cases calling *srjejH* the "older" reading). It usually does not give a fǎnqiè spelling for the rùshēng form, instead saying "如字 rú zì" ('as the character [is normally read]'). The spelling "所列反," implying *sr(joX)* + (*l*)jet = srjet*, does occur (pp. 74, 214, 366), but where it does it may be a copying error for "所例反" *sr(joX)* + (*l*)jejH = srjejH*.

23. Although the only reading for 山 shān in the *Guǎngyùn* is *srean*, the *Jīngdiǎn shìwén* gives *srjen* as an alternate reading in a gloss to the *Ěr yǎ* (*JDSW* 422). Similarly, for 稍 shào 'gradually', it gives *sraewH* but says "the old reading is *srjewH*" (*JDSW* 135). The qùshēng reading of 殺 shài < *sreajH* < *srejH* < *s<r>at-s 'diminish' is given as *sreajH* in the

Jīngdiǎn shìwén, several times with the note "the old reading is *srjejH*" (e.g., *JDSW* 122); the reading of 灑 sǎ < *Cə. s<r>ərʔ 'sprinkle' is given as *sreaX*, with the note "the old reading is *srjeX*" (*JDSW* 270; the *Guǎngyùn* gives the readings *sreaX*, *sraeX*, and *srjejX*); and so forth. Zhèngzhāng Shàngfāng's reconstruction does not take the change *Tsrj-* > *Tsr-* into account; for example, he reconstructs 山 shān < *srean* 'mountain' as "*sreen" (2003:455), which would correspond to "*sˢren" in our system. But this conflicts with *Shījīng* rhyming, as in Odes 189.1, 197.8, and 305.6, where the other rhyme words do not have front vowels. (In fact we reconstruct 山 shān < *srean* < *s-ŋrar with *-ar rather than *-an; see section 5.5.1.2.) Similarly, Zhèngzhāng reconstructs 殺 shā < *sreat* 'kill' as "*sreed," which would correspond to our "*sˢret." Starostin reconstructed 山 shān < *srean* as *srān (1989:576), which agrees with the *Shījīng* rhymes but makes the Middle Chinese reading *srean* irregular; we have not been able to find his reconstruction of 殺 shā.

24. If the *-r- here was the collective/plural infix *<r>, which is plausible in this case, then perhaps there were forms with and without *<r>: *Cə.[k]ˢoʔ and *Cə.kˢ<r>oʔ; but both would give MC *kuwX*. The presyllable *Cə. is reconstructed to account for the softened initial in Northern Mǐn, e.g., Jiàn'ōu /e 3/, Jiànyáng /heu 3/; see section 4.5.5.1.

25. In acute-initial syllables like *Tˢro and *Tsˢro, it appears that the *-r- produced a retroflex initial in Middle Chinese, but *-o developed to MC *-uw* as expected in type A; the resulting syllables "*Truw*" and "*Tsruw*" are treated like *Trjuw* and *Tsrjuw* in the *Qièyùn*, so that original type-A *Tsˢro appears to have merged with original type-B *Tsru. (It is likely that the "*-j-*" in our Middle Chinese notation is somewhat artificial here. Given the tendency of "*-j-*" to be lost after *Tsr*-type initials, a syllable like *tsrjuw* was actually probably something like [tʂiuw] phonetically; so perhaps this was a merger of [tʂuw] with [tʂiuw].) Examples: 咮 *tˢ<r>ok-s > *trjuwH* > zhòu 'beak', 縐 *[ts]ˢro-s > *tsrjuwH* > zhòu 'wrinkles', both from type A, contrasting with type-B 株 *tro > *trju* > zhū 'tree root, stem', 芻 *[tsʰ]ro > *tsrhju* > chú 'grass for fuel or fodder', with the regular type-B development *-o > *-ju*. See section 5.4.5.1.

26. In the traditional list of thirty-six zìmǔ 字母 (initial consonants), MC *ywin* and *hwin* are regarded as having the same initial consonant, namely, 喻 Yù. As noted in section 2.1.2.2, in more modern terminology, and in our notation, they are regarded as different initials because the *Qièyùn*'s fǎnqiè spellings clearly distinguish them. MC *y-* is called 喻四 Yù sì or 以 Yǐ, while MC *h-* in division-III (type B) syllables is called 喻三 Yù sān or 云 Yún.

27. Probably 凝 *[ŋ](r)əŋ > *nging* > níng 'freeze, coagulate' is somehow related to these, but the morphology is unclear. In the *Ěr yǎ* there is a passage where one version has 冰 bīng where another version has 凝 níng; see the *Jīngdiǎn shìwén* (*JDSW* 417).

28. In certain pre-Qín documents, there appears to have been a tendency for the character 命 mìng to be written differently depending on whether it was being used as a noun or a verb. For example, on strip 7 of "Kǒngzǐ *Shī* lùn" 《孔子詩論》 (*SB* 3.19), {命} appears six times: four times with a small double line 二 below, and twice without. The two tokens without 二 are clearly verbs; the four tokens with 二 appear to be nouns. See Lín Sùqīng (2003).

29. Based on our assumptions, we would expect a contrast between *Kan > MC *Kjon* and *Kran > MC *Kjen*; but in fact, although MC *-jon* and *-jen* are in different *Qièyùn* rhymes, it is difficult to find reliable minimal contrasts between them with velar or laryngeal initials. For example, the *Guǎngyùn* has a syllable *ngjon* but no *ngjen*, and it has a syllable *kjon* but no *kjen*. Syllables like *Kjon* and *Kjen* had merged by the time of the Late Middle Chinese rhyme tables (Pulleyblank 1984:71) and had probably already merged in one or more of the dialects on which the *Qièyùn* was based. As a result, we are not confident that

Kjen should always be reconstructed with *-r- and *Kjon* without *-r-. After labial initials, however, there are clear minimal contrasts, e.g., 晚 *m[o][r]ʔ > *mjonX* > wǎn ‘late’ vs. 勉 *mr[o][r]ʔ > *mjenX* > miǎn ‘make an effort’; labials became labiodentals before MC *-jon* but not before *-jen*.

30. In Ode 34.2, 軌 guǐ < *kʷruʔ rhymes with 牡 mǔ < *muwX* (< *mjuwX*) < *m(r)uʔ ‘male’; and other words with the phonetic 九 jiǔ < *kjuwX* < *[k]uʔ also rhyme as *u. (We write *[k] here because we do not know whether to reconstruct *kuʔ or *kʷuʔ; it is possible that the same phonetic could have been used to write both.) Karlgren did not account for this phenomenon in his Archaic Chinese reconstruction: he reconstructed words like 軌 guǐ < *kʷruʔ as *Ki̯wəg, corresponding to our *Kʷrəʔ, as if the vowel was *ə.

31. In this example, three changes have occurred: (1) the change of *-r to *-n, (2) the fronting of the nonfront vowels between acute onsets and acute codas, and (3) the lowering of high vowels in pharyngealized syllables. We do not actually know the chronological sequence of these changes, which in any case may have varied from dialect to dialect, but the Middle Chinese result would be the same in any case.

32. *The “*-āks” listed in the table below as Starostin’s reconstruction is actually his reconstruction of a stage preceding what he calls Old Chinese (*drevnekitajskij jazyk*); he assumed that in the stage he calls Old Chinese, earlier *-ks had already changed to *-h, *-ps and *-ts had both changed to a palatal *-ć, and *-s after nasals had changed to *-h (1989:332). But what we call Old Chinese is more comparable to Starostin’s earlier stage when *-s was still present (see the discussion in section 1.1), so those are the forms we cite as his reconstructions in this table and in similar tables below.

33. In general, according to the front-vowel hypothesis, Old Chinese rhymes will have some Middle Chinese reflexes in either division I (if the vowel is nonfront) or division IV (if the vowel is front *i or *e) but not both; the only exception is that, because of the fronting of *ə between acute onsets and acute codas, the rhymes *-əj, *-ət(-s), *-ən, and *-ər have both division-I reflexes (after grave initials) and division-IV reflexes (after acute initials); see section 5.5.5.

34. Since the coda *-r in *-ar, *-er, and *-or generally becomes MC *-n*, words with these rhymes are also usually assigned to the traditional 元 Yuán group; see section 5.5.2 below.

35. Recall that in our Middle Chinese notation, *tsyoX* is an abbreviation of *tsy-* + *-joX*, and *tsyaeX* is an abbreviation of *tsy-* + *-jae*; so the two contrasting finals are MC *-jo* and *-jae*.

36. We use a similar notation in two other cases: *-Ak (as the source of MC *-jek* < OC *-ak) and *-Aj (as the source of MC *-jae* < OC *-aj); see sections 5.4.1.2 and 5.4.2.2 below. It would be possible to account for the contrast by adding an additional contrast in the rhyme; for example, Starostin reconstructed 渚 *tsyoX* as *taʔ and 者 *tsyaeX* as *tiaʔ (1989:687–688); Zhèngzhāng Shàngfāng (2003) reconstructed 渚 *tjaʔ and 者 *tjaaʔ. But these contrasts are very poorly distributed in their systems; we prefer to leave the question open for now.

37. For example, *-joX* < *-aʔ rhymes with *-jaeX* < *-Aʔ in Odes 173.1, 214.1, and 218.4.

38. Ordinarily we would expect *-r- to produce a Middle Chinese retroflex initial of the *Tr-* or *Tsr-* types, but one possible development would be *t-qʰrA > *t-ʂA > *t-hA > *tʰA > *tsyhae*.

39. These words were erroneously reconstructed with lateral initials in Baxter (1992); see Sagart (1993b:256–257) and note 51 in Chapter 4.

40. Note that examples (894) and (895) are unusual in that they show graphic connections to rùshēng even though they are shǎngshēng and píngshēng, respectively; cf. 舄 *s.qʰAk > *sjek* > xì ‘slipper, shoe’ and 度 *[d]ˤak > *dak* > duó ‘measure (v.)’. This fact could be a clue to why we have *-jae* in such examples rather than *-jo*.

41. The character 飼, with the píngshēng character 司 *s-lə > *si* > sī 'superintend' as secondary phonetic, reflects the change *-ək-s > *ə-s and is probably of late origin; it does not occur in the *Shuōwén*, and we would be surprised to find it in early documents.

42. In addition to *-e, it is possible that the traditional 支 Zhī group includes some words that should be reconstructed with *-ej; see section 5.5.3.1 below.

43. In addition to *-ek(-s), the traditional 錫 Xī group includes some words that we reconstruct with *-ik(-s); see section 5.4.4 below.

44. In addition to *-eŋ, the traditional 耕 Gēng group includes some words that we reconstruct with *-iŋ; see section 5.4.4 below.

45. It is not yet clear where this conservative dialect was spoken, but a single example found so far attributes a case of *-ik* < *-ik to Shāndōng 山東 and Kuàijī 會稽 (corresponding to modern Shàoxīng 紹興 in Zhèjiāng province)—both areas on the coast. See example (956) and note 51 below.

46. See Odes 51.3, 116.3, 222.3, 249.1, 252.8, 261.1, and 262.5, where 命 mìng rhymes with words that are generally reconstructed with *-in. (It may be that some of the other words should also be reconstructed with *-iŋ, and that the apparent irregularity results from dialect mixture in our Middle Chinese sources.)

47. In the meaning 'command' (noun or verb), 令 líng ~ lìng appears to rhyme as if it were *-in in Ode 100.2, where the *Jīngdiǎn shìwén* says it is to be read *lingH* (*JDSW* 66), and in Ode 126.1, where the *Jīngdiǎn shìwén* gives the readings *ljeng*, *ljengH*, and *leng* (*JDSW* 69).

48. As is not infrequently the case, the Old Chinese rhymes of 命 mìng indicate a different tone category from that preserved in the Middle Chinese tradition. The *Guǎngyùn*'s only reading for 命 mìng is *mjaengH*, but in the *Shījīng* it usually rhymes as if it were in the píngshēng category: i.e., as if it did not have a final *-s. Originally there were presumably forms with and without *-s. Similarly, most of the rhymes of 令 lìng are with píngshēng words.

49. In fact, the character 矜 is read as MC *gin* in the meaning 'a kind of lance'. For what it is worth, the Mandarin pronunciation 矜 jīn would regularly reflect MC *kin*, not MC *king*.

50. In earlier reconstructions, which depended largely on the standard script, it was difficult to decide which of the various possible sources of MC *sy-* should be reconstructed in 身 shēn; in the absence of direct evidence, it had generally been reconstructed with a lateral initial, as a kind of default, e.g., "*hljin" in Baxter (1992), which would be "*l̥in" in our current system; see the discussion in section 2.3.

51. "In both Shāndōng 山東 and Kuàijī 會稽, [蝨 shī] is pronounced like 色 sè [MC *srik*] (山東及會稽皆音色)." The text is also found in CBETA (2013), http://tripitaka.cbeta.org/C057n1163_017, consulted July 14, 2013.

52. From Suwilai Premsrirat (2002); data available online at http://sealang.net/monkhmer/database/; accessed Nov 17, 2011.

53. In addition to *-u, the traditional 幽 Yōu group also includes some words that we reconstruct with *-iw; see section 5.6.3.1 below.

54. Karlgren did not reconstruct a syllable type corresponding to our *K^{w}ru but treated them as if they were all (in our system) *K^{w}rə; thus he reconstructed 軌 guǐ < *kwijX* 'wheel ruts' and 簋 guǐ < *kwijX* 'guǐ ritual vessel' as "*kɨwəg," as if they were in the traditional 之 Zhī group, like 龜 guī < *kwij* < *[k]^{w}rə 'tortoise'. But 軌 guǐ and 簋 guǐ clearly rhyme as *-uʔ in the *Shījīng* (34.2, 135.2, 165.2).

55. We write the reconstruction of 九 jiǔ < *kjuwX* 'nine' as *[k]uʔ, with square brackets, to express uncertainty about the onset. The use of 九 as a phonetic in examples (987) and (988)

suggests that it could be *kʷuʔ, a syllable type that our scenario presupposes but that is otherwise unattested; its connection to 肘 zhǒu < *trjuwX* 'elbow' (for which 九 is generally considered the early graph) suggests the possibility of a *t- presyllable.

56. In addition to *-uk(-s), the traditional 覺 Jué group also includes some words that we reconstruct with *-iwk(-s); see section 5.6.3.2 below.

57. Ode 165.6 in the Máo *Shī* has the line 坎坎鼓我 '*[k]ʰˢomʔ-[k]ʰˢomʔ they drum to us'; in the *Shuōwén* entry for 贛 kǎn, this line is quoted as "贛贛舞我" (emended by Duàn Yùcái to "贛贛鼓我"), with 贛 *[k]ʰomʔ for the Máo *Shī*'s 坎 *[k]ʰˢomʔ (*SWGL* 2320b).

58. In the Wáng Rénxù manuscript of the *Qièyùn*, 晨 chén has two readings: *dzyin*, glossed as 早 zǎo ('early'), and *zyin*, glossed as 平旦 píngdàn ('dawn'). Our reconstructions are *dzyin* < *[d]ər 'early' and *zyin* < *sə-[d]ər 'morning'; see section 4.5.3.2.

59. Ahom, Lü, and Dioi are Tai languages. According to Ethnologue (www.ethnologue.com), Ahom is a nearly extinct Southwestern Tai language of Assam (ISO code: aho); Lü (ISO code: khb) is a Southwestern Tai language spoken in southern Yúnnán, Laos, Myanmar, Thailand, and Vietnam; Dioi, also known as Bouyei (Chinese: Zhòngjiā 仲家; ISO code: pcc), is a Northern Tai language spoken in Guìzhōu.

60. The change is reflected in Hàn-dynasty rhyming when words like 加 jiā 'add' < *kˢraj began to rhyme with words like 家 jiā 'household' < *kˢra; see Luó Chángpéi and Zhōu Zǔmó (1958:20–24).

61. The original definitions in Rhodes, in Portuguese and Latin, are "phải: tocar ou empeçer em algũa cousa por desastre: impingere in aliquid ex infortunio; . . . phải tàu: fazer naufragio: pati naufragium."

62. The character 番 is also read fān < *phjon* in other contexts, further supporting the reconstruction of *-r.

63. Here 阿 *qˢa[j] has already become *ʔa. Note also the use of the qùshēng syllable 會 huì < *hwajH* < *ɦˢwajs < *m-kˢwat-s < *m-kˢot-s < *m-kˢop-s to represent *bhās-*, supporting the hypothesis that qùshēng reflects earlier final *-s. Judging from the transcription, the form of Indic represented is probably not Sanskrit but a Central Asian pronunciation with -bh- > -w- intervocalically. According to Zürcher (2007:35), 支婁迦讖 Zhī Lóujiāchèn (MC *tsye luw-kja-tsrhimH*) was an Indoscythian, often credited with bringing Mahāyāna Buddhism to China. The source of the example is the *Taishō Tripiṭaka* 224 (Takakusu 1924–1932:431), a translation of *Aṣṭasāhasrikāprajñāpāramitā*).

64. For additional evidence for an *-r coda in 山 shān, see examples (595), (596), and (597) in section 4.4.3.4, and the discussion there.

65. Although the only reading given in the *Guǎngyùn* for 諫 jiàn 'admonish' is MC *kaenH*, the word rhymes twice in the *Shījīng* (Odes 253.5 and, here, 254.1), and in both cases it rhymes as if it were *kˢranʔ.

66. Chinese dictionaries consistently give the pronunciation of 單于 as chányú, but in Western sinological literature it is usually transcribed as "shan-yü" (in Wade-Giles romanization) or "shanyu" (in pīnyīn), a habit that can probably be traced to Giles's *Chinese-English dictionary* (1892:1050), which gives 單 the pronunciation "shan²" (which would be "shán" in pīnyīn) in this expression. At the time when Giles's dictionary was written, standard Mandarin had not yet been precisely defined. In modern standard Mandarin there are no morphemes pronounced "shán."

67. The relevant passages are in "Wūwán, Xiānbēi, Dōng Yí zhuàn 烏丸鮮卑東夷傳" ('Account of the Wūwán, Xiānbēi, and Eastern Yí'), juàn 30 of the Wèi shū《魏書》.

68. See, for example, the following *Shījīng* rhyme sequences, in which well-established *-ar words rhyme with each other repeatedly: 69.1, 215.3, 244.4, 254.7, 259.1, 259.7, 262.4, 263.5.

69. The name is also written as 烏丸 "Wūwán." Even though 桓 huán and 丸 wán are pronounced differently in standard Mandarin, in Middle Chinese they are both *hwan*.

70. The following explanations of this rhyme are consistent with our hypotheses about *-r: (1) The poem represents a dialect where *-n, *-r, and *-j are all distinct, and all three words are from *-r, but the Middle Chinese readings are irregular because of dialect mixture. (2) The poem represents a dialect where *-r > *-j, and mixes original *-j and *-r; 泄 *tshjeX* and/or 瀰 *mjieX* are from original *-j, while 鮮 *sjen* is from original *-r. The 邶 Bèi state from which the poem supposedly originates is on the edge of the area where we believe *-r became *-j; see section 5.5.1.4 below. Either way, 鮮 *sjen* must be reconstructed as *[s]ar or *[s]er.

71. E.g., in "Ex historia Menandri Protectoris Excerpta de legationibus barbarorum ad Romanos," in Niebuhr (1829:281–437), containing the Greek original with Latin translation.

72. It is also uncertain whether the MC ′- here should be reconstructed as *ʔˤ- or *qˤ-; hence the brackets around the initial.

73. In addition to *-aj, the traditional 歌 Gē group also includes some words that we reconstruct with *-oj and (perhaps) *-ej; see sections 5.5.4.1 and 5.5.3.1 below. Words that we reconstruct with *-ar, *-er, and *-or may also be assigned to traditional 歌 Gē if they follow the dialect development *-r > *-j.

74. Note that although modern dialects generally reflect the change *Tsrj-* > *Tsr-*, the standard Mandarin pronunciation of 參差 cēncī 'uneven, irregular' reflects a form like *tsrhim.tsrhje*, undoubtedly based on the fǎnqiè in the *Jīngdiǎn shìwén* glosses on Ode 1.

75. In addition to *-at(-s), the traditional 月 Yuè group also includes some words that we reconstruct with *et(s) and *-ot(s); see sections 5.5.3.2 and 5.5.4.2 below. Also, because of the early change of *-p-s to *-t-s, words that actually had original *-ap-s, *-ep-s, and *-op-s have often been treated as if they were *-at-s, *-et-s, or *-ot-s and included in 月 Yuè.

76. A couple of words with the phonetic 犮 do rhyme as *-at(-s): 茇 *m-pˤat > *bat* > bá 'halt in the open', in Ode 16.1, and 軷 *[b]ˤ[a]t > *bat* > bá 'sacrifice to the gods of the road' in Ode 245.7; neither character is clearly attested in pre-Qín documents, so they are probably of late origin and reflect the merger of *Pat with *Pot.

77. The only irregularity in all these rhymes is the fact that in Ode 304.2, after six rhyme words in *-at, there is one in *-et, namely 截 *[dz]ˤet > *dzet* > jié 'cut, trim'.

78. The *Shuōwén* glosses 髮 fà as 'root' ("根也", *SWGL* 3988a), and Jì Xùshēng (2010:733) argues that this is correct; perhaps the word originally referred to small hair-like roots. So it is possible that it is related to the root in 拔 *bˤ<r>ot > beat > bá 'uproot'.

79. In addition to *-an, the traditional 元 Yuán group also includes some words that we reconstruct with *-en and *-on (see sections 5.5.3.3 and 5.5.4.3 below); those words that we reconstruct with *-ar, *-er, and *-or that follow the usual dialect development *-r > *-n are also traditionally included in 元 Yuán.

80. In addition to *-et(-s), the traditional 月 Yuè group also includes words that we reconstruct with *-at(-s) and *-ot(-s) (see sections 5.5.2.2 and 5.5.4.2). Also, because of the early change of *-p-s to *-t-s, words in original *-ap-s, *-ep-s, and *-op-s are often treated as if they were *-at-s, *-et-s, or *-ot-s and also included in 月 Yuè.

81. In addition to *-en, the traditional 元 Yuán group also includes words that we reconstruct with *-an and *-on (see sections 5.5.2.3 and 5.5.4.3). Words that we reconstruct with *-ar, *-er, and *-or that follow the usual dialect development *-r > *-n are also traditionally included in 元 Yuán.

82. The rhyme evidence for words with qiān as phonetic is somewhat ambiguous (Odes 58.2, 200.4, 220.3, 305.6), but the character contains the element 囟 *[s]ə[r]-s > *sinH* > xìn ‘fontanel’, which seems to have connections to such *-r words as 西 *s-nˤər > *sej* > xī ‘west’. Also, the *Shuōwén* gives an “ancient” character form 牽 for 遷 qiān < *tshjen*, composed of the elements 手 shǒu ‘hand’ and 西 xī ‘west’ (*SWGL* 757b), where 西 xī could be a phonetic element (though the vowels do not match).

83. In addition to *-oj, the traditional 歌 Gē group also includes words that we reconstruct with *-aj (see section 5.5.2.1). Words that we reconstruct with *-ar, *-er, and *-or that follow the dialect development *-r > *-j are also usually assigned to 歌 Gē.

84. In addition to *-ot(-s), the traditional 月 Yuè group also includes words that we reconstruct with *-at-s and *-et-s (see sections 5.5.2.2 and 5.5.3.2). Also, because of the early change of *-p-s to *-t-s, words in original *-ap-s, *-ep-s, and *-op-s are often treated as if they were *-at-s, *-et-s, or *-ot-s, and included in 月 Yuè.

85. In addition to *-on, the traditional 元 Yuán group also includes words that we reconstruct with *-an and *-en (see sections 5.5.2.3 and 5.5.3.3). Words that we reconstruct with *-ar, *-er, and *-or that follow the usual dialect development *-r > *-n are also usually assigned to 元 Yuán.

86. Norman identifies this Mǐn form with 苫 *s.tem > *syem* > shān ‘thatch’ (1996:26), but the Mǐn reflexes seem to reconstruct as pMǐn *-tsun C, except for Fúzhōu /tsaiŋ 5/, which is irregular, as Norman mentions; the Fúzhōu form is consistent with pMǐn *-ən C (Norman 1981:58). Both pMǐn *-un and *-ən could reasonably reflect Old Chinese *-ən or *-ər. Neither is consistent with any of the Proto-Mǐn finals ending in *-m, according to the correspondences in Norman (1981), which would seem to exclude 苫 shān < *syem* as the etymon in this case, since Middle Chinese *-m* usually corresponds to pMǐn *-m. So we believe that the etymon for pMǐn *-tsun C ‘thatch’ is 薦 *Cə.tsˤə[r]-s > *tsenH* > jiàn ‘grass, fodder’.

87. In addition to *-əj, the traditional 微 Wēi group also includes words that we reconstruct with *-uj (see section 5.5.7.1). Words that we reconstruct with *-ər and *-ur that follow the dialect development *-r > *-j are also usually assigned to 微 Wēi.

88. In a few cases, we might suspect *-ər instead of *-əj; in such cases we write *-ə[j].

89. The rhymes of 夷 yí < *ləj are in Odes 14.3, 90.1, 168.6, 191.5, 257.2, and 284.1 (the last being an irregular rhyme of *-əj with *-uj).

90. In fact, we suspect that the so-called 人方 rénfāng, often mentioned in Shāng inscriptions as one of the groups with whom the Shāng fought, were actually none other than the 夷方 yífāng, also an enemy of the Shāng (a view mentioned by Zhào Chéng 1988:145). The context would have been sufficient to show that the character represented {夷} rather than {人}.

91. The rhyming of 尸 shī itself is ambiguous: it clearly rhymes as *-əj in Ode 209.5 (rhyme words: 尸 *l̥əj 歸 *[k]ʷəj 遲 *l<r>ə[j] 私 *[s]əj), but it also rhymes in Ode 254.5, where all the other rhyme words seem to have *-ij (rhyme words: 嚌 *[dz]ˤ[i]j 毗 *[b]ij 迷 *mˤij 尸 *l̥əj 屎 *[qʰ]ij 葵 *gʷij 資 *[ts]ij 師 *srij). If we reconstruct 尸 shī with *-əj, then we can explain the rhyming in 254.5 as the result of the late sound change *-ə > *-ij after acute initials (although we suspect there could be a textual problem here); but if 尸 shī had *-ij, we have no way of accounting for its rhyme with *-əj in 209.5. So the rhyme evidence also indicates that 尸 *l̥əj is the correct reconstruction.

92. For example, the best comparisons with Proto-Tibeto-Burman *-əy (Matisoff 2003:201)—earlier reconstructed as *-iy (Benedict 1972:57, n. 188)—seem to be with OC *-ij, not with *-əj; see Baxter (1985).

93. In addition to *-ət(-s), the traditional 物 Wù group also includes words that we reconstruct with *-ut(-s) (see section 5.5.7.2). Also, because of the early change of *-p-s to *-t-s, words

in original *-əp-s or *-up-s are often treated as if they were *-ət-s or *-ut-s, respectively, and included in 物 Wù.

94. In addition to *-ən, the traditional 文 Wén group also includes words that we reconstruct with *-un (see section 5.5.7.3). Those words that we reconstruct with *-ər and *-ur are also traditionally included in 文 Wén if they have final *-n* in Middle Chinese.

95. In addition to *-ij, the traditional 脂 Zhī group may also include words with *-ir that follow the dialect development *-r > *-j (see section 5.5.6.4).

96. In addition to *-it(-s), the traditional 質 Zhì group also includes words with *-ik(-s) that follow the usual development *-ik > *-it (see section 5.4.4). Also, because of the early change of *-p-s to *-t-s, words in original *-ip-s are often treated as if they had *-it-s, and also included in 質 Zhì.

97. In addition to *-in, the traditional 真 Zhēn group also includes words with *-iŋ that follow the usual development *-iŋ > *-in (see section 5.4.4). Words in *-ir that follow the usual development *-r > *-n may also be included in 真 Zhēn.

98. The reference is to the emperor Jiǎnwén 簡文 (503–551) of the Liáng 梁 dynasty, who wrote a commentary on the *Lǎozǐ*, now lost. We are grateful to Wáng Hóngzhì 王弘治 for assistance in interpreting this passage.

99. In addition to *-uj, the traditional 微 Wēi group also includes words that we reconstruct with *-əj (see section 5.5.5.1). Words in *-ər and *-ur that follow the dialect development *-r > *-j may also be included in 微 Wēi.

100. In addition to *-ut(-s), the traditional 物 Wù group also includes words that we reconstruct with *-ət(-s) (section 5.5.5.2). Also, because of the early change of *-p-s to *t-s, words in original *-əp-s or *-up-s are often treated as if they had *-ət-s or *-ut-s, respectively, and are often included in 物 Wù.

101. In addition to *-un, the traditional 文 Wén group also includes words that we reconstruct with *-ən (section 5.5.5.3). Words in *-ər and *-ur that follow the usual development *-r > *-n may also be included in 文 Wén.

102. In addition to *-aw, the traditional 宵 Xiāo group also includes words that we reconstruct with *-ew; see section 5.6.2.1.

103. In addition to *-awk(-s), the traditional 藥 Yào group also includes words that we reconstruct with *-ewk(-s); see section 5.6.2.2.

104. In addition to *-ew, the traditional 宵 Xiāo group also includes words that we reconstruct with *-aw; see section 5.6.1.1.

105. In addition to *-ewk(-s), the traditional 藥 Yào group also includes words that we reconstruct with *-awk(-s); see section 5.6.1.2.

106. In addition to *-iw, the traditional 幽 Yōu group also includes words that we reconstruct with *-u; see section 5.4.6.1.

107. In addition to *-iwk(-s), the traditional 覺 Jué group also includes words that we reconstruct with *-uk(-s); see section 5.4.6.2.

108. The rest have vocalic codas. The estimates are rough because although we have more than 11,000 records in our database, each representing a word written and pronounced a certain way, a good many words are represented by more than one record.

109. See “Are there any words that rhyme with orange”?, at <http://oxforddictionaries.com/words/are-there-any-words-that-rhyme-with-orange>, and *Oxford English Dictionary* (Second edition, 1989; online version December 2011), at <http://www.oed.com.proxy.lib.umich.edu/view/Entry/187451>, consulted 18 December 2011.

110. The one systematic exception is that MC *-en*, *-et*, and *-ej* can come from the fronting of *ə between an acute onset and an acute coda; see section 5.5.5.

111. In Ode 265.3, 玷 diàn < *temX* < *tʰemʔ 'black spot' (evidently the same word as 點 diǎn < *temX*) rhymes with 貶 biǎn < *pjemX* 'diminish', but while *pjemX* could represent *premʔ and thus be a regular rhyme in our system, we cannot rule out the possibility that it was *pramʔ or *promʔ.

112. Dǒng Tónghé also reconstructed *-iɐm as the source for MC *-em* in the 談 Tán group, recognizing that it tended to be kept separate from (our) *-am in phonetic compounds. His *-iɐm corresponds to our *-em, and in fact it has few contacts with his *-ɐm.

113. "窮訪蜀土, 呼粒 [*lip*] 為逼 [*pik*], 時莫之解。吾云: '《三蒼》、《説文》, 此字白下為匕, 皆訓粒。《通俗文》音方力反 [*pik*]。'眾皆歡悟。" Quoted in *Hànyǔ dà cídiǎn* (2001).

114. The same character 皂 is also used to write the unrelated word xiāng < *xjang* 'fragrant', usually written 香.

115. Karlgren reconstructed 逮 dài as *d'əd, *d'iəd; Li has *dədh, which is irregular in his system (it should become MC *dwojH*). But Dǒng Tónghé recognized the labial coda: *d'ə̂b.

116. We write *[u] rather than *u here because it is also possible that there was a dialect in which original *-əp simply became *-up and subsequently developed like *-up; the same reasoning applies in some other examples below.

117. The vessel is number 2748 in *Jīnwén wénxiàn jíchéng*《金文文献集成》(Liú Qìngzhù et al. 2004). Our discussion relies on the detailed account in Chén Jiàn (2007). As Chén Jiàn points out, in the later script there came to be a division of labor between 贛 gòng 'to present (as a king to a subject)' and 貢 gòng 'to present (to a superior)', but originally they were a single word meaning 'to present' in either direction.

Chapter 6

1. It is true, of course, that the earliest Indo-European languages, still not too distant in time from their common ancestor, did share certain structural characteristics.

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