Trends in Linguistics

Studies and Monographs 64

A Handbook of Old Chinese Phonology

William H. Baxter

MOUTON
DE GRUYTER

Trends in Linguistics

Studies and Monographs 64

Editor
Werner Winter

Mouton de Gruyter
Berlin · New York

A Handbook of Old Chinese Phonology

by

William H. Baxter

Mouton de Gruyter
Berlin · New York 1992

Mouton de Gruyter (formerly Mouton, The Hague)
is a Division of Walter de Gruyter & Co., Berlin.

♾ Printed on acid-free paper which falls within the guidelines
of the ANSI to ensure permanence and durability.

Library of Congress Cataloging in Publication Data

Baxter, William Hubbard, 1949–
A handbook of Old Chinese phonology / William H. Baxter.
p. cm. – (Trends in linguistics. Studies and monographs ; 64)
Includes bibliographical references (p.) and index.
ISBN 3-11-012324-X (acid-free paper)
1. Chinese language – To 600 – Phonology. I. Title. II. Series.
PL1201.B38 1992
495.1'15–dc20 92-12353
CIP

Die Deutsche Bibliothek – Cataloging in Publication Data

Baxter, William H.:
A handbook of Old Chinese phonology / William H. Baxter. –
Berlin ; New York : Mouton de Gruyter, 1992
(Trends in linguistics : Studies and monographs ; 64)
ISBN 3-11-012324-X
NE: Trends in linguistics / Studies and monographs

© Copyright 1992 by Walter de Gruyter & Co., D-1000 Berlin 30
All rights reserved, including those of translation into foreign languages. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.
Printing: Werner Hildebrand, Berlin.
Binding: Lüderitz & Bauer, Berlin.
Printed in Germany

Preface

The intellectual origins of this book may be found in a paper presented over twenty years ago by my teacher Nicholas C. Bodman to a group of colleagues, in which he outlined a scheme for the reconstruction of Old Chinese based largely on the distribution of elements in its daughter language Middle Chinese (Bodman 1971). This scheme—together with ideas of E. G. Pulleyblank and S. E. Jaxontov—seemed to offer considerable insight into Chinese phonological history, but also appeared to conflict with the traditional analysis of Old Chinese rhyming developed by traditional Chinese scholars over the last several centuries (see Chapter 4). Were the new ideas simply wrong, then? Or did they apply to a different stage of the language from that examined by traditional Chinese scholars? Or was the traditional analysis wrong? A good deal of my research, from my doctoral dissertation (Baxter 1977) to the present, has focused on resolving these conflicts, developing this reconstruction scheme, and investigating its implications. It appears that the traditional analysis is not so much wrong as insufficiently precise; and the new ideas about Old Chinese, when worked out in detail, prove to be a useful tool in resolving the very kinds of philological problems that traditional Chinese scholars were interested in.

This book incorporates the results, so far, of this research: it presents a rather detailed reconstruction of the Old Chinese sound system, and argues that it is more adequate than previous analyses. The word "handbook" in the title is intended to recall the handbooks of Indo-European historical linguistics which present results in a similarly comprehensive and detailed manner. I hope that it will be a useful tool for those interested in Chinese historical linguistics or related areas of literature and philology.

With a book of this size, it is perhaps appropriate to give some guidance to readers who may not wish to begin at the beginning and read straight through to the end. Chapters 1 and 5, which introduce the study and summarize the reconstruction system, are probably appropriate for all readers. Students of Chinese historical linguistics might wish to read Chapter 2, which describes the phonological system of Middle Chinese, and Chapters 5 through 8, which describe the Old Chinese phonological system; Chapter 10 presents the reconstruction system in detail, rhyme group by rhyme group, and summarizes the evidence for revising the traditional analysis of Old

Chinese rhyming. Linguists with no special knowledge of Chinese may be interested in the discussion of rhyme and the use of rhymes as linguistic evidence in Chapter 3, and in the discussion of the Chinese linguistic tradition in Chapters 2 and 4. Those interested in areas of contact between linguistics and the study of literature may be interested in the general discussion of verse in section 3.1 of Chapter 3, and in Chapter 9, which discusses some of the philological problems which arise in studying early written texts.

Many people have helped make this book possible. My primary debt of gratitude is to my teacher Nicholas Bodman, who introduced me to this field of research, read an early version of the manuscript, and has kindly and generously supported me in many ways. Tsu-lin Mei also encouraged my efforts from their early stages and has been generous with his assistance and suggestions. Edwin Battistella, W. South Coblin, S. A. Starostin, and Thomas Toon have read parts of the manuscript and given me help of other kinds as well. This research was supported by Faculty Research Grants from the University of Alabama in Birmingham, by the American Council of Learned Societies, and by a Rackham Faculty Fellowship from the University of Michigan, and I am glad to express my gratitude. My colleagues in the Department of Asian Languages and Cultures and the Program in Linguistics at the University of Michigan have also given frequent help and encouragement. I would like to thank John Warner of the University of Michigan Statistical Research Laboratory for his mathematical assistance; the University of Michigan Phonetics Lab for the use of their laser printer in preparing camera-ready copy; and the staff of Mouton de Gruyter for their patience. Finally, I thank my family for their support and understanding.

Contents

1. Introduction 1
1.1. Goals 1
1.2. The Chinese languages, present and past 6
1.2.1. Chinese syllable structure 6
1.2.2. Dialects or languages? 7
1.2.3. Classification of Chinese dialects 9
1.2.4. Written sources for the history of Chinese 11
1.2.5. Stages in the history of Chinese 14
1.3. Notation and style 15
1.4. Methodological remarks 17
1.4.1. Theoretical assumptions 17
1.4.2. The nature of phonological reconstruction 18
1.4.3. Naturalness in reconstruction 20
1.4.4. Ockham's Razor 22
1.4.5. Defining Old Chinese 23
1.4.6. Evidence from Tibeto-Burman 25

2. The Middle Chinese phonological system 27
2.1. The need for a new transcription system 27
2.2. Major sources of evidence on Middle Chinese 32
2.2.1. Rhyme books 33
2.2.2. The rhyme-table tradition 41
2.3. The initials of Middle Chinese 45
2.3.1. Labial initials (*chún yīn* 脣音 'lip sounds') 46
2.3.2. Dentals (*shé tóu yīn* 舌頭音 'tongue-head sounds') 49
2.3.3. Lateral (*bàn shé yīn* 半舌音 'half tongue sound') 49
2.3.4. Retroflex stops (*shé shàng yīn* 舌上音 'tongue up sounds') 49
2.3.5. Dental sibilants (*chǐ tóu yīn* 齒頭音 'tooth-head sounds') 51
2.3.6. Palatal sibilants 52
2.3.7. Palatal nasal and glide 55
2.3.8. Retroflex sibilants 56
2.3.9. Velars (*yáyīn* 牙音 'back-tooth sounds') 57
2.3.10. Laryngeals (*hóuyīn* 喉音 'throat sounds') 58
2.3.11. Natural classes of initials 59
2.4. The finals of Middle Chinese 61
2.4.1. Distributional classes of finals 63

2.4.2. Summary of Middle Chinese finals 81

3. Rhymes as evidence in historical phonology 87
3.1. Rhyme and phonological structure 88
3.1.1. Defining rhyme 89
3.2. A statistical method for analyzing rhyme data 97
3.2.1. A model of rhyme-word choice 100
3.2.2. Modeling individual rhyme sequences 101
3.2.3. Evaluating samples of sequences 104
3.2.4. Combining results for sequences of different lengths 107
3.2.5. The accuracy of the initial estimates of frequency 112
3.2.6. A method for small samples with no mixed sequences 116
3.2.7. Issues of implementation 118
3.3. Illustrative examples 128
3.3.1. The 冬 Dōng and 侵 Qīn rhyme groups 128
3.3.2. A negative case: high and mid vowels in the 真 Zhēn group 135

4. Traditional research on Old Chinese rhyming 139
4.1. Traditional phonology: achievements and limitations 139
4.2. The traditional analysis—a modern version 141
4.3. The development of the traditional analysis 150
4.3.1. The *xiéyùn* ('harmonizing rhymes') theory 150
4.3.2. Wú Yù (ca. 1100–1154) 154
4.3.3. Chén Dì (1541–1617) 154
4.3.4. Gù Yánwǔ (1613–1682) 155
4.3.5. Jiāng Yǒng (1681–1762) 157
4.3.6. Duàn Yùcái (1735–1815) 160
4.3.7. Dài Zhèn (1724–1777) 162
4.3.8. Kǒng Guǎngsēn (1752–1786) 164
4.3.9. Wáng Niànsūn (1744–1832) 166
4.3.10. Jiāng Yǒugào (d. 1851) 169
4.4. Discussion and interpretation 171

5. The Old Chinese syllable: an overview 175
5.1. Pre-initials 175
5.2. Initials 177
5.3. Medials 178
5.4. Main vowels 180
5.5. Codas and post-codas 181
5.6. The syllable from Old Chinese to Middle Chinese 183

6. The Old Chinese syllable: initial consonants 187

6.1. Simple initials 188
6.1.1. Labial initials 188
6.1.2. Dental initials 191
6.1.3. Nonnasal resonants 196
6.1.4. Dental sibilants 203
6.1.5. Velars and laryngeals 206
6.1.6. Labiovelars and labiolaryngeals 214
6.2. Initial clusters 218
6.2.1. Voicing alternations and pre-initial **ɦ-* 218
6.2.2. The pre-initial **N-* 221
6.2.3. Clusters with **s-* 222
6.2.4. Clusters with **l* 232

7. The Old Chinese syllable: medials and main vowels 235
7.1. Syllables without medials: divisions I and IV 236
7.1.1. The rounded-vowel hypothesis 236
7.1.2. The front-vowel hypothesis 240
7.1.3. The six-vowel system 248
7.1.4. Comparison with Li Fang-kuei's system 253
7.1.5. Main vowels before other codas 256
7.2. Syllables with medial **-r-*: division II 258
7.2.1. **r*-color and **r*-loss 259
7.2.2. Evidence for the **r*-hypothesis 262
7.2.3. Division-II syllables with initials of type *TSr-* 267
7.3. Syllables with medial **-j-* and **-rj-*: division III 269
7.3.1. Division-III finals and their Old Chinese origins 269
7.3.2. The **rj*-hypothesis 280
7.3.3. The nature of the Middle Chinese *chóngniǔ* distinctions 282
7.3.4. The origin and phonetic nature of **-j-* 287

8. The Old Chinese syllable: codas and post-codas 291
8.1. The codas of Old Chinese 292
8.1.1. Codas *zero, **-j*, and **-w* 292
8.1.2. Nasal codas **-m*, **-n*, and **-ng* 298
8.1.3. Voiceless stop codas: **-p*, **-t*, **-k*, and **-wk* 299
8.2. Post-codas and the development of tones 302
8.2.1. The Old Chinese origins of tones 302
8.2.2. The origin of *qùshēng* (departing tone) 308
8.2.3. The origin of *shǎngshēng* (high or rising tone) 319
8.3. Karlgren's final voiced stop hypothesis 325
8.3.1. The development of the final voiced stop hypothesis 325

8.3.2. Direct and indirect contacts with *rùshēng* 329
8.3.3. Arguments against final voiced stops 332
8.3.4. Accounting for *rùshēng* contacts 336
8.4. Comparison with other systems 340

9. The script and text of the *Shījīng* 343
9.1. Stages in the development of the Chinese script 344
9.2. *Xiéshēng* characters and their interpretation 347
9.3. The text of the *Shījīng* 355
9.3.1. The present form of the *Shījīng* 355
9.3.2. "Pronunciation errors" in the *Shījīng* 358
9.3.3. "Pronunciation errors" affecting rhyme words 361

10. New rhyme categories for Old Chinese 367
10.1. Syllables with acute codas 370
10.1.1. The traditional 元 Yuán group 370
10.1.2. The traditional 月 Yuè and 祭 Jì groups 389
10.1.3. The traditional 歌 Gē group 413
10.1.4. The traditional 真 Zhēn group 422
10.1.5. The traditional 文 Wén group 425
10.1.6. The traditional 質 Zhì group 434
10.1.7. The traditional 物 Wù group 437
10.1.8. The traditional 脂 Zhī and 微 Wēi groups 446
10.2. Syllables with zero or back codas 464
10.2.1. The traditional 之 Zhī group 464
10.2.2. The traditional 職 Zhí group 472
10.2.3. The traditional 蒸 Zhēng group 476
10.2.4. The traditional 魚 Yú group 478
10.2.5. The traditional 鐸 Duó group 484
10.2.6. The traditional 陽 Yáng group 489
10.2.7. The traditional 支 Zhī group 491
10.2.8. The traditional 錫 Xī group 494
10.2.9. The traditional 耕 Gēng group 497
10.2.10. The traditional 侯 Hóu group 500
10.2.11. The traditional 屋 Wū group 503
10.2.12. The traditional 東 Dōng group 505
10.2.13. The traditional 幽 Yōu group 507
10.2.14. The traditional 覺 Jué group 518
10.2.15. The traditional 冬 Dōng group 524
10.2.16. The traditional 宵 Xiāo group 526
10.2.17. The traditional 藥 Yào group 532

10.3. Syllables with labial codas 536
10.3.1. The traditional 談 Tán group 537
10.3.2. The traditional 盍 Hé group 543
10.3.3. The traditional 侵 Qīn group 548
10.3.4. The traditional 緝 Qī group 555
10.4. Summary of rhyme groups 560

Appendix A Phonological changes from Old to Middle Chinese 565
Appendix B The rhymes of the *Shījīng* 583
Appendix C The rhyme words of the *Shījīng* 745

Notes 813
References 867
Index 905

Chapter 1

Introduction

1.1. Goals

This study proposes a new phonological reconstruction system for Old Chinese, the Chinese language of the early and mid Zhōu 周 dynasty—that is, approximately the eleventh to the seventh centuries B.C.[1] I take Old Chinese to be the ancestor of all attested varieties of Chinese, and the earliest stage of the Chinese language that can presently be reconstructed from Chinese evidence alone.

Old Chinese occupies a pivotal position in the study of language and history in East Asia. In the Old Chinese period, the Chinese began to produce one of the world's great literatures, which has both reflected and shaped human culture in East Asia for millennia. But our understanding of these early documents is hampered by a still inadequate knowledge of the language in which they were composed. Many unanswered or poorly answered questions arise even in the most thoroughly studied early Chinese texts. The lexicon of early Chinese gives the impression of being vast and patternless, with many words of similar meaning and unclear interrelationship. Our knowledge of the varieties of early Chinese is also poor. An important step in addressing these problems is a more adequate reconstruction of Old Chinese phonology.

Old Chinese is also the most distant recoverable Chinese outpost in the broad and only partially explored territory of Sino-Tibetan, one of mankind's major linguistic groups. A better understanding of this group's development would doubtless clarify the history and prehistory of East Asia, just as the reconstruction of the Indo-European family has clarified the history and prehistory of Western Asia and Europe. Yet further progress in Sino-Tibetan reconstruction will be difficult without a better reconstruction of the early stages of Chinese, the best-documented language of the group.

The position of Chinese is also pivotal within the study of human language in general, because it can help to correct the European bias of much modern linguistics. It has been too easy in recent linguistic study to confuse what is human with what is European. Only when non-European languages and their histories are understood as well as European ones can we begin to speak with confidence about the characteristics of the human language

faculty. It is with these broad goals in mind that I attempt in this study to develop a more adequate reconstruction of Old Chinese phonology.

A phonological reconstruction can be divided conceptually into two aspects. The first is a reconstruction system, which specifies a set of possible phonological elements, their possible arrangements, and their development in daughter languages. The second aspect is the application of this system to the basic linguistic expressions of the languages whose ancestor is being reconstructed. We can illustrate this using the reconstructed Proto-Indo-European (PIE) form **ḱm̥tóm* 'hundred'. It is the reconstruction system which tells us that **ḱ*, **m̥*, **t*, and so forth are possible elements for a Proto-Indo-European form. The reconstruction system also predicts that PIE **ḱ* will be reflected as *c-* in Latin, *k* in Greek, and *ś* in Sanskrit; that PIE **m̥* will become *a* in Greek and Sanskrit; and so on. We apply this reconstruction system by reconstructing particular Proto-Indo-European forms which are consistent with the data from attested Indo-European languages: thus **ḱm̥tóm* 'hundred' is reconstructed to account for Latin *centum,* Greek *(he-)katón,* Sanskrit *śatám,* and so forth. Clearly, formulating reconstructions of individual words is different from formulating the reconstruction system itself; the reconstruction of particular items could be wrong even if the overall system is correct.

Though it is useful to distinguish a reconstruction system from its application, the two are intimately related, since a system is judged adequate only by being successfully applied. A reconstruction system is more than just a summary of the data; it is rather a set of hypotheses which make predictions about the data, including data not yet seen.

The present study focuses primarily on developing a more adequate reconstruction system for Old Chinese, and applying it to enough of the available data to make a convincing case that it is an improvement over previous systems. Detailed reconstruction of the particular words found in early Chinese texts would be the task of an etymological lexicon (and a very large one); it is beyond the scope of a book such as this. Though I propose reconstructions for some two thousand words (listed in Appendix C), many of these individual reconstructions are tentative or incomplete, and a good number may be wrong. But I believe some new insights into Old Chinese and its development are possible even within these limitations.

The main types of available evidence on Old Chinese are the following:

1. *Texts originating in the Old Chinese period.* These include both inscriptions on Zhōu-dynasty bronze vessels and early classical texts such as the *Shījīng* 詩經 [Classic of poetry],[2] the *Shūjīng* 書經 [Classic of documents],

and parts of the *Yìjīng* 易經 [Classic of changes]. Those texts which include rhymes are especially valuable for reconstructing early pronunciation. The rhymes of the *Shījīng*, the largest collection of early rhymed texts, form the basic corpus for the present study; the textual history of the *Shījīng* is discussed in Chapter 9.

2. *The Chinese characters and their structure.* The Chinese script was once more closely connected to pronunciation than it now is, so Chinese characters often provide clues to earlier pronunciation. The use of the Chinese script as evidence is also discussed in Chapter 9.

3. *Middle Chinese pronunciation.* The pronunciation of the Middle Chinese period (roughly, the Suí 隋 and Táng 唐 dynasties) is rather thoroughly documented in contemporary sources. Since the language represented in these sources is descended from Old Chinese, they are also a major part of our information about Old Chinese. Evidence from Middle Chinese is discussed in Chapter 2.

Old Chinese, the language of early to mid Zhōu, is probably the earliest stage of Chinese for which reasonably detailed and complete reconstruction is feasible at present. The oracle-bone inscriptions of the Shāng 商 dynasty (sixteenth to eleventh centuries B.C.) are earlier, but present many more problems: they are more limited in content, are often difficult to interpret, and lack rhymes. For now, refining our knowledge of early Zhōu Chinese seems to offer the best hope of expanding our understanding of the early history of Chinese and of the relationships between Chinese and other languages.

The study of Old Chinese phonology already has a long history. Chinese scholars of the Qīng 清 dynasty (1644–1911) studied Old Chinese pronunciation in order to better understand the classical texts, and left a rich body of work which has been the foundation for all later research. The Swedish scholar Bernhard Karlgren (1889–1978) pioneered in applying European-style historical linguistics to Chinese: first to Middle Chinese (which he called "Ancient Chinese") and then to Old Chinese (his "Archaic Chinese").[3] Others have proposed modifications of, or alternatives to, his reconstructions.[4] My approach to Old Chinese reconstruction differs in several ways from much previous work in this area:

1. I pay special attention to the naturalness of the phonological systems and changes reconstructed. Karlgren saw himself as reconstructing phonetics, not phonology, and paid little attention to phonological structure. As a result, the systems he reconstructed often lack the symmetry and pattern

which are typical in the phonological systems of natural languages. For example, the vowel system he reconstructed for Old Chinese (his "Archaic Chinese") seems almost a random collection of phonetic symbols, as pointed out by Ting Pang-hsin (1975: 19):

		u, ŭ
e, ĕ		*ô, ộ*
	ə	*o, ŏ*
ɛ		*ɑ̊*
	a, ă	*â*

Although later scholars have modified many of Karlgren's reconstructions, they have not always made them more natural.[5] We are on firmest ground, I believe, when we reconstruct systems and changes which are well within the range of variation actually observed in human languages.

2. I place special importance on the phonological pattern of Middle Chinese and the clues it provides about earlier stages. For example, as S. E. Jaxontov (1960b) first pointed out, the distribution of *-w-* in Middle Chinese strongly suggests that *-w-* did not exist in Old Chinese as an independent element, but only as a component of labialized initials $*k^w$-, etc.

3. I reexamine and revise the traditional analysis of Old Chinese rhyming developed by Chinese scholars of the Qīng dynasty, using newly-developed statistical methods. As pointed out above, the rhymes in early Chinese texts provide crucial evidence for the phonological reconstruction of Old Chinese. Under the Qīng, phonological studies flourished, and a succession of brilliant classical scholars devised a set of rhyme categories intended to specify which words rhymed with which in Old Chinese. Though Karlgren was willing to differ with the Qīng phonologists, most modern research in Old Chinese reconstruction (e.g. Li 1971 [1980]; Pulleyblank 1977–1978) has assumed that this traditional analysis is basically correct as it stands. But while the work of the Qīng phonologists was a brilliant intellectual achievement, the rhyming of Old Chinese needs to be reexamined using modern methods. (Statistical procedures for rhyme analysis are presented in Chapter 3; traditional studies of Old Chinese phonology are discussed in Chapter 4.)

4. I take a new approach to the use of evidence from the Chinese script. Previous work on Old Chinese has relied largely on the script of the classical texts in their present versions, or on the "small seal" script described in the *Shuōwén jiězì* 說文解驻 (A.D. 100), a dictionary of the Hàn 漢 dynasty

(206 B.C. to A.D. 220).[6] Both these script forms often reflect post-Zhōu phonological changes; it is anachronistic to use them in reconstructing Old Chinese. Some of the inadequacies of the traditional rhyme categories for Old Chinese can be traced to the Qīng phonologists' use of late forms of the Chinese script as evidence about Old Chinese. This point is developed further in Chapter 9 and in Baxter (in press).

The present line of research began with a paper by Nicholas C. Bodman (1971), proposing a reconstruction of Old Chinese which assumed only six main vowels. In my doctoral thesis (Baxter 1977), I applied this system to the origin of the so-called *chóngniǔ* 重紐 distinctions of Middle Chinese (discussed in Chapters 2 and 7), and proposed a partial reconstruction system for Old Chinese. Subsequent papers by Bodman and myself have tested, refined, and revised the reconstruction system which grew out of these efforts. The present study is a comprehensive presentation of this system and of the evidence and arguments supporting it.[7]

The overall plan of this book is to review the available evidence, present a reconstruction system for Old Chinese, and test the predictions of that system against the rhyme evidence of the *Shījīng*. The phonological system of Middle Chinese is described in Chapter 2, which also presents the notation for Middle Chinese used in this book. Chapter 3 examines the theoretical and statistical problems of using rhymes as evidence about phonology, while Chapter 4 summarizes the traditional analysis of Old Chinese rhyming and its history. These chapters lay the groundwork for the development of the proposed reconstruction system itself, presented in Chapters 5 through 8. Chapter 9, on the text and script of the *Shījīng*, prepares for Chapter 10, in which the predictions of the proposed reconstruction system are tested against the rhyme evidence of the *Shījīng*. In Chapter 10, the reconstruction of each of the traditional rhyme groups is discussed individually; where my reconstruction system predicts the existence of previously unrecognized rhyme distinctions, these predictions are tested against the *Shījīng* rhymes, using the statistical methods developed in Chapter 3. Three appendices are provided for reference: a list of proposed phonological changes in Appendix A, a complete list of the rhyme sequences of the *Shījīng* in Appendix B, and an alphabetical list of the rhyme words of the *Shījīng*, along with reconstructions and references to their occurrences, in Appendix C.

The remainder of this introduction will give some basic background information on Chinese and its history, discuss certain methodological issues, and introduce some of the terminology and notation to be used.

1.2. The Chinese languages, present and past

This section discusses the forms of the Chinese language, ancient and modern, referred to in subsequent discussion. It will be convenient to begin by introducing a uniform terminology for functional positions in a Chinese syllable. The various dialects and historical stages of Chinese are similar enough in syllable structure that, as a rule, this terminology can be used for any of them without confusion, though we will modify it somewhat for Old Chinese.

1.2.1. Chinese syllable structure

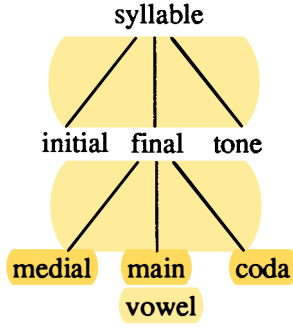
In general, a Chinese syllable can be divided into three parts:

1. the "initial" (*shēngmǔ* 聲母), the initial consonant of the syllable;
2. the "final" (*yùnmǔ* 韻母), consisting of all segments after the initial; and
3. the "tone" (*shēngdiào* 聲調), a tone contour superimposed over the whole syllable.

The final can be further subdivided into

1. the "medial" (*jièyīn* 介音): segments of the final which precede the main vowel;
2. the "main vowel" (*zhǔyào yuányīn* 主要元音): the nucleus of the syllable; and
3. the "coda" (*yùnwěi* 韻尾): segments following the main vowel.

These terms are summarized in the diagram below:



Since the medial is normally assumed to have no effect on rhyming, the main vowel and the coda are sometimes grouped together as the "rhyme" (*yùn* 韻). However, I will normally use the term "rhyme" instead for the Middle Chinese rhyme categories given in the rhyming dictionary *Qièyùn* 切韻, a rhyme dictionary of Middle Chinese (see page 13 below), which do not coincide with the phonological rhymes of Middle Chinese.[8] Given this terminology, the phonological system of a variety of Chinese can be described by giving the inventory of elements which can occur at each position in the syllable, and any restrictions on combinations of elements.

For Old Chinese, this terminology must be modified. Since Old Chinese allowed consonant clusters in both initial and final positions, I introduce the term "pre-initial" for the first segment of initial clusters (such as the **s-* of **sk-*), and the term "post-coda" for the final segment of syllable-final clusters (such as the **-s* of **-ks*). In the reconstruction presented here, it is assumed that the tones of Middle Chinese developed from Old Chinese codas and post-codas, and that Old Chinese syllables had no distinctive tones as such. (A summary of Old Chinese syllable structure is presented in Chapter 5.)

1.2.2. Dialects or languages?

The modern Chinese language is commonly said to consist of many related "dialects", spoken both in China and in Chinese settlements elsewhere. Many of these so-called dialects are not mutually intelligible; if one's terminology requires that only mutually intelligible forms of speech be called dialects of the same language, then they should be called separate languages, not dialects. However, the Chinese word for 'dialect', *fāngyán* 方言, does not usually carry this implication.[9] Most Chinese seem to feel that the existence of a common written form for these dialects, and the common culture and history of their speakers, justify regarding them all as constituting a single language. This is not simply a misunderstanding, as it is sometimes portrayed; it involves differences of intellectual tradition.

In the view of linguistics which prevails in the People's Republic of China, the sociolinguistic characteristics of a language are intimately related to the stage of social organization of the society which uses it. This view, which closely follows Soviet Marxist views of the place of language in social development, is central to many Chinese discussions of language and dialect, so it is appropriate to summarize it briefly here.

In this view, social organization proceeds by stages from the "clan" (Chinese *shìzú* 氏族, Russian *rod*) to the "tribe" (Chinese *bùluò* 部落, Russian *plemja*) to the "nationality" (Chinese *bùzú* 部族, Russian *narodnost'*), to the "nation" (Chinese *mínzú* 民族, Russian *nacija*), and finally to the "multinational state" (Chinese *duōmínzú guójiā* 多民族國家, Russian *mnogonacional'noe gosudarstvo*).

Language shows corresponding stages of development: A clan has a "clan language" (*shìzúyǔ* 氏族語) which covers a small territory, and shows little differentiation into dialects. A tribe has a "tribal language" (*bùluòyǔ* 部落語), used over a broader area, in which distinctions begin to appear between a common or standard language and local dialects. This trend continues in the language of a nationality (*bùzú*), the stage intermediate between tribe and nation.

Under normal circumstances, a nation (*mínzú*) is held to have its own "common language" (*gòngtóngyǔ* 共同語), generally based on the dialect of an area which is politically, economically, and culturally well-developed; at this stage the role of dialects gradually diminishes, and the dialects tend to disappear under the influence of the common language. For example, the majority ethnic group of China—loosely referred to in the West as "ethnic Chinese"—are officially known as the "Hàn nation" (*Hàn mínzú* 漢民族 or *Hànzú* 漢族), and are legally on a par with the other nations of China such as the Tibetans (*Zàngzú* 藏族) or Mongols (*Měnggǔzú* 蒙古族). The common language of the Hàn nation is *pǔtōnghuà* 普通話 or standard Mandarin, based on the northern or Mandarin dialect.

Finally, in a multinational state such as China or the Soviet Union, there is a "language for common communication" (*gòngtóng jiāojìyǔ* 共同交際語) or "inter-national language" (*mežnacional'nyj jazyk*)—where "nation" is understood in the sense of *mínzú*. Such a language allows the various *mínzú* to communicate with each other; in China, *pǔtōnghuà* or standard Mandarin serves both as the "common language" of the Hàn nation and as the "language for common communication" for the whole country.[10]

Since having its own language is one of the normal characteristics of a "nation" or *mínzú,* to regard, say, Cantonese and Mandarin as different languages, merely because they are mutually unintelligible, would seem to imply that Cantonese and Mandarin speakers belong to different *mínzú*—a conclusion which would be both historically inaccurate and politically unacceptable.

There is nothing inconsistent about this use of terms; it simply includes historical and sociolinguistic factors as well as purely linguistic ones in

deciding where language boundaries should be drawn. Of course, in the West, too, language boundaries are often not drawn by purely linguistic criteria either: Swedish, Danish, and Norwegian, though mutually intelligible, are usually considered different languages. Considering all this, I will continue to use the conventional term "dialects" even for mutually unintelligible varieties of Chinese.

1.2.3. Classification of Chinese dialects

There have been various proposals on how the Chinese dialects should be grouped and named. The following classification follows that of Zhān Bóhuì (1981 [1985]). Zhān identifies seven dialect groups:

1. *Běifāng fāngyán* 北方方言 (Northern or Mandarin dialects)
2. *Wú fāngyán* 吳方言 (Wú dialects)
3. *Xiāng fāngyán* 湘方言 (Xiāng or Húnán dialects)
4. *Gàn fāngyán* 贛方言 (Gàn or Jiāngxī [Kiangsi] dialects)
5. *Kèjiā fāngyán* 客家方言 (Kèjiā or Hakka dialects)
6. *Yuè fāngyán* 粵方言 (Yuè or Cantonese dialects)
7. *Mǐn fāngyán* 閩方言 (Mǐn or Fújiàn [Fukien] dialects)

Since these will come up in later discussion, I will describe each group briefly below.

1. The "northern dialects" are in English usually called Mandarin dialects (a translation of the older term *guānhuà* 官話 'officials' speech'), though "Mandarin" is sometimes also used in a narrower sense to denote standard Mandarin or *pǔtōnghuà*. These dialects are spoken by over 70% of the Hàn population, in about three-fourths of the Hàn-speaking area, including all areas of Hàn settlement north of the Chángjiāng (Yangtze) and part of its southern bank, and the southwestern provinces of Sìchuān (Szechwan), Yúnnán, and Guìzhōu (Kweichow). These dialects have few consonantal codas (e.g. no final *-p, -t,* or *-k*), and rather simple tonal systems (usually four or five tones, though some dialects have as few as three or as many as six). The standard language, *pǔtōnghuà* or standard Mandarin, is said to "take the pronunciation of Beijing as its standard pronunciation, the northern dialect (*běifāng fāngyán*) as its base dialect, and the classic works of

modern *báihuà* 白話 literature as its grammatical standard" (*Cíhǎi* 1979, s.v.; my translation).

Recently, Lǐ Róng (1985) has proposed that certain dialects in and near Shānxī province, heretofore assigned to the Mandarin group, should be considered a separate dialect group, which he calls "*Jìnyǔ* 晉語 [Jìn dialects]"—*Jìn* being the literary name for Shānxī province.[11]

2. The Wú dialects are spoken near the mouth of the Chángjiāng, including most of Zhèjiāng (Chekiang) and parts of Jiāngsū (Kiangsu) and Ānhuī (Anhwei). They preserve as a distinct class the voiced obstruent initials (*b-*, *d-*, *g-*, etc.) of Middle Chinese; in most other dialects, these have become voiceless. Most Wú dialects have seven or eight tones. The speech of Shànghǎi is a Wú dialect, although, with only five tones, its tone system is simpler than that of a typical Wú dialect such as that of Sūzhōu (Soochow).

3. The Xiāng or Húnán dialects are spoken in most of Húnán province (*Xiāng* being the literary name for Húnán). They are popularly known for changing *hu-* to *f-* and for confusing *n-* and *l-* (so that *Húnán* may sound like *Fúlán*). As in the Wú dialects, the Middle Chinese voiced obstruent initials (*b-*, *d-*, etc.) are widely preserved in this group (though not in the speech of the provincial capital, Chángshā).

4. The relatively little-studied Gàn or Jiāngxī dialects are spoken in most of Jiāngxī province (*Gàn* being the literary name for Jiāngxī). Middle Chinese voiced stops and affricates have generally become voiceless aspirates in this group.

5. The Kèjiā or Hakka dialects are spoken in various areas of southern China, especially northeastern Guǎngdōng, southern Jiāngxī, and western and northern Fújiàn. (The term "Hakka" represents the Cantonese pronunciation of *Kèjiā* 客家.) Hakka speakers are believed to be descended from inhabitants of northern China who moved south in several waves of migration during periods of political upheaval, especially at the end of the Sòng dynasty, bringing their speech with them. In the south they have generally remained culturally and linguistically distinct from their neighbors. In these dialects, Middle Chinese voiced obstruents have generally become voiceless aspirates, as in the Gàn dialects; velar initials (*k-*, *kh-*, etc.), which in many dialects have become palatal before front vowels, are preserved everywhere in Hakka, as they are in Cantonese and Mǐn. Hakka dialects generally lack the high front medial *-ū-* ([y] in the International Phonetic Alphabet).

6. The Yuè or Cantonese dialects are spoken in parts of Guǎngdōng (Kwangtung) and Guǎngxī (Kwangsi), and widely in Chinese settlements overseas. (Standard Cantonese is based on the dialect of Guǎngzhōu, also spoken in Hong Kong.) Cantonese dialects tend to have complex tonal systems, and generally retain the Middle Chinese codas *-p, -t,* and *-k*. As in Hakka and Mǐn, velar initials have not become palatal.

7. The Mǐn or Fújiàn dialect group evidently broke off from the other dialects at an early date, and also shows considerable diversity within itself; it is often further subdivided, e.g. into *Mǐnběi huà* 閩北話 'Northern Mǐn' and *Mǐnnán huà* 閩南話 'Southern Mǐn', though the proper way of subdividing the group is a matter of controversy. One characteristic of the group as a whole is the absence of the initial labiodental [f], which evidently developed as an innovation in other dialect groups after the Mǐn group had already split away. What is usually called Northern Mǐn is spoken in the northern part of Fújiàn; it includes the speech of the capital, Fúzhōu (Foochow). Southern Mǐn includes the speech of southern Fújiàn, Eastern Guǎngdōng, and Táiwān, as well as part of Hǎinán; it is also widely spoken in Chinese communities in Southeast Asia.

1.2.4. Written sources for the history of Chinese

It is possible to learn much about the history of Chinese just from modern dialects, using the comparative method; some recent studies have taken this approach, in an attempt to get evidence independent of written sources, or for dialect groups where written evidence is sparse or lacking.[12] But Chinese historical phonology has usually relied heavily on written records. For example, Bernhard Karlgren reconstructed the phonological categories of "Ancient Chinese" (called Middle Chinese in this study) on the basis of the distinctions made in written Chinese phonological works; he used dialect data only in choosing phonetic values for these categories.

One might wonder how Chinese written records, written in a nonalphabetic script, could be of much value for historical linguistics. In fact, they provide many kinds of useful information on the history of Chinese phonology. Some of the evidence is indirect, coming in the form of (1) *xiéshēng* 諧聲 characters, (2) rhymes, and (3) transcriptions. These are discussed individually below.

1. Xiéshēng *characters*. The Chinese script itself does not entirely conceal the sounds of the language it originally represented. Most of the characters

originated as so-called "phonetic compounds" (*xiéshēng* 諧聲 'harmonizing sound') consisting of two parts: a signific (also called a radical or determiner) and a phonetic. The phonetic is a character originally similar in sound to the word represented by the compound character; the signific is a character used for its semantic value to distinguish one compound from others which have the same phonetic. For example, the character 河 *hé* 'river' is a phonetic compound consisting of the phonetic 可 *kě* 'may, can' plus the signific 氵, an abbreviated form of 水 *shuǐ* 'water'. The phonetic 可 *kě* was chosen for its phonetic similarity to 河 *hé*, while the signific 氵 'water' suggests the meaning 'river', and distinguishes the character for 'river' from other characters written with the phonetic 可 *kě*. The set of characters written with the same phonetic element is called a "*xiéshēng* series". *Xiéshēng* series are one of the main sources of information about Old Chinese, since many of the *xiéshēng* characters were created during the Old Chinese period.[13] In this example, 河 *hé* and 可 *kě* are still similar in sound, but in other cases, because of sound changes since Old Chinese, words in the same *xiéshēng* series may show little or no phonetic resemblance in modern pronunciation.

2. *Rhymes*. Virtually all Chinese poetry before modern times has employed rhyme, and rhyming practice often provides important evidence about phonology. (The use of rhymes as evidence in historical phonology is discussed in Chapter 3.) By a fortunate coincidence, the earliest extant collection of Chinese poetry, the *Shījīng*, reflects approximately the same stage of the language as the *xiéshēng* characters, so that the two kinds of evidence can be tied together in reconstructing Old Chinese.

3. *Transcriptions*. Chinese characters are sometimes used purely for their sound to write foreign words in Chinese texts: proper names, for example, or technical terms in Buddhist scriptures. For example, in modern Chinese, *Washington* is written 華盛頓 *Huáshèngdùn*. The meanings of these three characters ('flowery'—'prosperous'—'pause') are basically irrelevant to their use in this name (though morphemes with neutral or vaguely complimentary connotations are usually preferred for this purpose). The same device was used to write foreign names in ancient China also; in those cases where the original foreign words can be identified, they can provide a key to the contemporary pronunciation of the Chinese characters used to transcribe them. Similarly, in early Japan, Chinese characters were used for their sound to write native Japanese words in the writing system known as *man'yōgana* 万葉仮名, from which the later kana syllabaries were derived (see Miller 1967: 90–99).

Conversely, Chinese texts sometimes appear transcribed in foreign alphabets, e.g. Tibetan, Uygur, 'Phags-pa—an alphabet based on the Tibetan, used for official purposes during the Yuán 元 dynasty (1279–1368)—and more recently, Roman.[14]

Very similar to transcriptions are the numerous Chinese loan words in Japanese, Korean, and Vietnamese (known respectively as Sino-Japanese, Sino-Korean, and Sino-Vietnamese, or collectively as "Sino-xenic"[15]). During the Táng dynasty, when the cultural influence of China on Japan, Korea, and Vietnam was especially strong, Chinese was widely used as a literary language there. Eventually, these languages borrowed massive amounts of Chinese vocabulary, adapting the Chinese pronunciations to the native phonological system. For purposes of historical phonology, these words are normally used in their earliest available written forms rather than their present-day spoken forms, and are thus, in effect, transcriptions of Chinese words in foreign scripts.

In addition to such indirect written evidence, there is a large traditional literature, dating from as early as the Hàn dynasty (206 B.C. to A.D. 220), dealing explicitly with language; this literature can conveniently be divided into four main types:

1. *Glosses on the classics.* Many works are devoted to the explication and correct reading of difficult words in classical texts. The glosses may appear in annotated editions of particular works or in separate works intended to be read alongside the classics. The *Jīngdiǎn shìwén* 經典釋文 (A.D. 583) of Lù Démíng 陸德明 is an important work of the latter type.

2. *Etymological works.* A number of works deal with the pronunciations, meanings, and origins of words, but are not tied to particular classical texts. This group includes dictionaries such as the *Ěryǎ* 爾雅 (probably from Western Hàn), the *Shuōwén jiězì* 說文解字 (completed in A.D. 100, henceforth simply the *Shuōwén*) of Xǔ Shèn 許愼, the *Shìmíng* 釋名 of Liú Xī 劉熙 (second century A.D.; see Bodman 1954), the *Yùpiān* 玉篇 (A.D. 548) of Gù Yěwáng 顧野王, and even dialect studies, such as the *Fāngyán* 方言 of Yáng Xióng 揚雄 (53 B.C. to A.D. 18).

3. *Rhyme books* (*yùnshū* 韻書). These are really dictionaries, arranged so that words which rhyme are grouped together. The most famous is the *Qièyùn* 切韻 (A.D. 601) of Lù Fǎyán 陸法言. Arrangement by rhymes made these works useful in writing poetry, of course, but it was also one logical solution to the problem of how to arrange a dictionary for a language

written in a nonalphabetic script. The rhyme-book tradition is described in more detail in Chapter 2.

4. *Rhyme tables* (*yùntú* 韻圖). These are phonological tables in which characters are arranged according to their initials and finals (see section 1.2.1 above). Accompanying the rhyme tables is a traditional terminology for describing the phonological characteristics of Chinese syllables: a set of thirty-six names for initial consonants, terms referring to vowel quality, terms for the presence or absence of a rounded glide before the main vowel, etc. This tradition is also discussed in Chapter 2.

1.2.5. Stages in the history of Chinese

Dividing a language's history into periods is convenient but always somewhat artificial, since languages change constantly and gradually. Names tend to be given first to those periods about which there is most evidence, and other periods are sometimes left with no commonly agreed-upon name. I will not attempt to give an exhaustive terminology for the periods of the history of Chinese; the following terms are, however, useful:

1. *Old Chinese* (OC)—the Chinese language of the early and mid Zhōu dynasty. It is the language of the early Chinese classics and of Zhōu bronze inscriptions; it corresponds roughly to what Bernhard Karlgren called "Archaic Chinese" (see Karlgren 1954), and to what is called *Shànggǔ Hànyǔ* 上古漢語 in Chinese. I will describe my use of this term more precisely below (section 1.4.5).

2. *Early Middle Chinese* (EMC)—the language codified in the rhyming dictionary *Qièyùn* of A.D. 601, which probably represents a conservative version of the standard literary language of the sixth century. Because the rhyme-book tradition provides such detailed information about it, Early Middle Chinese is one of the main sources of evidence about Old Chinese. I quote Early Middle Chinese forms in a transcription which is described in more detail in Chapter 2.

3. *Late Middle Chinese* (LMC)—the language of late Táng, represented in the rhyme-table tradition of late Táng and early Sòng 宋. Most of the distinctions found in modern Chinese dialects can be traced no further back than Late Middle Chinese, although many dialects retain a few distinctions from an earlier stage. Late Middle Chinese is also the source of the major strata of Sino-xenic loan words (except for the Go'on stratum of Sino-

Japanese; see Chapter 2). The Mǐn dialect group shows distinctions which predate Early Middle Chinese, so it must have split off from the other dialects still earlier.[16]

4. *Old Mandarin* (OM). This term is used for the early form of Mandarin preserved in such works as the *Zhōngyuán yīnyùn* 中原音韻 (1324), a rhyme book of the Yuán dynasty intended as a standard for rhymes in Yuán opera (see Stimson 1966).

Karlgren's term "Ancient Chinese" encompasses both Early Middle Chinese and Late Middle Chinese; I follow Pulleyblank (1970–1971, 1984) in recognizing a distinction between them. Strictly speaking, the term "Middle Chinese" (which corresponds to the Chinese term *Zhōnggǔ Hànyǔ* 中古漢語) includes both Early Middle Chinese and Late Middle Chinese, but since it is the former which concerns us more here, I will often use the term "Middle Chinese" (MC) loosely, to refer to Early Middle Chinese.

For other stages of Chinese, which lack well-established standard names, it is convenient to use the names of historical periods; thus we can speak of the Chinese of late Shāng (eleventh or twelfth century B.C.), or of the Zhànguó 戰國 period (475–221 B.C.), or of Eastern Hàn (A.D. 21–220).

1.3. Notation and style

I include here some remarks about the form of cited examples. A typical example is cited in the following form:

(1) 人 *rén* < *nyin* < **njin* 'person'

The following points should be noted:

1. Chinese characters are cited in their traditional forms, not in simplified characters.

2. In cited examples, modern Chinese pronunciation is given first, in the *pīnyīn* romanization. The pronunciations given are those considered standard according to recent dictionaries published in the People's Republic of China. (These sometimes differ from the pronunciations given in older dictionaries, or in dictionaries from Taiwan.)

3. In cases where the modern pronunciation is not what would be expected as the regular reflex of the recorded Middle Chinese pronunciation, I usually enclose the modern reading in square brackets to mark it as irregular. For example, the character 洵, used to mean 'far away' in Ode 31.5, is now

standardly read *xún*, although from its Middle Chinese reading *xwen* we would expect modern *xuān*. (The reading *xún* is evidently influenced by the phonetic element 旬 *xún* 'ten-day week'.) I therefore cite it as

(2) 洵 [*xún*] < *xwen* < **hwin* 'far away'.

4. (Early) Middle Chinese pronunciations are given in the transcription described in Chapter 2. (The equivalent notation in Karlgren's Ancient Chinese reconstruction may be deduced from the information in that chapter.) Middle Chinese forms are distinguished from modern forms by the absence of the usual *pīnyīn* tone marks, and from Old Chinese forms by the absence of an asterisk.

5. Old Chinese forms are given in the reconstruction system presented in this book.

6. After the pronunciations comes a gloss, usually brief, and intended for identification only; these glosses are often based, without further attribution, on the glosses in Karlgren's "Grammata serica recensa" (1957) and in Schuessler (1987), which I have found especially useful. A fully adequate representation of the meaning of an Old Chinese word (or of what we understand of its meaning) would require careful comparison of its attested uses and possible etymological connections; in most cases this is beyond the scope of this book.

Poems of the *Shījīng* are cited in the form "Ode 198.2", where 198 is the ode number and 2 the stanza number, according to the text of the *Máo Shī yǐndé* (Harvard-Yenching Institute 1934 [1962]). From this information the name of each ode and the section of the *Shījīng* in which it occurs may be found in Appendix B. *Shījīng* rhyme sequences are cited by letter: "198.2A" indicates the first rhyme sequence of stanza 2 of Ode 198, "198.2B" indicates the second rhyme sequence in the stanza, and so on. (The first sequence of a stanza is marked "A" even if it is the only rhyme sequence in the stanza.)

Each reconstructed sound change is given a name by which it is referred to throughout the text (e.g. ***r-loss** for the change by which medial **r* was lost); such names are printed in boldface wherever they occur. As noted above, a summary of the changes reconstructed is found in Appendix A.

1.4. Methodological remarks

1.4.1. Theoretical assumptions

The primary focus of this study is on recovering the basic facts of Old Chinese phonology, not on phonological theory. A dichotomy between facts and theory is ultimately false, of course; any research on historical phonology makes some theoretical assumptions, explicit or implicit. The theoretical assumptions underlying this study are, I believe, largely uncontroversial; but in this section I will try to make some of them explicit.

I assume that the phonological system of a language includes (1) a set of phonological representations which embody what is phonologically distinctive about each basic expression of the language, and (2) a set of phonological rules which apply generally. Both phonological representations and phonological rules can change over time, and changes in one part of the system can have consequences in another.

The units of phonological representations may be called phonemes. (I do not assume that these phonemes necessarily have the property of biuniqueness typically attributed to them in American Structuralism.) I take phonemes to be bundles of distinctive features, possibly from some universal set. When reference to features is called for, I use the feature system of Chomsky and Halle (1968) for convenience, supplemented by additional categories and terms when necessary. For most purposes, however, phonemes are represented by letters of the International Phonetic Alphabet, set between slanted lines.

Since they are tied both to the social functioning of language and to human biology, phonological systems do not vary without limit. Too simple a system (say, one allowing only one possible syllable) would not function adequately; too complex a system (say, one including ten thousand distinct vowels) would be unlearnable or unusable or both. We can say, loosely, that such extreme systems would be unnatural. Phonological changes also do not vary without limit, for the same reasons. An adequate general theory of phonology would specify the limits of variation, and explain the origins of these limits—whether historical, biological, or both. Beyond the extreme cases outlined above, defining what is phonologically natural is difficult. I will return to this question below.

There has been perennial controversy in modern linguistics over the relationship between phonological representations and actual pronunciation. One aspect of this controversy is the question of when speakers construct

abstract representations of morphemes to account for morphological alternations. For example, in English, are *knife* [naif] and *knives* [naivz] derived from a single form of the root, or from two forms /naif/ ~ /naiv/? Such questions rarely arise in Chinese historical phonology, since morphological alternations are rather uncommon.[17]

Much recent work in phonology examines how features are organized within syllables. While I sympathize with this line of inquiry, I do not attempt here to fit Old Chinese into a general theory of syllable structure. The traditional terminology for syllable positions outlined above is usually adequate for descriptive purposes, and could probably be translated into any reasonable theory of syllable structure.

1.4.2. The nature of phonological reconstruction

A phonological reconstruction is sometimes thought of simply as a collection of spellings, in some more or less phonetic alphabet, intended to represent the pronunciations of an earlier age. This characterization, correct as far as it goes, obscures the conceptual structure of a reconstruction. The spellings which are the visible form of a reconstruction reflect a set of hypotheses about the phonology of a language and about its development. These hypotheses show a complex pattern of interdependence; hypothesis A cannot be consistently maintained unless one also accepts hypothesis B, accepting hypothesis B makes it impossible to accept hypothesis C, and so on. These hypotheses, which are the conceptual structure of the reconstruction, are represented only indirectly in the spellings of the reconstruction.

For example, Karlgren's Archaic reconstruction incorporates the hypothesis that Old Chinese, like Sanskrit, had four manners of articulation for initial stops:

voiceless unaspirated (e.g. **k-*, **p-*, **t-*)

voiceless aspirated (e.g. **k'-*, **p'-*, **t'-*)

voiced unaspirated (e.g. **g-*, **b-*, **d-*)

voiced aspirated (e.g. **g'-*, **b'-*, **d'-*)

Karlgren's reconstruction also incorporates the related hypothesis that the voiced unaspirated initials **g-*, **b-*, **d-*, etc. were lost, but that the voiced aspirates **g'-*, **b'-*, **d'-*, etc. survived into Middle Chinese (Karlgren's "Ancient Chinese"). Neither hypothesis can be read directly from the reconstructions of particular words.

The importance of reconstructing changes as well as forms should not be overlooked. To give an adequate phonological history of a language, it is not enough to describe the language as one believes it was, even if the phonological system reconstructed for it is a plausible one. Any reconstruction implies a set of changes by which later stages are derived, and these must be specified along with the reconstructions of particular words. I have attempted to do this in a preliminary way in this study (see the summary of major phonological changes in Appendix A). Eventually, it may be possible to define these changes more explicitly, locate them in space and time, and use them to examine early Chinese dialects—perhaps to date or place early texts on phonological grounds, as can sometimes be done for languages such as English whose phonological history is better understood.

Phonological changes vary widely in their scope of application: some affect a large proportion of a language's morphemes (such as the Great Vowel Shift of English, which affected words with long vowels); others, which we may call minor changes, affect a few syllables, or even a single syllable only. An example of a minor change is the relatively recent change in Mandarin by which the syllable *yóng* became *róng*:[18]

(3) 榮 *róng* < *yóng* < *hjwæng* 'glory'

(4) 融 *róng* < *yóng* < *yuwng* 'melt; blend'

(5) 容 *róng* < *yóng* < *yowng* 'contain'

The same syllable in other tones (*yōng, yǒng, yòng*) was not affected, nor were most other syllables with initial *y-*.[19] I will have occasion to propose several minor changes of this type.[20] Of course, sometimes what seems to be a minor change later turns out to be a special case of a more general change; but there is nothing implausible about minor changes per se.

The hypotheses of a reconstruction are formulated within a framework of methodological assumptions about which hypotheses are possible in principle, where hypotheses come from, what data the hypotheses are intended to account for, and how to choose among competing hypotheses. Karlgren, for example, assumed that the four-way distinction in manner of articulation described above, being attested for Sanskrit, was available as a possible structure for Old Chinese also. He assumed (quite reasonably) that the ground rules of Old Chinese phonology are not radically different from those which apply to other languages. A possible alternative view is that Chinese is governed by different principles entirely, any comparisons with Sanskrit or other languages being therefore irrelevant.

Although scholars working in historical reconstruction seem to share many basic assumptions, it may be useful to state explicitly some of the methodological assumptions which underlie the hypotheses presented in this study. This is done in the remainder of this section.

1.4.3. Naturalness in reconstruction

The first assumption involves the goals of reconstruction:

> Assumption 1: A reconstructed language should be a natural synchronic system from which known later stages can be derived by natural diachronic processes.

We may take "natural" here to mean "possible in a natural language". A fully adequate theory of phonology and phonological change in human language would presumably specify which synchronic systems and diachronic processes are natural and which are not. Unfortunately, such a theory does not yet exist. In its absence, we must rely on our experience with linguistic structures and changes. We have confidence in reconstructed structures and changes for which we can easily find parallels in other languages, and we are suspicious of reconstructions for which parallels are hard to find.

For example, our experience with vowel systems suggests that they have a certain degree of symmetry and that there are limits on the number of elements they can include. Probably no one would accept a reconstructed vowel system which consisted of all the vowels for which there are symbols in the International Phonetic Alphabet, for example. Most random subsets of these would not be considered natural vowel systems, either. It is this kind of thinking which has led to dissatisfaction with Karlgren's Archaic Chinese reconstruction, as mentioned above.

Of course, there may be differences due to language type; what is natural for one type of language may be unnatural for another type. If we think of naturalness as a set of constraints on possible human languages, then some of these constraints may be unconditional, applying to any human language; they may be stated in the form

> for any natural language L, p(L) is true,

where p(L) is some proposition involving L. "All languages have syllables" would be a constraint of this kind. Other constraints may be conditional; they may be stated in the form

> for any natural language L, if p(L) then q(L).

For example, constraints which apply only to tone languages would be of this kind.

Crucially, however, I assume that a language's "type" is not permanent, but can change over time. Some writers speak of the "characteristics" (*tèdiǎn* 特點) of the Chinese language (that it is tonal, uninflected, and so forth) as if they belonged to Chinese permanently and must always have been so. Certainly, language characteristics can persist for long periods of time, but I take the view that the only truly permanent characteristics of any language are those common to all possible human languages. It follows from this assumption that Old Chinese may have been typologically rather different from Middle and Modern Chinese. It also follows that typological characteristics are not a reliable guide to genetic relationships among languages; we cannot assume that two languages are genetically related just because they are both tonal, for example.

Partly for historical reasons, the idea of naturalness of structure has received insufficient attention in Old Chinese reconstruction. Judging from their fondness for symmetrical diagrams of phonological categories, the Qīng phonologists seem to have had a notion of phonological structure, but it was rather abstract and unconstrained by conditions on naturalness in the modern sense. Karlgren's lack of attention to naturalness has already been mentioned.

Besides Karlgren's, many other current reconstructions of Old Chinese are also implausible as phonological structures, even if they otherwise fit the available evidence fairly well. For example, the system recently proposed by Wáng Lì (1980b) allows a total of seven different semivowels and semivowel combinations in medial position before the main vowel: **-e-*, **-i-*, **-y-*, **-u-*, **-o-*, **-iu-*, and **-yu-*; I doubt if any known language has such an array. (Even with such a rich system of medials, Wáng Lì's system still fails to account for many crucial distinctions.) Li Fang-kuei's system (1971 [1980]) accounts more adequately for the evidence about Old Chinese, but its contrasts among **-j-*, **-i-*, and **-ji-* in prevocalic position, though perhaps not impossible, also seem implausible. Pulleyblank's reconstruction with only two main vowels has already been mentioned (see note 5). I argue that we should construct such typologically unusual systems only when compelled to do so by the evidence. (In the case of Old Chinese, I will argue that a simpler, less unusual system can actually account for the evidence better.) This leads to the second assumption, which is closely related to the first:

> Assumption 2: Since many hypotheses may be consistent with our knowledge at any given time, it is best to check first those hypotheses that are typologically least unusual.

We are rarely in the position of being able to confirm one hypothesis and disconfirm all the competing ones; so we need a way to decide among hypotheses all of which appear to be consistent with our knowledge at the moment. There are probably fewer simple, typologically ordinary solutions than complex, unusual ones; if we start with simple solutions and move toward more complex ones only when the simpler ones prove to be inadequate, we will be able to find a simple solution if there is one.

Again, in judging what is typologically unusual and what is not, we must rely on our experience with language structure and language change; no phonological theory can yet do this for us adequately. And again, what is unusual may vary with language type.

1.4.4. Ockham's Razor

The third assumption is a version of Ockham's Razor:

> Assumption 3: Hypotheses which tie a number of phenomena together are to be preferred over hypotheses which account for only one phenomenon at a time.

As an example of this assumption, consider the reconstruction of the following words:

(6) 藍 *lán* < MC *lam* 'indigo'

(7) 監 *jiān* < MC *kæm* 'inspect'

(8) 鸞 *luán* < MC *lwan* 'harness bells'

(9) 蠻 *mán* < MC *mæn* 'Southern barbarian'

Note that item (6) is a *xiéshēng* character with item (7) 監 as its phonetic element, and that (8) and (9) share the same phonetic element 䜌. In both cases, we have words with Middle Chinese (and modern) initial *l-* in the same *xiéshēng* series with words having other Middle Chinese initial consonants: *k-* in 'inspect', *m-* in 'Southern barbarian'. Since words in a single *xiéshēng* series usually have similar initials, Karlgren reconstructed Old Chinese *l*-clusters in words like these:

藍 'indigo', Karlgren's **glâm*

監 'inspect', Karlgren's **klam*

鑾 'harness bells', Karlgren's **blwân*

蠻 'Southern barbarian', Karlgren's **mlwan*.

Notice that he also reconstructed two different vowels in these words: **â* > MC *-a-* and **a* > MC *-æ-*. His **â* and **a* rhyme with each other in Old Chinese poetry, although their reflexes *-a-* and *-æ-* do not rhyme with each other in Middle Chinese. Karlgren accounted for this by assuming that rhyme standards were laxer in Old Chinese times than in Middle Chinese times. Thus he accounted for these words and their history by using three different hypotheses, involving (1) *l*-clusters in Old Chinese, (2) an **â/a* distinction in Old Chinese, and (3) a change in the strictness of rhyming.

S. E. Jaxontov (1960a), on the other hand, has proposed an alternative analysis, part of which was summarized above: according to his account, MC *-æ-* developed from OC **-a-* when a preceding **-l-* was lost. This makes Karlgren's **â/a* distinction unnecessary in Old Chinese. I adopt this proposal in the reconstruction system proposed here, but with **r* instead of Jaxontov's **l*. My reconstructions are

藍 'indigo' *lán* < *lam* < **g-ram*

監 'inspect' *jiān* < *kæm* < **kram*

鑾 'harness bells' *luán* < *lwan* < **b-rwan* (< **b-ron*)

蠻 'Southern barbarian' *mán* < *mæn* < **mrwan* (< **mron*)

This single hypothesis of Jaxontov's simultaneously accounts for (1) the presence of MC *l-* in *xiéshēng* series with other initials in these words; (2) the Middle Chinese distinction between *-a-* and *-æ-*; and (3) the change in rhyming practice between Old Chinese and Middle Chinese (due to the phonological split of **-a-* into /a/ and /æ/), where Karlgren had a separate explanation for each phenomenon. By assumption 3 above, Jaxontov's solution is to be preferred.

1.4.5. Defining Old Chinese

The last assumption defines more precisely what we mean by "Old Chinese", by specifying what evidence is to be considered relevant when

reconstructing it. In the strictest sense, I use the term "Old Chinese" for a reconstructed stage with these properties:

> Assumption 4: A reconstruction of Old Chinese should account for the rhymes of the *Shījīng,* the *xiéshēng* characters of Zhōu-dynasty script, the phonological system of Middle Chinese, and the modern Chinese dialects.

More loosely, "Old Chinese" can refer to any variety of the Chinese of early and mid Zhōu. In this looser sense, Old Chinese need not be a single synchronic stage; we can speak of dialects and stages of Old Chinese.

In the usual terminology of historical linguistics, an "old" language is the language of the earliest written documents; a "modern" language is the contemporary form; and a "middle" language is a stage in between. An earlier reconstructed stage, unattested in written documents, is called a "proto-" language. This terminology developed within Indo-European historical linguistics, and was first applied to languages with alphabetical writing systems. The distinction between an "old" language and a "proto-" language was founded on the idea that it was relatively easy to figure out the phonology of an "old" language from the available written texts (since they were written alphabetically); but the forms of a "proto-" language were unattested and had to be reconstructed.

It is difficult to draw this distinction in the same way for Chinese, however, because the language of the oldest texts is not attested in the same sense that Latin or Old English are attested; we must reconstruct it, just as an Indo-Europeanist must reconstruct Proto-Germanic or Proto-Slavic.[21] At the same time, the texts themselves do provide independent, albeit rather incomplete, evidence. Thus most reconstructions of "Old Chinese" have analogies to both the "old" and the "proto-" languages of the traditional European terminology. Old Chinese is, in a way, attested, since ancient texts provide evidence in the form of rhymes, *xiéshēng* series, and so forth. Yet it must also be reconstructed in such a way that all the distinctions of Middle Chinese can be derived from it.

Assumption 4 does not require that our Old Chinese reconstruction be identical with, say, the language of the *Shījīng*—only that the language of the *Shījīng* is derivable from it. We cannot know a priori that all the Old Chinese features which can be reconstructed from other evidence were still present in all varieties of Chinese represented in the *Shījīng*. But by definition, Old Chinese, if not identical to the *Shījīng* language, must at least be ancestral to it. Similarly, it is possible that no variety of Chinese repre-

sented in the *Shījīng* is the direct ancestor of Middle Chinese; but Old Chinese is ancestral to Middle Chinese by definition.[22]

Assumption 4 mentions both Middle Chinese and the modern Chinese dialects. If we assume that the modern dialects can be derived from Middle Chinese, then this is redundant; accounting for Middle Chinese will also account for those dialects. But as I mentioned above, there is at least one group of dialects, the Mǐn dialects, which split off from the others before the Middle Chinese stage, and therefore cannot be derived from Middle Chinese. In principle, a reconstruction of Old Chinese should account for these dialects also. In fact, however, because the reconstruction of the Mǐn group and its history is still at a preliminary stage, I will largely ignore this part of the definition. Further research on the Mǐn group should make it possible to correct this deficiency in our reconstruction.

1.4.6. Evidence from Tibeto-Burman

Is it legitimate to use evidence from Tibeto-Burman in reconstructing Old Chinese? As I have defined it, Old Chinese is the system in terms of which we can explain the Old Chinese rhymes and graphic evidence, and the phonology of Middle Chinese and modern dialects. Clearly, then, it would be inconsistent to incorporate phonological distinctions into Old Chinese purely on the basis of Tibeto-Burman evidence—distinctions which are not reflected in any way in the Chinese evidence. If, for example, Tibeto-Burman shows a contrast between final **-n* and final **-l*, and if this distinction is not reflected in any way in Chinese, then it would be confusing levels of the analysis to incorporate the distinction between **-n* and **-l* into Old Chinese. On this issue, I believe, there is little disagreement.

On the other hand, if we wish to explore the well-supported hypothesis that Chinese is related to the Tibeto-Burman family, we may wish to construct hypotheses about stages intermediate between Old Chinese and an assumed ancestor, incorporating distinctions from languages we assume to be related. Bodman's Proto-Chinese reconstructions (1980) make use of evidence of this type. Such reconstructions are simply a way of exploring possible relationships between Chinese and other languages; our understanding of these relationships is unlikely to proceed very far without them. As long as we do not confuse Tibeto-Burman distinctions with Chinese ones, I see nothing wrong with such reconstructions.

Moreover, in searching for possible hypotheses to explain the Chinese evidence, it seems to me that we are perfectly justified in looking to Tibeto-

Burman evidence (or to other languages, or to common sense, or to yarrow stalks, for that matter) for ideas on how to account for the problem within our Old Chinese reconstruction—as long as we test the hypotheses against Chinese evidence. As a hypothetical example, let us suppose that Proto-Tibeto-Burman has a contrast of **-n* and **-l* in final position; and suppose that we find in Old Chinese pairs of words of similar form and meaning, except that one member of the pair ends in MC *-n* and the other in MC *-w*; and suppose further that we have many good examples of apparent cognates between such pairs and Tibeto-Burman words ending in **-l*. Then we are entitled to investigate the hypothesis that Old Chinese, too, had a contrast of **-n* and **-l*, possibly cognate to the Tibeto-Burman distinction, and that **-n* consistently became MC *-n*, but **-l* developed into *-n* in some dialects, and into *-w* in others. (This example is based on an actual proposal in Bodman 1980: 75–79.)

Whether we ultimately accept this hypothesis will depend, of course, on further evidence and argumentation; but the hypothesis is not contaminated by the fact that we got the idea from looking at Tibeto-Burman. In fact, if this hypothesis can account for the facts, then (by our third assumption above) it has an advantage over other competing explanations, since it not only explains the Chinese evidence but also contributes to a plausible account of the evolution of Old Chinese within the larger Sino-Tibetan family.

Of course, there will be borderline cases where judgments may vary. But in general, the validity of hypotheses is independent of where we get the hypotheses. All we must remember is that hypotheses about Old Chinese must be tested primarily against Chinese evidence.

Chapter 2

The Middle Chinese phonological system

2.1. The need for a new transcription system

As the previous chapter pointed out, the phonological system of Middle Chinese is one of the major kinds of evidence used to reconstruct Old Chinese. This chapter describes the available evidence about Middle Chinese, summarizes its phonological structure, and introduces a transcription for (Early) Middle Chinese.

The transcription for Middle Chinese introduced here requires some explanation. Research in Chinese historical phonology has been severely hampered by the lack of a convenient and adequate notation for Middle Chinese pronunciation. Karlgren's "Ancient Chinese", because of its availability in a number of reference works,[23] has become a kind of de facto standard, but this is in many ways unfortunate. Despite its historical importance as the first attempt at a detailed phonetic reconstruction of Middle Chinese, Karlgren's system is both inconvenient and seriously flawed. Some of the flaws are corrected in more recent proposed reconstructions,[24] but I know of no reconstruction which is entirely suitable as a standard notation; along with much that is uncontroversial, each system includes its author's solutions to problems on which no consensus has been reached, and each would probably be unacceptable to others in the field. This dilemma can perhaps be resolved if we distinguish transcription from phonological reconstruction. The notation I introduce here is not intended as a reconstruction; rather it is a convenient transcription which adequately represents all the phonological distinctions of Middle Chinese while leaving controversial questions open. It is my hope that it will be acceptable and useful as a common notation for scholars who may disagree on the details of Middle Chinese reconstruction. (Even those who may not wish to adopt it as a standard notation may find it useful for some purposes since, with certain simple substitutions, it can be made fully typable and is thus easy to use in computer applications.) There is no reason why we should be without a satisfactory notation for Middle Chinese while waiting for the remaining controversial points of interpretation to be resolved.[25]

To explain the need for a notation other than Karlgren's, I summarize here the major disadvantages of Karlgren's Ancient Chinese reconstruction.

First, Karlgren failed to mark certain distinctions which are clearly indicated in the Early Middle Chinese sources and are relevant to Old Chinese reconstruction. For example:

1. Karlgren failed to distinguish the *Qièyùn*'s 脂 Zhī and 之 Zhī rhymes, both of which he reconstructed as *-i*; for example, he reconstructed both the following words as *kji*, even though the first is in the 脂 Zhī rhyme and the second in the 之 Zhī rhyme (my transcriptions are given for comparison):

(10) 飢 *jī* 'famine' (Karlgren's *kji*, my *kij*)

(11) 箕 *jī* 'winnowing basket' (Karlgren's *kji*, my *ki*)

2. Karlgren failed to distinguish the *Qièyùn*'s 佳 Jiā and 夬 Guài rhymes, both of which he reconstructed as *-(w)ai*; for example, he reconstructed both the following words as *kwai-*, even though the rhyme books put them in different rhymes:

(12) 卦 *guà* 'prognosticate with yarrow stalks' (Karlgren's *kwai-*, my *kwɛiH*)

(13) 夬 *guài* 'divide, make a breach' (Karlgren's *kwai-*, my *kwæjH*)

3. Karlgren failed to distinguish the so-called *chóngniǔ* 重紐 doublets found in certain *Qièyùn* rhymes (discussed in more detail in section 2.4.1.4); for example, Karlgren reconstructed both the following words as *mi̯ĕt*, even though they are listed separately in the *Qièyùn*, and given distinct *fǎnqiè* spellings:

(14) 密 *mì* 'dense' (Karlgren's *mi̯ĕt*, my *mit*)

(15) 蜜 *mì* 'honey' (Karlgren's *mi̯ĕt*, my *mjit*)

Second, as noted in Chapter 1, Karlgren paid little attention to the distribution of the elements he reconstructed, or to whether they were distinctive or not. He described phonemic analysis as a "craze" in which one attempts "to write a given language with as few simple letters as possible, preferably no other than those to be found on an American typewriter" (1954: 366). This view often led him to mark spurious distinctions between sounds which he apparently believed to be phonetically different, even though they were probably phonologically (and perhaps phonetically) identical. For example, Karlgren's Ancient Chinese vowels *-e-* and *-ā-* are in complementary distribution, since *-e-* occurs only after *-i-*, while *-ā-* occurs only after *-i̯-*. (Karlgren described *-i-* as a "strong vocalic" medial, *-i̯-* as a "weak consonantal" one.) Moreover, words with Karlgren's *-e-* and words with Karl-

gren's *-ä-* appear to rhyme freely with each other in poetry of the Middle Chinese period. The following pair illustrates these vowels as reconstructed by Karlgren:

(16) 先 *xiān* 'first', Karlgren's *sien* (my *sen*)

(17) 仙 *xiān* 'an immortal', Karlgren's *si̯ān* (my *sjen*).

All evidence appears to indicate that these two words actually had the same main vowel in Early Middle Chinese, and differed only in the preceding medial; accordingly, I write them *sen* and *sjen,* respectively. Karlgren's reconstruction, in which the words appear to have both different medials and different main vowels, obscures both the phonological structure of Middle Chinese and the rhyming patterns of Middle Chinese poetry.

Third, not only did Karlgren use more than one symbol for the same vowel in some cases; in other cases, he used the same symbol for vowels which are clearly different. This is probably because he failed to recognize the distinction between Early Middle Chinese and Late Middle Chinese. For example, Karlgren reconstructed the same main vowel *-ə-* in both the following words:

(18) 根 *gēn* 'root', Karlgren's *kən* (my *kon*)

(19) 斤 *jīn* 'axe; catty', Karlgren's *ki̯ən* (my *kjin*)

His reconstruction makes it appear that the two words would make a good rhyme. This may have been true for Late Middle Chinese,[26] but in Early Middle Chinese, rhymes of this type are quite rare. Instead, the overwhelming tendency in Early Middle Chinese is for Karlgren's *-ən* and *-uən* to rhyme with the finals he reconstructed as *-i̯ɒn* and *-i̯wɒn*, not with his *-i̯ən* and *-i̯uən* (for Suí dynasty data see Lǐ Róng 1961–62 [1982]: 167–82). This probably indicates that in Early Middle Chinese, Karlgren's finals *-ən* and *-uən* had the same main vowel as his finals *-i̯ɒn* and *-i̯wɒn*; accordingly, in my notation I write the former as *-on* and *-won,* the latter as *-jon* and *-jwon.* The *-o-* in these finals is probably best interpreted as a mid back unrounded vowel [ʌ].

The fourth problem is of less theoretical importance, but a great practical disadvantage: it is that Karlgren's symbols are difficult to handle typographically, especially on a typewriter or computer. Moreover, they are confusing and even misleading to nonspecialists, who have difficulty reproducing them accurately and are tempted to simplify his notation by ignoring some of its troublesome distinctions. The problem is that although some of Karlgren's diacritics are superfluous and safely omitted, others, though not

visually salient, mark crucial distinctions. For example, removing the diacritics from Karlgren's *ljĕn* (my *lin*) makes it look like the quite different syllable written by him as *lien* (my *len*).

The system for Middle Chinese transcription introduced here is designed to avoid these disadvantages. Its major features are the following:

1. It represents all the distinctions of the *Qièyùn* phonological system, including those ignored by Karlgren.

2. By using a few straightforward substitutions, it can be made fully typable, using only characters available on ordinary typewriters and computer keyboards, without diacritics, overstrikes, superscripts, or subscripts. In this typable version of the transcription, all the symbols used have standard ASCII codes, and can be used in any standard word-processing or database software. We may wish for a day when the computer world agrees on a standard way to handle diacritics and phonetic symbols, but that day has not yet come; until it does, the desire to use only symbols found on an American typewriter, though ridiculed by Karlgren, deserves to be taken seriously in designing a practical transcription system. But even aside from mechanical convenience, avoiding diacritics and minimizing special symbols makes the notation easier to read and remember, especially for nonspecialists.

3. Because the number of available symbols is limited, letters are used to represent features which Karlgren represented with diacritics. For example, *-y-* is used as a general sign for palatalization: Karlgren's palatal *ɕ-* is written *sy-*.

4. All syllables in the same *Qièyùn* rhyme are written with the same main vowel. The converse is not true: syllables found in different *Qièyùn* rhymes do not necessarily have different main vowels. For example, 先 *xiān* < *sen* 'first' and 仙 *xiān* < *sjen* 'immortal', cited above, are written with the main vowel *-e-*, even though they are in different *Qièyùn* rhymes, because they rhyme in Suí dynasty poetry.

I emphasize again that the Middle Chinese transcription proposed here is not intended as a reconstruction of any synchronic state of the Chinese language. A number of its notations are merely representations, more or less arbitrary, of distinctions which are preserved in the Chinese phonological tradition. Indeed, given the fact that the *Qièyùn* probably represented more distinctions than were preserved in any single dialect (see section 2.2.1.1 below), it may be that no true linguistic reconstruction should include all of

its distinctions. What the proposed notation does is represent, in compact and reasonably realistic form, the phonological information provided for each word by the native linguistic tradition.

Section 2.2 below discusses the Middle Chinese rhyme books and rhyme tables. My Middle Chinese transcription is presented in detail in section 2.3 (on Middle Chinese initials) and section 2.4 (on Middle Chinese finals). Although the details of the transcription are not presented until sections 2.3 and 2.4, I will use it in citing examples in section 2.2, since this will make the discussion of the rhyme books and rhyme tables easier to follow. To make these examples clearer, I will first summarize here some of the notational conventions of the transcription:

1. The initial *ʔ-* represents a glottal stop [ʔ]; when this symbol is not available, an apostrophe *'-* may be substituted. An initial letter *h-* represents a voiced guttural initial, probably [ɦ] or [ɣ].

2. Secondary features of articulation in initials are represented by letters rather than diacritics. Thus *-y-* represents palatal articulation: *sy-* is equivalent to Karlgren's *ś-*, and so on. Similarly, *-r-* represents retroflex articulation, and serves the function of Karlgren's subscript dot.[27]

3. When a palatal initial spelled with *-y-* occurs with a final whose first letter is normally *-j-*, the *-j-* is omitted: thus the syllable consisting of the initial *tsy-* plus the final *-jang* is written as *tsyang*, not *tsyjang*. This convention simplifies the spelling of syllables, and involves no loss of contrast, for the palatal initials occur only with finals beginning with *-j-* or *-i-* (and *-ji-* never contrasts with *-i-* after palatals).

4. Conventions for main vowels are: (1) The symbol *-æ-* may be interpreted as a low front (unrounded) vowel [æ]; when this symbol is not available, the digraph *-ae-* may be substituted. (2) The symbol *-ɛ-* may be interpreted as an open mid front (unrounded) vowel [ɛ]; when this symbol is not available, the typable digraph *-ea-* may be substituted. (3) The barred-*i* symbol *-ɨ-* is used for a high central unrounded vowel [ɨ]; when this symbol is unavailable, a plus sign *-+-* may be substituted. (4) The letter *-o-* is usually best interpreted as a mid back unrounded vowel [ʌ].

5. The traditional tone categories *píng* 平 'level', *shǎng* 上 'rising' or 'up', *qù* 去 'departing', and *rù* 入 'entering' are identified by the last letter of the syllable; no diacritics are used. *Shǎngshēng* is marked by a suffixed *-X*, and *qùshēng* by a suffixed *-H*. (The use of small capitals for tone marks is optional, but helps to distinguish these symbols from the initial consonants

written *x-* and *h-* respectively.) *Rùshēng* words are those ending in *-p, -t,* or *-k*; syllables not ending with *-X, -H, -p, -t,* or *-k* are *píngshēng*.

2.2. Major sources of evidence on Middle Chinese

Traditional Chinese phonological texts dating from the Middle Chinese period are so abundant and detailed that the usual practice, from Karlgren's time to the present, has been to use them as the primary basis for reconstructing the phonological categories of Middle Chinese, and to use other evidence—principally the modern Chinese dialects and Chinese loan words in other languages—in an auxiliary way, to fill in the phonetic values of these categories. The principal written sources used are (1) the rhyme books (*yùnshū* 韻書) of the *Qièyùn* tradition, which arrange words by rhyme and indicate the pronunciation of each syllable (in a manner to be described below); and (2) rhyme tables (*yùntú* 韻圖) such as the *Yùnjìng* 韻鏡, which plot syllables on a grid according to their initials and finals. These two types of evidence are discussed in sections 2.2.1 and 2.2.2 respectively.

There is some justification for this heavy reliance on written sources, since the rhyme books and rhyme tables often preserve evidence of distinctions which remain only incompletely, if at all, in the modern dialects, and could not be recovered by comparative reconstruction alone. The so-called *chóngniǔ* distinctions mentioned in section 2.1 are a good example: the words 密 *mì* < *mit* 'dense' and 蜜 *mì* < *mjit* 'honey', and many similar pairs of words, are systematically distinguished in the rhyme books and rhyme tables, and there is ample evidence that these distinctions were real. But the distinctions have been almost entirely lost in modern dialects, and would be difficult to recover without the written sources. At the same time, these distinctions are crucial, I believe, for a correct reconstruction of the Old Chinese vowel system.

However, the dangers of relying primarily on written evidence should be kept in mind. There is good reason to believe that some of the distinctions made in traditional phonology were artificial or incorrect. For example, the Early Middle Chinese initials which I write as *dzy-* and *zy-* appear to have been reversed by mistake in the rhyme-table tradition, so that the former was treated as a fricative and the latter as an affricate. This error probably occurred because the two initials had merged in most dialects by the Late Middle Chinese period (see section 2.3.6 below). Furthermore, the written evidence does not represent all dialects equally, and may be irrelevant or misleading when applied to the history of certain modern dialects (such as

those of the Mǐn group). Although in this study I continue a more or less traditional approach to Middle Chinese based primarily on written sources, further research on modern dialects may turn out to be an important corrective to the possible biases of this approach.

2.2.1. Rhyme books

Rhyme books are known by title from as early as the Wèi-Jìn period (A.D 220–420), but the most important part of the rhyme-book tradition is a series of rhyming dictionaries beginning in A.D. 601 with the *Qièyùn* 切韻 by Lù Fǎyán 陸法言 of the Suí dynasty (581–618). Although the rhyme books may originally have been intended simply as aids in writing poetry, they gradually took on many of the characteristics of general-purpose dictionaries, providing information on the pronunciations, meanings, and written forms of the literary Chinese vocabulary of the time.

Pronunciations in the rhyme books were indicated by the method known as *fǎnqiè* 反切 (translated by Karlgren as "turning and cutting", 1954: 213). A *fǎnqiè* spelling represents the pronunciation of a character by the use of two other characters: an initial speller, having the same initial consonant as the word being spelled, and a final speller, having the same final. For example, the word 東 *dōng* < MC *tuwng* 'east' is spelled 德紅, that is, "*dé* + *hóng*", or in Middle Chinese pronunciation, *t(ok)* + *(h)uwng*, indicating the combination of the initial *t-* with the final *-uwng*. Well-known characters were used as spellers whenever possible, so that readers could construct the pronunciation of an unfamiliar word from the pronunciations of words they already knew.

The method of *fǎnqiè* spelling is thought to have originated during the second century A.D.—possibly influenced by knowledge of Indian phonology. Before it was introduced, the only known way to indicate the pronunciation of a character was to give a homophonous character; where no homophone could be found (or none that the reader was likely to know), it was necessary to rely on near-homophones. This method (called *zhíyīn* 直音 'direct sounds') was widely used in Hàn-dynasty commentaries on the classics. *Fǎnqiè* spellings were a great advance in precision.[28]

All the rhyme books in the *Qièyùn* tradition have a similar organization, which may be summarized as follows:

1. *Tone groups.* Each rhyme book is divided into four main sections, one for each of the tones of Middle Chinese, in a conventional order: *píngshēng* 平聲 'even tone', *shǎngshēng* 上聲 'rising' or 'up tone', *qùshēng* 去聲

'departing tone', and *rùshēng* 入聲 'entering tone'. Most rhyme books assign one *juàn* 卷 ('fascicle') to each tone, except that the *píngshēng* section is divided into two *juàn* because of its length (*píngshēng* having more characters than any other tone).

2. *Rhymes*. Each tone group is subdivided into rhymes which are conventionally identified by their first entry: the 東 Dōng rhyme is the rhyme whose first word is 東 *dōng* < *tuwng* 'east', and so on. All the characters in a *Qièyùn* rhyme are assumed to have rhymed with each other, but they did not necessarily have identical finals: the 東 Dōng rhyme, for example, includes words with the two Middle Chinese finals *-uwng* and *-juwng*.

Generally speaking, each *píngshēng* rhyme has corresponding rhymes in *shǎngshēng* and *qùshēng*. Rhymes ending in nasal codas also have a corresponding rhyme in *rùshēng*, which ends in the corresponding voiceless stop; for example, MC *-et* is considered the *rùshēng* counterpart of MC *-en* (*píng*), *-enX* (*shǎng*), and *-enH* (*qù*). For convenience, the head character of the *píngshēng* rhyme is often used to refer to the whole set of corresponding rhymes regardless of tone. For example, "東 Dōng" sometimes refers not just to the first rhyme of the *píngshēng* section, but also, in a broader sense, to the corresponding rhymes in *shǎngshēng* and *qùshēng*: 董 Dǒng (containing words with finals *-uwngX* and *-juwngX*) and 送 Sòng (containing words with finals *-uwngH* and *-juwngH*); and sometimes also to the corresponding *rùshēng* rhyme 屋 Wū (containing words with finals *-uwk* and *-juwk*). The order of the rhymes is basically the same in all four tones; that is, the first rhyme in the *píngshēng* section corresponds to the first rhymes of *shǎngshēng*, *qùshēng*, and *rùshēng*, etc. But there are some anomalies which disturb this simple ordering. For example, in the *Qièyùn*, there are four rhymes which occur only in *qùshēng*: 祭 Jì, 泰 Tài, 夬 Guài, and 廢 Fèi.

The order of rhymes within a tone group does not follow any obvious order, except that similar rhymes are grouped together. For example, the 陽 Yáng rhyme (containing words with the finals *-jang* and *-jwang*) and the 唐 Táng rhyme (containing words with the finals *-ang* and *-wang*) are adjacent, reflecting the fact that all four of these finals normally rhymed with each other freely in poetry of the time. The words used as labels of the rhymes also seem to have some significance: when the labels of adjacent rhymes begin with the same Middle Chinese initial, this is probably an indication that the two rhymes were similar or perhaps, in some contemporary dialects, identical. For example, the rhymes labeled 先 Xiān (MC *sen*) and 仙 Xiān (MC *sjen*) are adjacent, and their first characters both begin with *s-*; the

words in these two rhymes rhymed freely with each other in Middle Chinese times, and the distinction between them was eventually lost in most dialects. Similarly, the 刪 Shān (MC *sræn*) and 山 Shān (MC *srɛn*) rhymes are adjacent, and their first characters both begin with *sr-*; they, too, eventually merged in most dialects, and this merger may already have taken place in some dialects by the time of the *Qièyùn*.[29]

3. *Homophone groups.* Within each rhyme, words which are completely homophonous are grouped together in homophone groups. Under each character a gloss is given, sometimes very brief, sometimes (especially in the later books of the tradition) longer, with references to the character's use in ancient literature. In addition, under the first character in each homophone group, the pronunciation of the words in the group is indicated by a *fǎnqiè* spelling of the form "*A B* fǎn 反" or "*A B* qiè 切", where *A* is the initial speller and *B* the final speller (see above). The number of characters in the homophone group is also given in the entry for the first character. If a character has more than one pronunciation, this fact may be indicated in one or both of the following ways: (1) the same character may appear in more than one homophone group, or (2) a character's entry in one homophone group may give an additional pronunciation, indicated either by a *fǎnqiè* spelling or by a homophonous character. The arrangement of homophone groups within a rhyme follows no obvious principle, though there are occasional patterns of some interest.

2.2.1.1. The Qièyùn

Regarding the origins of the *Qièyùn* and the way in which it was compiled, we are fortunate in having Lù Fǎyán's own preface to the *Qièyùn,* dated A.D. 601. Although Lù Fǎyán was responsible for the final compilation of the work, the original draft, begun some twenty years earlier, is said to represent the judgments of a group of scholars who met at Lù Fǎyán's home. Lù describes how the *Qièyùn* grew out of their discussions:

> In the evening, after they had enjoyed their wine, their discussions always turned to phonology. Differences obtained between the pronunciations of the past and the present and different principles of selection were followed by the various authors....
>
> The *Yùnjí* 韻集 by Lǚ Jìng 呂靜, the *Yùnlüè* 韻略 by Xiàhóu Gāi 夏侯該, the *Yùnlüè* 韻略 by Yáng Xiūzhī 陽休之, the *Yīnpǔ* 音譜 by Lǐ Jìjié 李季節, and the *Yùnlüè* 韻略 by Dù Táiqīng 杜臺卿 all

> contain forms which are mutually inconsistent. The rhymes used in the South also differ widely from those used in the North. And so we discussed the right and the wrong of South and North, and the prevailing and the obsolete of past and present; wishing to present a more refined and precise standard, we discarded all that was ill-defined and lacked preciseness. The *wàishǐ* 外史 Yán Zhītuī 顏之推 and the *guózǐ* 國子 Xiāo Gāi 蕭該 were responsible for most of these judgments.
>
> The *zhùzuò* 著作 Wèi Yànyuān 魏彥淵 said to me, Fǎyán 法言: "Now that all doubtful cases have been solved through our recent discussions, why not write it all down in accordance with our discourses? Let us few friends settle these matters once and for all." And so I grasped my brush, and aided by the light of a candle, I wrote down a draft summary, which eventually was perfected through wide consultation and penetrating research. (Adapted from Zhōu Zǔmó 1968: 35)

The five works mentioned by Lù in the second paragraph were earlier rhyme books, now no longer extant. Although they are mentioned in the writings of the time, we know very little about them other than their names and authors. The most solid information we have about their contents comes from a manuscript of a later version of the *Qièyùn* (that of Wáng Rénxū—see below) in which the rhymes of the *Qièyùn* are listed and compared with those of earlier rhyme books. In general, the *Qièyùn* seems to maintain all the rhyming distinctions made in any one of the earlier works.

There has been much debate about precisely what language is represented in the *Qièyùn*. Was it the speech of a particular place and time, or did it include distinctions made in various different places, possibly at different times? Especially important is the question of whether the phonological system represented was artificial and arbitrary, or whether it accurately reflected, in one way or another, the linguistic reality of the time.

On this point, Karlgren, without really giving any arguments, took the view that the language represented in the *Qièyùn* was

> essentially the dialect of Ch'ang-an in Shensi; during the lapse of the T'ang era it became a kind of Koine, the language spoken by the educated circles in the leading cities and centres all over the country, except the coastal province of Fukien. (Karlgren 1954: 212)

Cháng'ān (now Xī'ān) was the capital of the Suí and Táng dynasties, and since the *Qièyùn* was written in the Suí dynasty, it may seem logical that the *Qièyùn* authors would have taken its dialect as their standard. However, there are strong arguments against this view. The Suí dynasty reunited

China only in 590--actually after the time, according to the *Qièyùn* preface, when the *Qièyùn* authors were beginning their nocturnal phonological discussions. As pointed out by Chén Yínkè (1949) and Zhōu Zǔmó (1963 [1966]), the dialect of Cháng'ān may have enjoyed less prestige at the time than those of other major cultural centers farther east—Luòyáng 洛陽, Yè 鄴 (in southern Héběi), and Jīnlíng 金陵 (modern Nanjing). In a work of his own, Yán Zhītuī (531–595), one of the *Qièyùn* authors whom Lù Fǎyán credits with making most of the judgments, speaks favorably of the speech of Luòyáng and Jīnlíng, but does not mention Cháng'ān. None of the *Qièyùn* authors was from Cháng'ān; three were from Jīnlíng, the rest from Yè. Moreover, we have independent sources of information about the Cháng'ān dialect which show a number of important differences from the language represented in the *Qièyùn* (K. Chang 1974: 67–69). Indeed, the *Qièyùn* preface itself strongly suggests that the intention of the authors was to establish a national standard which was not fully embodied in the speech of any single place. This would explain the fact that the *Qièyùn* maintained all the rhyme distinctions made in any one of the earlier rhyme books.

Although we cannot assume that the *Qièyùn* represented the language of a single place and time, the phonological system it represented may have been no more artificial than that represented in, say, an ordinary American dictionary. Typically, the pronunciations indicated in American dictionaries include more distinctions than are preserved in any one variety of English; thus they include both the distinction between [hw] and [w] (made by some Americans, but not preserved in standard British English) and the distinction between "broad a" as in *father* and "short o" as in *cot* (preserved in standard British English but not in most varieties of American English). The resulting system may not exactly represent the pronunciation of any single area, but it is far from artificial.[30]

Thus the artificiality of the *Qièyùn* standard should not be exaggerated. Some later scholars, such as the Qīng scholar Dài Zhèn 戴震 (1723–1777), suspected that many of the distinctions in the *Qièyùn* were without objective foundation; the existence of roughly two hundred separate rhyme groups (counting each tone separately) seemed implausible (Wáng Lì 1936–37 [1957]: 245–6). But most of the fine distinctions made in the *Qièyùn* can be confirmed by other evidence from approximately the same period, such as the *Yùpiān,* the *Jīngdiǎn shìwén,* and Xuányìng's *Yíqiè jīng yīnyì* (Zhōu Zǔmó 1963 [1966], Zhōu Fǎgāo 1948b [1968]; on these sources, see section 2.2.1.3 below). As Pulleyblank puts it:

> It may be that no one dialect in A.D. 600 retained all the distinctions made by the Ch'ieh-yün but we may feel reasonably sure that all the distinctions were to be found currently in some variety of cultivated speech. (Pulleyblank 1962: 65)

(For more detailed discussion of the *Qièyùn* and the language it represents, see Zhōu Zǔmó 1963 [1966] and K. Chang 1974.)

2.2.1.2. Revisions of the Qièyùn

From contemporary sources we know of a number of revisions of the *Qièyùn* made during the Táng and Sòng dynasties. The major versions are listed in Table 2.1 (adapted from K. Chang 1974: 74). In modern times, the *Guǎngyùn* 廣韻 (1007–8) and the *Jíyùn* 集韻 (1038–9) were the only available versions for many years. The *Guǎngyùn* was compiled under imperial auspices in the Sòng dynasty (960–1279) by a group of scholars led by Chén Péngnián 陳彭年 (961–1017) and Qiū Yōng 邱雍. The *Jíyùn* was a revision of the *Guǎngyùn* compiled by Dīng Dù 丁度 (990–1053) later in Sòng. Unfortunately, the phonological value of the currently available version of the *Jíyùn* is greatly diminished by many obvious errors which probably crept in after the original version (Wáng Lì 1981: 72–74). The *Guǎngyùn,* the earlier of the two versions, has been assumed—correctly, as it turned out—to preserve the phonological categories of the original *Qièyùn* almost entirely intact, in spite of the passage of four centuries; and since the earlier rhyme books had all been lost, studies of *Qièyùn* phonology were really based until recently on the *Guǎngyùn.*

Since 1900, however, portions of some of the earlier versions have become available. Rhyme book fragments were discovered in the Dūnhuáng caves and in Turfan; others turned up in Beijing. Most were manuscripts, although some printed versions were found also. Wáng Guówéi 王國維 (1877–1927) argued that two of the three *Qièyùn* fragments from Dūnhuáng in the British Museum were from Zhǎngsūn Nèyán's version, and that the other represented Lù Fǎyán's original version (quoted in Wáng Lì 1936–37 [1957]: 178–80). Wáng Rénxū's "corrected and supplemented" edition was represented by fragments from Dūnhuáng and the Former Palace Museum (Gùgōng Bówùyuàn 故宮博物院) in Beijing. Fragments of the *Tángyùn* also came to light. A parallel edition of the available fragments and the *Guǎngyùn* was published in 1937, with the title *Shíyùn huìbiān* 十韻彙編 [Collected edition of ten rhyme books] (Liú, Luó, & Wèi 1937).

Table 2.1. Principal versions of the *Qièyùn*

Date	*Principal author(s)*	*Title*
601	Lù Fǎyán 陸法言	*Qièyùn* 切韻
677	Zhǎngsūn Nèyán 長孫訥言	*Qièyùn* 切韻
706	Wáng Rénxū 王仁煦	*Kānmiù bǔquē Qièyùn* 刊謬缺切韻 [Corrected and supplemented *Qièyùn*]
720	Sūn Miǎn 孫愐	*Tángyùn* 唐韻 (first version)
751	Sūn Miǎn 孫愐	*Tángyùn* 唐韻 (second version)
763–84	Lǐ Zhōu 李舟	*Qièyùn* 切韻
1007–8	Chén Péngnián 陳彭年, Qiū Yōng 邱雍	*Guǎngyùn* 廣韻 [Broad rhymes]
1038–9	Dīng Dù 丁度	*Jíyùn* 集韻 [Collected rhymes]

(Adapted from K. Chang 1974: 74)

The most dramatic discovery, however, came in 1947 when an almost entirely complete manuscript of Wáng Rénxū's edition was discovered in the Former Palace Museum in Beijing (Zhōu Zǔmó 1966c). This version has been studied by Dǒng Tónghé (1948b [1974], 1952 [1974]) and by Lǐ Róng (1956); a critical edition by Lóng Yǔchún (1968) has also been published.

The various revisions of the *Qièyùn* were made not only to correct errors in the original version, but also to include more words and more information about each word. The main purpose of the original *Qièyùn* authors seems to have been to establish a standard phonological system, not primarily to write a dictionary; the glosses are sometimes extremely brief even in the *Guǎngyùn,* and even more so in earlier versions. The extra material inserted in the later versions served mostly to make the work more useful as a dictionary.

The phonological system of the original version remained largely unchanged, at least down to the *Guǎngyùn*; the *fǎnqiè* spellings used in later versions were almost always equivalent, if not identical, to the original ones. The total number of rhymes was increased from an original 193 in the *Qièyùn* to 206 in the *Guǎngyùn,* but this probably has no phonological significance; the changes involved either the filling of accidental gaps or the

separation into different rhymes of finals which, although distinguished already in the earlier versions, had been put in the same rhyme. (For example, the Middle Chinese finals *-an* and *-wan* were put in the same rhyme in the *Qièyùn,* but in separate rhymes in the *Guǎngyùn.*) The only important phonological difference between earlier and later versions appears to be that MC *dzr-* and *zr-,* which were still distinguished in Wáng Rénxū's version, were not distinguished in the *Guǎngyùn* (Dǒng Tónghé 1952 [1974]: 517–18).

In this study, most Middle Chinese readings are taken from the *Guǎngyùn,* which is still the most convenient rhyme book to use because of the existence of indexed versions and the relative lack of textual problems.

2.2.1.3. Other sources of fǎnqiè *spellings*

In addition to the rhyming dictionaries, there are several other important works of the Middle Chinese period which give *fǎnqiè* spellings. I will discuss some of the major ones below.

The *Jīngdiǎn shìwén* 經典釋文 by Lù Démíng 陸德明 contains notes on the pronunciation of words in fourteen classical texts.[31] Although Lù Démíng is usually described as a man of the Táng dynasty (618–907), he lived from about 550 to 630, and the *Jīngdiǎn shìwén* was probably written in 583, actually before the *Qièyùn* (see Lín Tāo 1962, Zhōu Zǔmó 1966a: 275, Wáng Lì 1981: 63). In this work, pronunciations are given (usually by means of *fǎnqiè* spellings) for difficult words in the classical texts, or for words with unusual readings. Lù Démíng refers to many philological works of the preceding centuries, many of which are now lost and known only from the *Jīngdiǎn shìwén.* The phonological system represented is very close to that of the *Qièyùn,* with a few differences probably characteristic of the educated speech of the Wú 吳 area, Lù Démíng's home.[32] In reconstructing the pronunciations of rhyme words in the *Shījīng,* I generally follow the readings of the *Jīngdiǎn Shìwén,* except where it lacks distinctions made in the *Qièyùn.*

Another major source on Early Middle Chinese is the *Yùpiān* 玉篇, compiled in 543 by Gù Yěwáng 顧野王 (519–581). The *Yùpiān* was a dictionary modeled on the *Shuōwén jiězì* in which characters were arranged under 542 radicals.[33] A *fǎnqiè* spelling was given under each character. The original *Yùpiān* was a large and unwieldy work of thirty *juàn,* and during Táng and Sòng various abridgements and revisions of it were made, which often altered the original *fǎnqiè* spellings; of the original version only frag-

ments remain (some two thousand entries out of a reported original total of 16,917), and the currently-available version of the *Yùpiān* is not a reliable guide to Early Middle Chinese phonology.

However, the Japanese monk Kūkai 空海 (774–835), who went to China in 804, used the original *Yùpiān* as the basis for his character dictionary *Tenrei Banshō Meigi* 篆隷萬象名義. According to Zhōu Zǔmó's study of this work (1966a), comparison of its *fǎnqiè* with those which remain of the original *Yùpiān* shows that they faithfully preserve the original phonological system of the *Yùpiān*. Zhōu Zǔmó's analysis of these *fǎnqiè* reveals a phonological system very close to that of the *Jīngdiǎn Shìwén*; the major difference is that the *fǎnqiè* of the *Banshō meigi* apparently reflect the split of labial initials *p-*, *ph-*, and *b-* into labial and labiodental series.[34]

Several other works which include *fǎnqiè* spellings are important to the study of Middle Chinese and its varieties, but can be mentioned only briefly here. One such work is the *Yīqiè jīng yīnyì* 一切經音義, completed about 655 by the monk Xuányìng 玄應, a disciple of the famous Xuánzàng 玄奘 who brought Buddhist scriptures from India. This work provides *fǎnqiè* spellings for various texts in the Buddhist canon (see Zhōu Fǎgāo 1948b [1968]). About a century later, the monk Huìlín 慧琳 produced a similar but larger work of the same title (see Huáng Cuìbó 1930).

2.2.2. The rhyme-table tradition

The rhyme-table tradition is called in Chinese *děngyùnxué* 等韻學 'study of divisions and rhymes'. (On the meaning of "divisions" see below.) It consists of a number of phonological tables and an accompanying literature which probably began to develop in late Táng. The stage of the language represented by the rhyme tables (Late Middle Chinese) differs somewhat from the language of the *Qièyùn*; but the rhyme tables, if carefully used, are still very useful in reconstructing Early Middle Chinese, and much of their terminology is applicable to the Early Middle Chinese stage.

The earliest extant rhyme tables, and the most useful for the study of Early Middle Chinese, are the *Yùnjìng* 韻鏡 [Mirror of rhymes] and the *Qīyīn lüè* 七音略 [Summary of the seven sounds]. I will refer to these as the early rhyme tables, in contrast to other later tables which are less useful for studying the Early Middle Chinese period.

The available version of the *Yùnjìng* was published by Zhāng Línzhī 張麟之, who wrote two prefaces to it, dated 1161 and 1203. The *Qīyīn lüè* was included by the Sòng dynasty scholar Zhèng Qiáo 鄭樵 (1108–1166) in his

encyclopedia, the *Tōngzhì* 通志. (For a detailed discussion see Luó Chángpéi 1935.) It has been shown that both works represent a single pre-Sòng tradition. I will briefly describe the arrangement of the *Yùnjìng* here in order to give a more precise idea of what a rhyme table is. Most of the discussion applies also to the *Qīyīn lüè*, which is very similar.

The *Yùnjìng* consists of forty-three charts or *zhuǎn* 轉 (literally, 'turns') in which the syllables of the rhyme book tradition are tabulated according to their phonological characteristics. Each of the forty-three charts tabulates the occurrences of a set of finals with the various possible initials, in all tones. Within a particular chart, characters are placed in the row corresponding to their final and in the column corresponding to their initial.

2.2.2.1. Representation of finals in the Yùnjìng

As many as four different finals (not counting tonal distinctions) may be listed in a single chart of the *Yùnjìng*, but the finals in any one chart all have the same coda (except that *rùshēng* has a final voiceless stop where the other tones have a final nasal), and probably had similar main vowels in Late Middle Chinese. Each chart is described as *nèizhuǎn* 內轉 'inner *zhuǎn*' or *wàizhuǎn* 外轉 'outer *zhuǎn*'—terms whose meaning is not completely clear.[35] In addition, the terms *kāi* 開 'open' and *hé* 合 'closed' (abbreviations of *kāikǒu* 開口 'open mouth' and *hékǒu* 合口 'closed mouth') are used to indicate the presence or absence of medial *-w-* before the main vowel: *hékǒu* indicates a medial *-w-*, *kāikǒu* indicates the absence of *-w-*. These terms will be used frequently throughout this study.[36]

Each chart has sixteen rows in four groups of four rows each. Each group of four rows corresponds to one of the four tones. The four rows within each tone category are called *děng* 等 'divisions' (or 'grades') and are commonly referred to by number: division I, division II, division III, and division IV.

The phonetic significance of these "divisions" is a much-debated problem on which the Chinese phonological tradition itself sheds little direct light. Most modern researchers, working from dialect reflexes, assume that (for the stage of the language represented by the rhyme tables) divisions III and IV had some kind of high front medial, while divisions I and II did not. There is further agreement that the vowel in the division I finals was "dark" or pronounced farther back than in division II finals. The distinction between divisions III and IV has left almost no trace in modern dialects;

various interpretations of this distinction have been proposed, including differences in the medial, differences in the main vowel, or both.

Table 2.2 illustrates the placement of finals in the rows of two adjacent charts (numbers twenty-three and twenty-four) of the *Yùnjìng*. The finals are given in the notation for Middle Chinese to be introduced below. Table 2.3 illustrates the reflexes of these finals with velar initials in Mandarin and Cantonese.

2.2.2.2. *Representation of initials in the* Yùnjìng

Each chart in the *Yùnjìng* has twenty-three columns which indicate the initials of the syllables in the table.[37] The twenty-three columns are separated into groups which correspond to positions of articulation: labials, dentals, and so on. Within each of these groups, the initials are ordered according to their manner of articulation. For example, the first four columns of each table include words with labial initials, in the following order: *p-* (voiceless unaspirated stop), *ph-* (voiceless aspirated stop), *b-* (voiced stop), and *m-* (nasal); the order in the other groups is parallel. There are traditional terms for both the positions and the manners of articulation, which differ somewhat from one rhyme table to another.

The rhyme-table tradition also includes a list of thirty-six traditional names for initial consonants (called *zìmǔ* 字母 'mothers of characters'), but these are not present in the *Yùnjìng* itself. This list does not entirely correspond to the set of Early Middle Chinese initials which can be derived from analysis of the *fǎnqiè* spellings of the rhyme book tradition, for the thirty-six *zìmǔ* arose later than the rhyme books and probably reflect Late rather than Early Middle Chinese. Though the *Yùnjìng* combines the thirty-six initials into twenty-three columns, some later rhyme tables have thirty-six columns, one for each initial (e.g. the *Qièyùn zhǐzhǎngtú* 切韻指掌圖). The traditional thirty-six *zìmǔ*, along with the traditional terminology for positions and manners of articulation, are listed and discussed in section 2.3, where the Middle Chinese initials are described in more detail.

Table 2.2. Middle Chinese finals in two adjacent tables of the *Yùnjìng*

Tone	*Division*	Chart 23 *wàizhuǎn kāikǒu*	Chart 24 *wàizhuǎn hékǒu*
píngshēng	I	*-an*	*-wan*
	II	*-æn*	*-wæn*
	III	*-jen*	*-jwen*
	IV	*-en*	*-wen*
shǎngshēng	I	*-anX*	*-wanX*
	II	*-ænX*	*-wænX*
	III	*-jenX*	*-jwenX*
	IV	*-enX*	*-wenX*
qùshēng	I	*-anH*	*-wanH*
	II	*-ænH*	*-wænH*
	III	*-jenH*	*-jwenH*
	IV	*-enH*	*-wenH*
rùshēng	I	*-at*	*-wat*
	II	*-æt*	*-wæt*
	III	*-jet*	*-jwet*
	IV	*-et*	*-wet*

Table 2.3. The four divisions illustrated in Mandarin and Cantonese

Example	*Division*	*Middle Chinese*	*Mandarin*	*Cantonese*
肝 'liver'	I	*kan*	*gān*	*gòn*
姦 'adultery'	II	*kæn*	*jiān*	*gàan*
蹇 'lame'	III	*kjenX*	*jiǎn*	*gín*
肩 'shoulder'	IV	*ken*	*jiān*	*gìn*
官 'official'	I	*kwan*	*guān*	*gùn*
關 'to shut'	II	*kwæn*	*guān*	*gwàan*
卷 'roll up'	III	*kjwenX*	*juǎn*	*gyún*
涓 'streamlet'	IV	*kwen*	*juān*	*gyùn*

2.3. The initials of Middle Chinese

Table 2.4 lists the initials of Middle Chinese as they are written in my transcription. The symbols used in Table 2.4 have their standard phonetic values, with the following exceptions:

1. Aspiration of stops and affricates is indicated by the letter *-h-*; this *-h-* is equivalent to the [ʰ] or ['] of the International Phonetic Alphabet.
2. The letter *-r-* is not intended as a separate segment, but rather represents retroflex articulation of the preceding consonant.
3. Similarly, the letter *-y-* indicates palatal articulation of the preceding consonant.
4. Initial *h-* represents a voiced guttural fricative, probably [ɦ] or [ɣ] in the International Phonetic Alphabet (the exact position of articulation is unclear), in contrast to *x-*, which is voiceless.

Table 2.4. The initials of Middle Chinese

Labials:	*p-*	*ph-*	*b-*	*m-*			
Dentals:	*t-*	*th-*	*d-*	*n-*			
Lateral:						*l-*	
Retroflex stops:	*tr-*	*trh-*	*dr-*	*nr-*			
Dental sibilants:	*ts-*	*tsh-*	*dz-*		*s-*	*z-*	
Retroflex sibilants:	*tsr-*	*tsrh-*	*dzr-*		*sr-*	*zr-*	
Palatals:	*tsy-*	*tsyh-*	*dzy-*	*ny-*	*sy-*	*zy-*	*y-*
Velars:	*k-*	*kh-*	*g-*	*ng-*			
Laryngeals:	*ʔ-*				*x-*	*h-*	

As Table 2.4 shows, Middle Chinese had oral stops and affricates with three manners of articulation, which I represent as follows:

1. *Voiceless unaspirated.* The traditional term for this class is *quán qīng* 全清 'full clear'.[38] These initials normally remain as voiceless unaspirated in modern dialects.

2. *Voiceless aspirated.* The traditional term for this class is *cì qīng* 次清 'second clear'.[39] In my notation, aspiration is indicated by the letter *-h-*,

always written after any mark of secondary articulation such as *-y-* (palatalization) or *-r-* (retroflexion). (As an independent initial, however, *h-* represents a voiced guttural fricative; see above.) The voiceless aspirated initials normally have voiceless aspirated reflexes in modern dialects.

3. *Voiced.* The traditional term for voiced obstruents is *quán zhuó* 全濁 'full muddy'. Voiced resonants such as the nasals and *l-*, on the other hand, were described as *cì zhuó* 次濁 'second muddy'.[40] Karlgren reconstructed the "full muddy" stop and affricate initials as voiced aspirates, writing them *b'-*, *d'-*, *dz'-*, etc. There is little evidence for this aspiration, however, and I follow Lǐ Róng (1956) and others in representing these initials as simply voiced. The voiced initials have lost their voicing in most modern dialects, becoming aspirated or unaspirated according to tone and dialect. (For example, in Mandarin, voiced initials in *píngshēng* become voiceless aspirated, while voiced initials in other tones normally become voiceless unaspirated.) However, in the Wú dialects and a number of others (including some of the Xiāng or Húnán dialects), the voiced initials are preserved as a separate class.

We now turn to a more detailed discussion of the initials at each position of articulation. Along with my own notation, I will give the reconstructions of Karlgren (1954) and Pulleyblank (1984) for reference. I will also discuss the label or labels for each initial in the traditional list of thirty-six initials (*zìmǔ* 字母), and the conventional labels used for initials in Chinese-language phonological works.

2.3.1. Labials (*chúnyīn* 脣音 'lip sounds')

The labial initials of Middle Chinese are listed in Table 2.5.

Table 2.5. Middle Chinese labial initials

Baxter	Karlgren	Pulleyblank (EMC)
p-	*p-*	*p-*
ph-	*p'-*	*p'-*
b-	*b'-*	*b-*
m-	*m-*	*m-*

Notice that Early Middle Chinese had no labiodental initials like *f-* or *v-*; such initials developed under certain conditions from the bilabial initials in

most later varieties of Chinese, including the Late Middle Chinese represented in the rhyme tables. This change, which we may call **labiodentalization** (see Appendix A), may be formulated as follows:

$P \rightarrow F$ / ____ *j* [V, + back]

That is, Early Middle Chinese labial initials became labiodentals when followed by medial *-j-* and a back vowel (*-i-*, *-u-*, *-a-*, or *-o-* in my notation).

This formulation of labiodentalization is due to Y. R. Chao (1941). Chao expressed doubts about this formulation because some syllables which Karlgren reconstructed with back vowels did not undergo the change: for example, 兵 *bīng* < *pjæng* (Karlgren's *pi̯ʊng*), 品 *pǐn* < *phimx*, Karlgren's *p'i̯əm:*), and 冰 *bīng* < *ping* (Karlgren's *pi̯əng*). As my transcription suggests, I suspect these actually had front vowels at the time labiodentalization occurred. (On the reconstruction of front vowels in the first two, see Pulleyblank 1962: 74–75, 78–79.) Other formulations of labiodentalization are possible, of course (see for example Pulleyblank 1984: 86–91).

In modern Mandarin, Middle Chinese *p-*, *ph-*, and *b-* have all developed into *f-* in these conditions; labiodentalized *m-* had probably become *v-* in Old Mandarin, later merging with *w-* in the standard language:

(20) 風 *fēng* < *pjuwng* 'wind'

(21) 芳 *fāng* < *phjang* 'fragrant'

(22) 伐 *fá* < *bjot* 'expedition'

(23) 無 *wú* (< OM *vú*) < *mju* 'have not'

Except for this process of labiodentalization, the Middle Chinese labial initials generally remain bilabial in modern dialects.

It is characteristic of the Mǐn dialects that they were unaffected by labiodentalization, except in literary items apparently borrowed from other dialects in the Táng period (618–907) or later. In words where other dialects have [f], colloquial Mǐn pronunciation (presumably inherited from the parent language rather than borrowed) has bilabials; in literary items, [f] has been borrowed as [h(u)] or [x(u)]. For example, in the dialect of Xiàmén (Amoy), we have the following doublet corresponding to 分 *fēn* < MC *pjun*:

分 *pun 1* 'to divide' (colloquial)

分 *hun 1* 'to divide' (literary)

corresponding to

(24) 分 *fēn* < *pjun* 'to divide'.

The Kèjiā (Hakka) dialects also preserve bilabial initials in a number of common words where other dialects have labiodentals.[41]

In the traditional terminology, which reflects Late rather than Early Middle Chinese, the bilabial initials are called *zhòng chúnyīn* 重脣音 'heavy lip sounds' while the labiodental initials which developed from them are called *qīng chúnyīn* 輕脣音 'light lip sounds'. In the thirty-six *zìmǔ*, there are four names for "heavy lip sounds" and four for the corresponding "light lip sounds". The traditional names for the "heavy lip sounds" (bilabials), with their Early Middle Chinese pronunciations, are

幫	Bāng < Pang	*p-*
滂	Pāng < Phang	*ph-*
並	Bìng < BengX	*b-*
明	Míng < Mjæng	*m-*.

The traditional names for the "light lip sounds" (labiodentals) are:

非	Fēi < Pjɨj	LMC *f-*	< EMC *p-*
敷	Fū < Phju	LMC *f-*	< EMC *ph-*
奉	Fèng < BjowngX	LMC *ffi-*	< EMC *b-*
微	Wēi < Mjɨj	LMC *ʋ-*	< EMC *m-*.

The Late Middle Chinese reconstructions above follow Pulleyblank (1984). Though the rhyme-table tradition maintains a distinction between 非 Fēi, the labiodental from EMC *p-*, and 敷 Fū, the labiodental from EMC *ph-*, Pulleyblank (1984: 69) argues that these initials were not phonetically different in Late Middle Chinese, the distinction being an artificial one based on Early Middle Chinese *fǎnqiè* spellings; a distinction between unaspirated [f] and aspirated [f'] would be rather unusual. It is possible, however, that at an early stage of labiodentalization, MC *p-* and *ph-* became labiodental affricates [pf] and [pf'] respectively before merging as [f].

The phonetic status of 微 Wēi, the labiodental initial derived from EMC *m-*, is also problematical. It is often represented as a labiodental nasal, IPA [ɱ] (e.g. in *Cíhǎi: Yǔyán wénzì fēncè* 1978: 43). But according to Ladefoged (1971: 37), labiodental [ɱ] is normally found only as a positional variant of other nasals; there are no known cases in the languages of the world where [ɱ] and [m] are phonologically distinct. Pulleyblank reconstructs this initial for Late Middle Chinese as a bilabial approximant [ʋ]. Note that some southern dialects show no evidence of labiodentalization in words with EMC *m-*; cf.

(25) 晚 Cantonese *máahn* 'late', Mandarin *wǎn* < EMC *mjonX*.

Rather than assume that labiodentalization occurred and was then reversed in such dialects, it may be better to assume that it just operated differently, and never affected EMC *m-* in the first place.

2.3.2. Dentals (*shé tóu yīn* 舌頭音 'tongue-head sounds')

The Middle Chinese dental initials are listed in Table 2.6.

Table 2.6. Middle Chinese dental initials

Baxter	Karlgren	Pulleyblank (EMC)
t-	*t-*	*t-*
th-	*t'-*	*t'-*
d-	*d'-*	*d-*
n-	*n-*	*n-*

It is unclear whether these should be regarded as dental or alveolar in articulation, but otherwise there is little controversy about their reconstruction. They are generally alveolars in modern dialects; note however that in many dialects *n-* is not distinguished from *l-*. The traditional names of these initials are

端 Duān < Twan *t-*
透 Tòu < ThuwH *th-*
定 Dìng < DengH *d-*
泥 Ní < Nej *n-*.

2.3.3. Lateral (*bàn shé yīn* 半舌音 'half tongue sound')

The Middle Chinese lateral initial is written *l-* in my transcription, and is reconstructed as *l-* by both Karlgren and Pulleyblank. About this initial there is also little controversy. Its traditional name is

來 Lái < Loj *l-*.

It is usually preserved as *l-* in modern dialects, except that it not infrequently merges with *n-*.

2.3.4. Retroflex stops (*shé shàng yīn* 舌上音 'tongue up sounds')

The Middle Chinese retroflex stops are listed in Table 2.7.

Table 2.7. Middle Chinese retroflex stop initials

Baxter	Karlgren	Pulleyblank (EMC)
tr-	*ʈ-*	*tr-* (*t-*)
trh-	*ʈʻ-*	*trʻ* (*tʻ-*)
dr-	*ɖʻ-*	*dr-* (*d-*)
nr-	*ɳ*	*nr-* (*n-*)

Karlgren reconstructed these initials as palatal stops, but it is more likely that they should be reconstructed as retroflex stops, as proposed by Luó Chángpéi (1931b), since they were regularly used to transcribe the retroflex stops of Sanskrit. As Pulleyblank observed (1984: 66), these initials are also represented as retroflex in Sino-Vietnamese, e.g.

(26) 知 *zhī* < *trje* 'to know', Sino-Vietnamese *tri.*

As noted above, the *-r-* in my transcription is simply a mark of retroflexion, and is not intended as a separate segment. The retroflex stop initials are almost in complementary distribution with the dentals, and the two types of initials are sometimes confused in *fǎnqiè* spellings; Pulleyblank gives convincing arguments that the failure to distinguish dental and retroflex initials was a southern dialect feature (1984: 168–69). We find a contrast in the pair

(27) 地 *dì* < *dijH* 'ground'

(28) 稚 *zhì* < *drijH* 'young',

but the syllable *dijH* is anomalous; normally, plain dental stops do not occur with those finals beginning with *-i-* or *-j-* (the so-called division-III finals; see section 2.4 below). But because of this contrast, the difference in transcription values, and the different treatment in traditional phonology, I maintain the distinction of dental and retroflex stop initials in my Middle Chinese notation.

In most modern dialects, *nr-* has merged with *n-*, but *tr-*, *trh-*, and *dr-* have merged with the palatal and retroflex affricates. However, the Mǐn dialects, in both colloquial and literary pronunciation, usually have dental stops corresponding to MC *tr-*, *trh-*, and *dr-* as well as MC *t-* *th-*, and *d-*. For example:

(29) 中 *zhōng* < *trjuwng* 'middle', Xiàmén *tiong 1* (literary)

(30) 茶 *chá* < *dræ* 'tea', Xiàmén *te 2* (colloquial)

The traditional names for the retroflex stop initials are

知	Zhī < Trje	*tr-*
徹	Chè < Trhjet	*trh-*
澄	Chéng < Dring	*dr-*
娘	Niáng < Nrjang	*nr-*.

2.3.5. Dental sibilants (*chǐ tóu yīn* 齒頭音 'tooth-head sounds')

The Middle Chinese dental sibilant initials are listed in Table 2.8.

Table 2.8. Middle Chinese dental sibilant initials

Baxter	Karlgren	Pulleyblank (EMC)
ts-	*ts-*	*ts-*
tsh-	*ts'-*	*ts'-*
dz-	*dz'-*	*dz-*
s-	*s-*	*s-*
z-	*z-*	*z-*

There is little controversy about the reconstruction of these initials. Their traditional names are

精	Jīng < Tsjeng	*ts-*
清	Qīng < Tshjeng	*tsh-*
從	Cóng < Dzjowng	*dz-*
心	Xīn < Sim	*s-*
邪	Xié < Zjæ	*z-*.

In many dialects (including most Mandarin dialects), these initials have become palatalized before high front vowels, merging with velar initials, which palatalized in the same environment. For example, in standard Mandarin, the original dental sibilants and the velars have merged in this environment as palatal *j-*, *q-*, and *x-*. An example is the following pair:

(31) 津 *jīn* < *tsin* 'ford'

(32) 巾 *jīn* < *kin* 'kerchief'

Some Mandarin dialects still keep such pairs distinct (as [tsin] versus [cin], for example), and in those that do, the original dental sibilants are

traditionally called *jiān yīn* 尖音 'sharp sounds', while the palatals of velar origin are called *tuán yīn* 團音 'rounded sounds'.

2.3.6. Palatal sibilants

The Middle Chinese palatal sibilants are listed in Table 2.9.

Table 2.9. Middle Chinese palatal sibilant initials

Baxter	Karlgren	Pulleyblank (EMC)
tsy-	*tś-*	*tɕ-*
tsyh-	*tś'-*	*tɕ'-*
dzy-	*ź-*	*dʑ-* (*ʑ-*)
sy-	*ś-*	*ɕ-*
zy-	*dź'-*	*ʑ-*

These initials occur only with finals containing a high front medial or vowel *-j-* or *-i-*; as noted earlier, as a spelling convention, I uniformly omit *-j-* after any initial containing the sign of palatalization *-y-*.

The major point of controversy concerning the palatal initials is the status of the initials which I write as *dzy-* and *zy-*. My Middle Chinese notation follows the proposal by Lù Zhìwéi (1947 [1971]: 11–13) and Pulleyblank (1962: 67–68, 1984: 169–70) that the initial which Karlgren reconstructed as *ź-* was actually an affricate, while his *dź'-* was a fricative, in those dialects which distinguished them. The confusion originates with the rhyme tables, which place *zy-* in the same column with *dz-* and *dzr-*, and place *dzy-* in the same column with *z-* and *zr-*. This placement probably reflects the common confusion of *dzy-* and *zy-* in Late Middle Chinese times. There are several arguments in favor of Lù Zhìwéi and Pulleyblank's treatment of these initials:

1. As Pulleyblank points out, this treatment of *dzy-* and *zy-* makes possible a coherent interpretation of a statement by Yán Zhītuī (one of the *Qièyùn* authors), in his *Yán shì jiā xùn* 顏氏家訓 [Family instructions for the Yán clan]; Yán Zhītuī says that southerners pronounce

錢 *dzjen* like 涎 *zjen*
石 *dzyek* like 射 *zyek*
賤 *dzjenH* like 羨 *zjenH*, and
是 *dzyeX* like 舐 *zyeX*.

In the interpretation adopted here, the words on the left all begin with affricates, and the words on the right all begin with fricatives. If Karlgren's interpretation is adopted, then there is no consistent pattern. (See Zhōu Zǔmó 1943 [1966]: 412–13.)

2. There is a tendency for MC *dzy-* (Karlgren's *ź-*) to be used to transcribe the Sanskrit voiced palatal *j-*, while *zy-* (Karlgren's *dź'-*) is used to transcribe Sanskrit *y* or *ś* (see Pulleyblank 1962: 68).

3. Of somewhat less weight, but still significant, is the fact that MC *dzy-* usually seems to have *xiéshēng* connections with dental stops *t-*, *d-*, and so forth, which supports its reconstruction as **dj-* in Old Chinese. A change from **dj-* to a palatal affricate *dzy-* would be a very natural change. For example,

(33) 禪 *shàn* < *dzyenH* < **djans* 'hand over to another'[42]

has as phonetic

(34) 單 *dān* < *tan* < **tan* 'single'.

The proper Old Chinese reconstruction of MC *zy-* is more problematical, as we shall see, but it usually has *xiéshēng* connections with words we would reconstruct with **l-* or **j-*. These fit well with the theory that it was a fricative rather than an affricate in Middle Chinese.

In rhyme-table phonology, which reflects Late Middle Chinese, the palatal initials *tsy-*, *tsyh-*, *dzy-*, *sy-*, and *zy-* and the retroflex initials *tsr-*, *tsrh-*, *dzr-*, *sr-*, and *zr-* are treated as a single set, called *zhèng chǐyīn* 正齒音 'true front-tooth sounds'. Probably, the two types of initials had merged as the result of a sound change which caused EMC *-i-* and *-j-* either to be lost or to became back after retroflex sibilants *TSr-*; I call this change ***TSrj- > TSr-*** (see Appendix A).[43] Since the palatal initials occurred only before *-i-* or *-j-*, this change put the palatal and retroflex sibilants in complementary distribution, and they could be reanalyzed as a single series. (The retroflex initials are still put in division II and the palatals in division III, but this could be because of the difference in the following vocalism, not because of any phonological difference between the initials themselves.)

For example, in the available versions of the *Qièyùn*, the word

(35) 生 *shēng* < *srjæng* 'be born, live'

has the *fǎnqiè* spelling

所京反
suǒ jīng fǎn i.e. *srjoX + kjæng = srjæng.*

But later, in the *Guǎngyùn,* the spelling is

所庚切
suǒ gēng qiè i.e. *srjoX + kæng = sræng.*

reflecting the loss of *-j-* after the retroflex sibilant initial *sr-*.[44] (The *fǎnqiè* spellings preserved in the rhyme books do not show this change consistently, but the change appears to be complete by the time of the rhyme tables.) Since initial *sy-* occurs only before a front medial or vowel, the loss of *-j-* after *sr-* put *sy-* and *sr-* in complementary distribution, and they were probably reanalyzed as variants of a single initial in Late Middle Chinese.

The traditional names of the *zhèng chǐyīn* are

照 Zhào < TsyewH	LMC	*tʂ-*	< EMC *tsy-* and *tsr-*
穿 Chuān < Tsyhwen	LMC	*tʂʻ-*	< EMC *tsyh-* and *tsrh-*
牀 Chuáng < Dzrjang	LMC	*(t)ʂɦ-*	< EMC *zy-* and *dzr-*
審 Shěn < SyimX	LMC	*ʂ-*	< EMC *sy-* and *sr-*
禪 Shàn < DzyenH	LMC	*ʂɦ-*	< EMC *dzy-* and *zr-*.

The influence of the traditional thirty-six *zìmǔ* was such that the Early Middle Chinese distinction between the palatal and retroflex sibilants was not discovered until the late Qīng scholar Chén Lǐ 陳澧 (1810–1882) analyzed the *fǎnqiè* spellings of the *Guǎngyùn* in his pioneering study *Qièyùn kǎo* 切韻考 (1842 [1965]). Since this distinction was overlooked in traditional phonology, the traditional labels must be modified in some way if we are to have separate labels for the Early Middle Chinese palatal and retroflex sibilants. Since the rhyme tables always place retroflex sibilants in division II and palatal sibilants in division III, one common solution is simply to add 二 *èr* 'two' or 三 *sān* 'three' as subscripts after the traditional labels, to represent the retroflex and palatal sibilants respectively. However, another solution, that of substituting a new set of labels for these initials, has become common in modern Chinese works on historical phonology (see for example Dīng Shēngshù & Lǐ Róng 1981). In this revised set of labels, the palatal initials are

章 Zhāng < Tsyang	*tsy-*	(or "照三 Zhào sān")
昌 Chāng < Tsyhang	*tsyh-*	(or "穿三 Chuān sān")
禪 Shàn < DzyenH	*dzy-*	(or "禪三 Shàn sān")
書 Shū < Syo	*sy-*	(or "審三 Shěn sān")
船 Chuán < Zywen	*zy-*	(or "牀三 Chuáng sān").

(The revised labels for the retroflex sibilants are listed in section 2.3.8 below.)

In modern standard Mandarin, the palatal sibilants have become retroflex *zh-*, *ch-*, and *sh-*, merging with the retroflex stops and sibilants. For example, the following three syllables have merged as Mandarin *zhēn*:

(36) 珍 *zhēn* < *trin* 'precious' (retroflex stop)

(37) 真 *zhēn* < *tsyin* 'true, real' (palatal affricate)

(38) 榛 *zhēn* < *tsrin* 'hazel' (retroflex affricate)

In some dialects, these initials have further merged with the dental sibilants; for example, many speakers pronounce Mandarin *zh-*, *ch-*, *sh-* as *z-*, *c-*, *s-*.

2.3.7. Palatal nasal and glide

The Middle Chinese palatal nasal and glide are listed in Table 2.10.

Table 2.10. Middle Chinese palatal nasal and glide

Baxter	Karlgren	Pulleyblank (EMC)
ny-	*ńź-*	*ɲ-*
y-	*i̯-*	*j-*

From the point of view of Early Middle Chinese phonology, these two initials pattern exactly like the palatal sibilants above, but I treat them separately here because they are treated somewhat differently in the rhyme-table tradition.

The initial *ny-* is traditionally called a *bàn chǐyīn* 半齒音 'half front-tooth sound'; its traditional label is

日 Rì < Nyit *ny-*.

Karlgren's reconstruction *ńź-* for MC *ny-* was intended to account for the fact that its reflex is a nasal in some dialects and a nonnasal voiced fricative (e.g., Mandarin *r-*) in others. For Early Middle Chinese, however, it is widely agreed that it was simply a palatal nasal.

In the rhyme tables, EMC *y-* apparently merged with the palatalized allophone of initial *h-*, which I will write as *h(j)-*. (MC *h-* represents a voiced velar or pharyngeal fricative; like other guttural initials, it seems to have had

a special palatalized allophone before *-j-* or *-i-*.) In the rhyme-table tradition, the resulting initial is given the name

喻 Yù < YuH *y-* and *h(j)-*.

This initial is included among the *hóu yīn* 喉音 'throat sounds' (laryngeals). The words with initial *h(j)-* and the words with initial *y-* are still distinguishable in the rhyme tables, however, because *h(j)-* is placed in division III, while *y-* is placed in division IV. A sample of this contrast is the following pair:

(39) 尤 *yóu* < *hjuw* 'especially' (division III)

(40) 由 *yóu* < *yuw* 'from; by' (division IV)

This case is analogous in many ways to the merger of the palatal and retroflex sibilants. Both words above are traditionally regarded as having the initial 喻 Yù, but Chén Lǐ's analysis of the *fǎnqiè* of the *Guǎngyùn* showed that they had different initials in Early Middle Chinese. Therefore the traditional terminology is normally modified, either by adding a subscript 三 *sān* 'three' or 四 *sì* 'four' to 喻 Yù, or by revising the traditional labels. The new labels are

云 Yún < Hjun	*h(j)-*	(or "喻三 Yù sān")
以 Yǐ < YiX	*y-*	(or "喻四 Yù sì").

The *y-* initial is generally preserved as a high front glide in modern dialects (sometimes analyzed as a zero initial followed by a high front medial).

2.3.8. Retroflex sibilants

The retroflex sibilant initials of Middle Chinese are listed in Table 2.11. The *Qièyùn* distinguishes the two initials *dzr-* and *zr-* (the latter occurring in two words only), but they are not distinguished in the *Guǎngyùn,* and Karlgren's reconstruction, which was based on the *Guǎngyùn,* does not include the initial *zr-* for this reason.

Table 2.11. Middle Chinese retroflex sibilant initials

Baxter	Karlgren	Pulleyblank (EMC)
tsr-	*tʂ-*	*tʂ-*
tsrh-	*tʂ'-*	*tʂʻ-*
dzr-	*dʐ'-*	*dʐ-*
zr-	—	*ʐ-*

As noted above, the retroflex sibilants are combined with the palatal sibilants in the rhyme tables, and the traditional labels have been revised to incorporate the Early Middle Chinese distinction between retroflex and palatal sibilants. There is, however, no standard label for *zr-*:

莊 Zhuāng < Tsrjang	*tsr-*	(or "照二 Zhào èr")
初 Chū < Tsrhjo	*tsrh-*	(or "穿二 Chuān èr")
崇 Chóng < Dzrjuwng	*dzr-*	(or "牀二 Chuáng èr")
生 Shēng < Srjæng	*sr-*	(or "審二 Shěn èr")
[no standard label]	*zr-*	("禪二 Shàn èr")

In modern Mandarin, the retroflex sibilants regularly become retroflex *zh-*, *ch-*, *sh-*, merging with the retroflex stops and the palatal sibilants (see above). However, in quite a number of words they become plain dental sibilants *z-*, *c-*, *s-* instead, even in dialects where these are distinct from *zh-*, *ch-*, and *sh-*. This irregularity probably reflects dialect mixture; for example, alongside the literary pronunciation

(41) 色 *sè* < *srik* 'color'

we have the colloquial pronunciation

(42) 色 *shǎi* < *srik* 'color',

one with *s-*, and one with *sh-*.

2.3.9. Velars (*yáyīn* 牙音 'back-tooth sounds')

The velar initials of Middle Chinese are listed in Table 2.12. There is little controversy about the reconstruction of these initials. The oral stops *k-*, *kh-*, and *g-* remain as velars in most dialects, although in many dialects they palatalized before high front vowels and glides—giving *j-* and *q-* in standard Mandarin, for example. Some southeastern dialects (Cantonese, Hakka, Mǐn) did not undergo this palatalization, and generally maintain original

velars in all positions. For example, 金 MC *kim* 'gold' is Mandarin *jīn*, but Cantonese *gàm*.

Table 2.12. Middle Chinese velar initials

Baxter	Karlgren	Pulleyblank (EMC)
k-	*k-*	*k-*
kh-	*k'-*	*k'-*
g-	*g'-*	*g-*
ng-	*ng-*	*ŋ-*

The velar nasal initial *ng-* (a digraph for [ŋ], not a prenasalized voiced stop) no longer occurs in initial position in standard Mandarin. It was generally lost in this position, but in a few exceptional items it shows up as Mandarin *n-* when [i] or [j] follows, e.g. 牛 *niú* < *ngjuw* 'ox', 逆 *nì* < *ngjaek* 'contrary'.

The traditional names for these initials are

見 Jiàn < KenH	*k-*
溪 [Xī] < Khej	*kh-*
群 Qún < Gjun	*g-*
疑 Yí < Ngi	*ng-*.

Note that the standard pronunciation of 溪 [*xī*] < *khej* is irregular; we would expect Mandarin *qī* (which occurs as an alternate reading for this character).

2.3.10. Laryngeals (*hóu yīn* 喉音 'throat sounds')

The laryngeal initials of Middle Chinese are listed in Table 2.13. When the glottal stop symbol *ʔ-* is not available, the apostrophe *'-* may be used as a typable substitute. Also, for typographical convenience, *x-* represents a voiceless fricative initial and *h-* a voiced one; their exact position of articulation is difficult to determine, and may have varied from dialect to dialect (as the reflexes of these initials do today). Thus *x-* may represent phonetic [x] or [h], while *h-* may represent [ɣ] or [ɦ]. (This is the reason for Pulleyblank's multiple reconstructions in this group.)

Table 2.13. Middle Chinese laryngeal initials

Baxter	Karlgren	Pulleyblank (EMC)
ʔ-	*·-*	*ʔ-*
x-	*χ-*	*x- ~ h-*
h-	*ɣ-*	*ɣ- ~ ɦ-*
h(j)-	*jɦ-*	*w- ~ H-*

The initial listed as *h(j)-* was probably just an allophone of *h-*, as occasional *fǎnqiè* spellings seem to indicate, and my notation treats it as such.[45] In the rhyme tables, however, *h(j)-* is not in the same column with *h-*, but rather with palatal *y-*: *h(j)-* is placed in division III and *y-* in division IV, and both are labeled 喻 Yù (see above).

In modern dialects there may or may not be a phonetic glottal stop corresponding to MC *ʔ-*, but when tones split according to the voicing of the initial, syllables beginning with MC *ʔ-* generally followed the pattern of syllables with voiceless initials. MC *x-* and *h-* are usually represented by guttural fricatives of some kind. However, most dialects reflect the Late Middle Chinese merger of *y-* and *h(j)-*.

The traditional terms for these initials are

影 Yǐng < ʔJængX	*ʔ-*
曉 Xiǎo < XewX	*x-*
匣 Xiá < Hæp	*h-*
喻 Yù < YuH	*h(j)-* and *y-*.

As noted above, the distinction between *h(j)-* and *y-* may be represented by revising the traditional labels:

云 Yún < Hjun	*h(j)-*	(or "喻三 Yù sān")
以 Yǐ < YiX	*y-*	(or "喻四 Yù sì")

2.3.11. Natural classes of initials

It is convenient to recognize certain natural classes of initials which emerge from an examination of their phonetic character and distribution.

First, we may divide the initials into "grave" and "acute", terms borrowed from the feature system of Jakobson and Halle (1971). Grave initials include the labials, velars, and laryngeals—those which are [– coronal] in the system of Chomsky and Halle (1968)—while acute initials include all the

rest, which are [+ coronal] (including *y-*, traditionally included among the laryngeals).[46] The distinction between grave and acute initials is fundamental in Chinese historical phonology; a number of sound changes affecting finals were limited to syllables with one type of initial or the other. For example, the Old Chinese final **-jan* becomes MC *-jon* after grave initials, but *-jen* after acute initials (merging with original **-jen*), as in

(43) 言 *yán* < *ngjon* < **ngjan* 'word, speak'

(44) 然 *rán* < *nyen* < **njan* 'to burn; thus'.

As a result of such changes, certain types of Middle Chinese finals (such as the *-jon* in the example above) occur only with grave initials, so that grave and acute initials have quite different distributions in Middle Chinese.

I will also classify Middle Chinese initials as "simple" or "complex". By simple initials I mean the set of nineteen listed in Table 2.14.

Table 2.14. Middle Chinese simple initials

Labials:	*p-*	*ph-*	*b-*	*m-*			
Dentals:	*t-*	*th-*	*d-*	*n-*			
Lateral:						*l-*	
Dental Sibilants:	*ts-*	*tsh-*	*dz-*		*s-*		
Velars:	*k-*	*kh-*		*ng-*			
Laryngeals:	*ʔ-*				*x-*	*h-*	

The simple initials can be defined distributionally: they include all initials which occur with the so-called division-I finals of Middle Chinese (see below). As we shall see, the division-I finals are to be reconstructed in Old Chinese without medial **-j-* or **-r-*.[47] As a group, the simple initials lack secondary features of articulation such as palatalization or retroflexion.

The complex initials, listed in Table 2.15, never occur with finals of division I, and include the palatal and retroflex initials, plus *z-* and *g-*.

Table 2.15. Middle Chinese complex initials

Retroflex stops:	*tr-*	*trh-*	*dr-*	*nr-*			
Dental sibilants:						*z-*	
Palatals:	*tsy-*	*tsyh-*	*dzy-*	*ny-*	*sy-*	*zy-*	*y-*
Retroflex sibilants:	*tsr-*	*tsrh-*	*dzr-*		*sr-*	*zr-*	
Velars:			*g-*				

We will see later that the complex initials of Middle Chinese reflect Old Chinese initial consonants which have been influenced by a following medial *-*j*- or *-*r*-; when there is no such medial, the Middle Chinese reflex is a simple initial.

Initials *z*- and *g*- look as if they belong among the simple initials, but I include them among the complex initials because of their distribution: they never occur with Middle Chinese division-I finals. From a synchronic point of view, this distribution is probably accidental, but the present classification is convenient for historical purposes.

2.4. The finals of Middle Chinese

As explained in Chapter 1, a final includes at least a main vowel; the vowel may also be followed by a coda, and it may be preceded by one or more medials. My Middle Chinese transcription has a similar structure. I will first summarize the elements which can occur in the various positions in my transcription, and then describe the finals of Middle Chinese in more detail.

The eight elements listed in Table 2.16 may occur in main-vowel position in my notation.

Table 2.16. Middle Chinese main vowels

i	*ɨ*	*u*
e		*o*
ɛ		
æ	a	

These symbols may be made typable by substituting digraphs *-ae-* and *-ea-* for *-æ-* and *-ɛ-* respectively, and a plus sign *-+-* for *-ɨ-*. The letter *-o-* is probably best thought of as representing a mid back unrounded vowel [ʌ].

These main vowels may be followed by the codas in Table 2.17 (though not all combinations occur).

Table 2.17. Middle Chinese codas

zero	*-w*		*-j*	*-ɨ*
-ng	*-wng*	*-m*	*-n*	
-k	*-wk*	*-p*	*-t*	

The symbol *-i* is written as a coda only in the finals *-ɛi* and *-wɛi* (the 佳 Jiā rhyme of the *Qièyùn*). This is a notational device for distinguishing these finals from *-ɛj* and *-wɛj* (the 皆 Jiē rhyme) and *-æj* and *-wæj* (the 夬 Guài rhyme, which occurs only in *qùshēng*). It is doubtful whether *-ɛj*, *-ɛi*, and *-æj* were all distinct in any single dialect, but they are distinguished in the *Qièyùn*, and they have distinct Old Chinese origins, so it is useful to distinguish them notationally.

The combinations *-wng* and *-wk* may be taken literally, or interpreted as labiovelars /ŋ^{w}/ and /k^{w}/, or simply regarded as a notational trick to get by with fewer vowel symbols. It seems realistic, though, to regard them as codas distinct from *-ng* and *-k*. This idea is supported by the arrangement of the *Qièyùn*, where the rhymes ending in *-wng* (and their *rùshēng* counterparts in *-wk*) are placed together at the very beginning:[48]

東 Dōng (Tuwng)
冬 Dōng (Towng)
鍾 Zhōng (Tsyowng)
江 Jiāng (Kæwng)

By contrast, the other rhymes in *-ng* (like their *rùshēng* counterparts in *-k*) are farther down the list.[49] This arrangement suggests that the *Qièyùn* authors felt *-wng* and *-wk* to be different codas from *-ng* and *-k*.

The basic medials in my transcription are *-j-* and *-w-*; they may also occur in combination: *-jw-*. Words with the medial *-w-* are traditionally referred to as *hékǒu* 合口 'closed mouth', as opposed to the finals without it, which are *kāikǒu* 開口 'open mouth'. As Y. R. Chao showed (1941), the medial *-w-* is not contrastive after labial initials; that is, finals like *-an* and *-wan* do not contrast after labials. Labial-initial words are sometimes treated as *kāikǒu* in the rhyme tables, sometimes as *hékǒu*; in *fǎnqiè* spellings, too, a syllable like MC *pan* might have a *kāikǒu* final speller like *kan* or a *hékǒu* final speller like *kwan* (or it might be spelled with another labial-initial word like *man*). In my transcription, I write *-w-* after labial initials only in words which the *Qièyùn* places in a distinctively *hékǒu* rhyme. The purpose of this convention is to make the *Qièyùn* rhyme recoverable from the spelling. For example, I write

(45) 奔 *bēn* < *pwon* 'to run'

with *-w-*, even though there is no contrasting syllable *pon*, because it is placed in the *Qièyùn*'s 魂 Hún (Hwon) rhyme with the other words in *-won*, not in the 痕 Hén (Hon) rhyme with the words in *-on*. On the other hand, I write

(46) 瞞 *mán* < *man* 'deceive',

without *-w-* because *-an* and *-wan* are included in the same *Qièyùn* rhyme, 寒 Hán (Han).[50]

In addition to the basic medials *-j-* and *-w-*, I add an *-i-* after the medial, and before the main vowel, in order to represent certain of the *chóngniǔ* distinctions (about which more below). An example of a *chóngniǔ* distinction is the following pair:

(47) 弁 *biàn* < *bjenH* 'cap'

(48) 便 *biàn* < *bjienH* 'comfortable; convenient'

Though these two words have merged in modern dialects, they are placed in different homophone groups in the *Qièyùn*, and have different *fǎnqiè* spellings. Moreover, in the rhyme tables, 弁 *bjenH* is placed in division III, and 便 *bjienH* in division IV; for this reason, such syllables are referred to as "division-III" and "division-IV" *chóngniǔ* syllables, respectively. In my notation, division-IV *chóngniǔ* syllables, and only these, contain both medial *-j-* and *-i-* (either as *-ji-* or as *-jwi-*); division-III *chóngniǔ* syllables (and other division-III syllables) contain either *-j-* or *-i-* but not both. The *chóngniǔ* distinction has been interpreted by some as a difference in the medial, by others as a difference in the main vowel; my notation (similar to that of Li Fang-kuei 1971 [1980]) is a compromise intended to represent the distinction graphically while leaving its phonological interpretation open.[51]

2.4.1. Distributional classes of finals

As with the initials, it is convenient to have terms for distributional classes of Middle Chinese finals. Traditionally, finals are classified according to how they are placed in the rhyme tables: those Early Middle Chinese finals which the rhyme tables place in division I are called division-I finals, and so on. This terminology is convenient and commonly used, although we must remember that the rhyme tables represent Late Middle Chinese rather than Early Middle Chinese, and not all the categories of the later stage necessarily apply to the earlier. I discuss the finals of Early Middle Chinese by category below.

2.4.1.1. Division-I finals

Division-I finals are those placed in division I of the rhyme tables. Their placement in the rhyme tables may be diagrammed as in Table 2.18, using the division-I final *-an* as an example.

Table 2.18. Division-I finals in the rhyme tables

	P-	*T(r)-*	*K-*	*TS(r,y)-*	*l-*	*y-*
I	*Pan*	*Tan*	*Kan*	*TSan*	*lan*	—
II	—	—	—	—	—	—
III	—	—	—	—	—	—
IV	—	—	—	—	—	—

In Table 2.18 and in similar ones to follow, syllable types containing the finals under discussion are listed in the place assigned to them by the conventions of the rhyme tables. The capital letters represent classes of initials:

- *P-* represents the labial initials *p-*, *ph-*, *b-*, and *m-*.
- *T(r)-* represents the dental and retroflex stop initials: *T-* stands for *t-*, *th-*, *d-*, and *n-* (placed in divisions I and IV), and *Tr-* stands for the retroflex stop initials *tr-*, *trh-*, *dr-*, and *nr-* (placed in divisions II and III).
- *K-* represents the velar and laryngeal initials *k-*, *kh-*, *g-*, *ng-*, *ʔ-*, *x-*, and *h-*.
- *TS(r,y)-* represents the affricate and fricative initials: *TS-* stands for the dental sibilants *ts-*, *tsh-*, *dz-*, and *s-*, placed in divisions I and IV, and *z-*, which occurs in division IV only; *TSr-* stands for retroflex sibilants *tsr-*, *tsrh-*, *dzr-*, *sr-*, and *zr-*, placed in division II only; and *TSy-* stands for the palatals *tsy-*, *tsyh-*, *dzy-*, *ny-*, *sy-*, and *zy-*, placed in division III only.

The initials *l-* and *y-* are listed separately, since they have special characteristics: *l-* is similar in distribution to the dental stops, but unlike them it occurs in all four divisions (though only marginally in division II); *y-* has the same distribution as the other palatals, but is placed in division IV instead of division III.

Table 2.19. The division-I finals

MC finals		Karlgren		*Qièyùn* rhymes
-a	*-wa*	*-â*	*-uâ*	歌 Gē (Ka)
-ajH	*-wajH*	*-âi-*	*-wâi-*	泰 Tài (ThajH) (*qùshēng* only)
-aw		*-âu*		豪 Háo (Haw)
-an	*-wan*	*-ân*	*-uân*	寒 Hán (Han)
-ang	*-wang*	*-âng*	*-wâng*	唐 Táng (Dang)
-am		*-âm*		談 Tán (Dam)
-oj	*-woj*	*-ậi*	*-uậi*	咍 Hāi (Xoj), 灰 Huī (Xwoj)
-on	*-won*	*-ən*	*-uən*	痕 Hén (Hon), 魂 Hún (Hwon)
-ong	*-wong*	*-əng*	*-wəng*	登 Dēng (Tong)
-owng		*-uong*		冬 Dōng (Towng)
-om		*-ậm*		覃 Tán (Dom)
-u		*-uo*		模 Mú (Mu)
-uw		*-ậu*		侯 Hóu (Huw)
-uwng		*-ung*		東 Dōng (Tuwng)

The division-I finals occur only with the nineteen simple initials (listed in Table 2.14 above). In my notation, division-I finals can be identified by the presence of one of the [+ back] vowels *-a-*, *-o-*, or *-u-* as main vowel, without a preceding *-j-* or *-y-*. (Recall that medial *-j-* is omitted by convention after initials spelled with *-y-*.) They include the finals in Table 2.19, listed with the *Qièyùn* rhymes in which they are placed. In this and similar tables below, I list only *píngshēng* rhymes (except for those finals which occur only in *qùshēng*). Except for occasional accidental gaps, the finals with nasal codas have corresponding finals in *rùshēng*, with *-p*, *-t*, *-k*, or *-wk* instead of *-m*, *-n*, *-ng*, and *-wng*. Karlgren's Ancient Chinese reconstructions are included for comparison.

In the *Qièyùn*, the division-I finals are normally found in rhymes by themselves, not combined with finals of other types in the same rhyme; the only exceptions are as follows:

- The 東 Dōng (Tuwng) rhyme includes both the division-I final *-uwng* and the division-III final *-juwng*.

- The 歌 Gē (Ka) rhyme includes both the division-I finals *-a* and *-wa* and a few words with the division-III finals *-ja* and *-jwa* (e.g. 迦 *jiā* < *kja*, used to transliterate Sanskrit *ka*, and 靴 *xuē* < *xjwa* 'boot').

2.4.1.2. Division-IV finals

The division-IV finals are those which occur exclusively in division IV of the rhyme tables. (I also call them "pure division-IV finals" to distinguish them from the division-IV *chóngniŭ* finals, which are actually a subtype of the division-III finals; see below.) Their placement in the rhyme tables can be diagrammed as in Table 2.20, using the division-IV final *-en* as an example.

Table 2.20. Division-IV finals in the rhyme tables

	P-	*T(r)-*	*K-*	*TS(r,y)-*	*l-*	*y-*
I	—	—	—	—	—	—
II	—	—	—	—	—	—
III	—	—	—	—	—	—
IV	*Pen*	*Ten*	*Ken*	*Tsen*	*len*	—

The division-IV finals occur with exactly the same set of initials as the division-I finals: the nineteen simple initials, which show neither palatalization nor retroflexion. From an Early Middle Chinese point of view, then, the division-I and division-IV finals together form a natural distributional class. In my notation, the division-IV finals all have the main vowel *-e-*, not preceded by *-j-* or *-y-*. In Early Middle Chinese, the difference between division-I and division-IV finals is that division-I finals have back vowels, while division-IV finals have the front vowel *-e-*. The division-IV finals of Early Middle Chinese are listed in Table 2.21, with their *Qièyùn* rhymes. Division-IV rhymes are invariably placed in separate *Qièyùn* rhymes by themselves.[52]

By Late Middle Chinese, it is likely that a sound change had introduced a front glide before the vowel *-e-* in division-IV finals:

$$\emptyset \rightarrow j \,/\, C \_\_ e$$

As a result of this change, EMC *-en* merged with *-jien* in syllables with grave initials, and with *-jen* in syllables with acute initials.

Table 2.21. The division-IV finals

MC finals		Karlgren		*Qièyùn* rhymes
-ej	*-wej*	*-iei*	*-iwei*	齊 Qí (Dzej)
-ew		*-ieu*		蕭 Xiāo (Sew)
-en	*-wen*	*-ien*	*-iwen*	先 Xiān (Sen)
-eng	*-weng*	*-ieng*	*-iweng*	青 Qīng (Tsheng)
-em		*-iem*		添 Tiān (Them)

2.4.1.3. *Division-II finals*

Division-II finals are those placed exclusively in division II of the rhyme tables.[53] Their placement may be diagrammed as in Table 2.22, using the division-II final *-æn* as an example. In my transcription, division-II finals are those with the main vowel *-æ-* or *-ɛ-*, not preceded by *-j-* (or *-y-*). Division-II finals are basically limited to occurring with the labial, velar, laryngeal, and retroflex stop and sibilant initials (though they occasionally occur exceptionally with other initials[54]). The division-II finals are listed in Table 2.23, with their *Qièyùn* rhymes.

Table 2.22. Division-II finals in the rhyme tables

	P-	*T(r)-*	*K-*	*TS(r,y)-*	*l-*	*y-*
I	—	—	—	—	—	—
II	*Pæn*	*Træn*	*Kæn*	*Tsræn*	—	—
III	—	—	—	—	—	—
IV	—	—	—	—	—	—

Most of the division-II finals are in separate *Qièyùn* rhymes by themselves; the following are exceptions to this pattern:

- The 麻 Má (Mæ) rhyme contains both the division-II finals *-æ* and *-wæ* and the division-III final *-jæ*.
- The 庚 Gēng (Kæng) rhyme contains both the division-II finals *-æng* and *-wæng* and the division-III finals *-jæng* and *-jwæng*.

Table 2.23. The division-II finals

MC finals		Karlgren		*Qièyùn* rhymes
-æ	*-wæ*	*-a*	*-wa*	麻 Má (Mæ)
-æjH	*-wæjH*	*-ai-*	*-wai-*	夬 Guài (KwæjH) (*qùshēng* only)
-æw		*-au*		肴 Yáo (Hæw)
-æn	*-wæn*	*-an*	*-wan*	刪 Shān (Sræn)
-æng	*-wæng*	*-ɒng*	*-wɒng*	庚 Gēng (Kæng)
-æwng		*-ång*		江 Jiāng (Kæwng)
-æm		*-am*		銜 Xián (Hæm)
-ɛi	*-wɛi*	*-ai*	*-wai*	佳 Jiā (Kɛi)
-ɛj	*-wɛj*	*-ăi*	*-wăi*	皆 Jiē (Kɛj)
-ɛn	*-wɛn*	*-ăn*	*-wăn*	山 Shān (Srɛn)
-ɛng	*-wɛng*	*-ɛng*	*-wɛng*	耕 Gēng (Kɛng)
-ɛm		*-ăm*		咸 Xián (Hɛm)

The division-II vowels *-æ-* and *-ɛ-* had merged by Late Middle Chinese, and it is likely that this merger had already begun in some dialects at the time of the *Qièyùn*. Note that some of the division-II rhymes occur in pairs which are adjacent in the *Qièyùn*, one with *-æ-* and one with *-ɛ-*, both labels beginning with the same initial:

刪 Shān (Sræn) and 山 Shān (Srɛn)

庚 Gēng (Kæng) and 耕 Gēng (Kɛng)

銜 Xián (Hæm) and 咸 Xián (Hɛm)

Use of the same initial in the names of adjacent rhymes probably indicates that some dialects in Early Middle Chinese times did not distinguish these rhymes. There is also independent evidence for this fact. Judging from the annotations in the rhyme list at the beginning of the Wáng Rénxū version of the *Qièyùn* (see section 2.2.1.2 above), *-ɛ-* and *-æ-* in these finals were not distinguished in the *Yīnpǔ* 音譜, a rhyme book mentioned in the *Qièyùn* preface but now lost. Its author, Lǐ Jìjié 李季節, was a native of what is now southern Héběi who served the Northern Qí 齊 dynasty (550–577). Moreover, Zhōu Zǔmó (1943 [1966]: 417) gives examples which suggest that the finals *-æn* and *-ɛn* were not distinguished by Guō Pú 郭璞 (276–

324), also from north of the Yellow River. Yán Zhītuī, one of the *Qièyùn* authors, criticizes northerners for pronouncing

(49) 洽 [*qià*] < *hɛp* 'accord with'

like

(50) 狎 *xiá* < *hæp* 'disrespectful'.

(See Zhōu Zǔmó (1943 [1966]: 413.) However, it is not clear that such confusions were characteristic of all northern speech; some of the rhyme books mentioned in the Wáng Rénxū rhyme list as distinguishing *-æ-* rhymes from *-ɛ-* rhymes were written by Northerners.

In some cases where we would expect to find a pair of division-II rhymes, we find only one: for example, there is a rhyme *-æw* but no corresponding rhyme *-ɛw*. Perhaps *-ɛ-* and *-æ-* had already merged before *-w* by the time of the *Qièyùn*.

2.4.1.4. Division-III or palatalizing finals

All the remaining finals not so far discussed belong in the class conventionally called "division-III finals". In my transcription, syllables with division-III finals are those which have one or more of the following characteristics: (1) medial *-j-*, (2) initials spelled with *-y-* (after which *-j-* is omitted by spelling rule), or (3) the main vowel *-i-*. These finals are called "division-III finals" because they occur in division III in the rhyme tables; but syllables with division-III finals may also occur in divisions II or IV, depending on their initials. These finals might better be called "palatalizing" or "yodising" finals, because they appear to have conditioned palatalized allophones of certain of the initials which preceded them—a phenomenon which Karlgren called "yodisation".

The evidence for palatalized allophones before division-III finals comes from a tendency in *fǎnqiè* spellings for the initial spellers of division-III words to be division-III words themselves. For example, the word

(51) 薑 *jiāng* < *kjang* 'ginger',

with the division-III final *-jang*, is spelled in the *Qièyùn* as

居良反
jū liáng fǎn, i.e. *k(jo) + (l)jang = kjang*

where the initial speller 居 *jū* < *kjo* also has a division-III final (*-jo*). On the other hand, words with non-division-III finals usually have non-division-III words as initial spellers; for example, the word

(52) 剛 *gāng* < *kang* 'hard; strong',

with the division-I final *-ang*, is spelled

古郎反
gǔ láng fǎn, i.e. *k(uX) + (l)ang = kang*

where the initial speller has the division-I final *-uX*. Words with division-I finals may also be used as initial spellers for words with division-II or division-IV finals, and vice versa, but there are few cases of crossover between division-III and non-division-III initial spellers.

This suggests that the *k-* initial which preceded division-III finals like *-jang* and *-jo* was somehow phonetically different from the *k-* initial which preceded other types of finals. The most natural assumption seems to be that initial spellers like 居 *jū* < *kjo* represented a front or palatalized allophone of the initial *k-*, conditioned by a following high front vowel or medial.[55] The tendency to spell palatalized allophones differently is most noticeable with grave initials. This interpretation fits well with the idea that the common feature of the division-III finals was a high front medial or main vowel *-j-* or *-i-*, as suggested by my transcription. I trace this feature to the influence of the Old Chinese medial **-j-*.

Note also that the palatal initials *tsy-* etc. occur only with division-III finals, while the dentals *t-*, *th-*, *d-*, and *n-* never occur with these finals. (Apparent cases of dental initials with division-III finals probably represent dialects where these initials were not distinct from the retroflex stops *tr-* etc.) Because of this distribution, the Middle Chinese palatals can in most cases be reconstructed as dentals which underwent palatalization before **-j-*:

**tj-* > *tsy-*
**thj-* > *tsyh-*
**dj-* > *dzy-*
**nj-* > *ny-*

Pulleyblank's interpretation of these facts (1984) is somewhat different, and as the issue bears on the reconstruction of Old Chinese, I will discuss his views briefly.[56] In his view, what the division-III finals of Early Middle Chinese have in common is that they all begin with one of the high vowels /i/, /ɨ/, or /u/. Finals of this type are assumed to reflect a distinctive Old

Chinese syllable type which Pulleyblank calls "type-B syllables", which originally had an accent on the first mora of the syllable.

While it is worthwhile to explore alternatives to the traditional view that division-III finals involve a high front medial, I see several problems with this aspect of Pulleyblank's reconstruction of Middle Chinese. For one thing, it seems more natural to attribute the development of the palatal initials *TSy-* to the influence of a high front glide than to the influence of vowel height alone. Also, attributing the distinctiveness of the division-III finals to the main vowel makes it difficult to account in a straightforward way for cases where division-III finals rhyme with finals of other types. For example, the 東 Dōng (Tuwng) rhyme includes both a division-III final which I write as *-juwng* and a division-I final which I write as *-uwng*. According to Pulleyblank's hypothesis, the division-III final must begin with a high vowel, and the division-I final cannot; thus he reconstructs the two finals of the 東 Dōng (Tuwng) rhyme as /-uwŋ/ and /-owŋ/ respectively, with different main vowels, even though they are in the same *Qièyùn* rhyme and rhyme with each other freely in poetry. Similarly, Pulleyblank's /-ɨan/ (my *-jon*) rhymes with his /-ən/ (my *-on*) but not with his /-ian/ (my *-jen*); his /-ian/ rhymes instead with his /-ɛn/ (my *-en*).[57]

The division-III finals are a large class which can be further subdivided in several ways. I will speak of the following classes:

- independent division-III finals
- mixed division-III finals
- *chóngniǔ* finals

Independent division-III finals

The independent division-III finals are also called "pure" division-III finals, because they occur only in division III of the rhyme tables. They also occur only with grave initials. Their placement in the rhyme tables may be diagrammed as in Table 2.24, using the independent division-III final *-jon* as an example.

Table 2.24. Independent division-III finals in the rhyme tables

	P-	*T(r)-*	*K-*	*TS(r,y)-*	*l-*	*y-*
I	—	—	—	—	—	—
II	—	—	—	—	—	—
III	*Pjon*	—	*Kjon*	—	—	—
IV	—	—	—	—	—	—

The finals of this class are listed in Table 2.25, with their *Qièyùn* rhymes.

Table 2.25. The independent division-III finals

MC finals		Karlgren		*Qièyùn* rhymes
-jɨj	*-jwɨj*	*-ɻi*	*-wɻi*	微 Wēi (Mjɨj)
-jojʜ	*-jwojʜ*	*-ɻɒi-*	*-ɻwɒi-*	廢 Fèi (PjojH) (*qùshēng* only)
-jɨn		*-ɻən*		殷 Yīn (ʔJɨn)
-jun		*-ɻuən*		文 Wén (Mjun)
-jon	*-jwon*	*-ɻɒn*	*-ɻwɒn*	元 Yuán (Ngjwon)
-jæm		*-ɻɒm*		嚴 Yán (Ngjæm)
-jom		*-ɻwɒm*		凡 Fán (Bjom)

In the *Qièyùn*, these finals all occur in rhymes by themselves. The finals *-jæm* and *-jom* are virtually in complementary distribution and should probably be reconstructed the same, but I transcribe them differently in order to represent the *Qièyùn*'s distinction, even if it turns out to be artificial. The division-III finals of the 庚 Gēng (Kæng) rhyme, which I write as *-jæng* and *-jwæng*, are sometimes treated as independent division-III finals, but I prefer to include them among the division-III *chóngniǔ* finals instead (see below).

Labial initials occurring with any of the independent division-III finals later became labiodentals. This resulted from the change **labiodentalization**, which I formulate as applying to labial initials when followed by *-j-* plus a [+ back] vowel (see section 2.3 above). Here are some examples:

(53) 飛 *fēi* < *pjɨj* 'to fly'

(54) 廢 *fèi* < *pjojʜ* 'to abandon'

(55) 分 *fēn* < *pjun* 'to divide'

(56) 翻 *fān* < *pjon* 'to overturn'

(57) 凡 *fán* < *bjom* 'in every case'.

(Labial initials do not occur with the independent division-III finals *-jɨn* or *-jæm*.)

How did it come about that the independent division-III finals occurred only after grave initials? This distribution results from the sound change I call **acute fronting** (see Appendix A), which caused back vowels after **-j-* to become fronted in certain syllables with acute initials. For example, original **-jɨn* was fronted to MC *-in* after acute initials (merging with original **-jin*); but after grave initials, **-jɨn* remained distinct, as in the following examples:

(58) 振 *zhēn* < *tsyin* < **tjɨn* 'numerous; majestic'

(59) 斤 *jīn* < *kjɨn* < **kjɨn* 'axe; catty'

Similarly, **-jan* became MC *-jen* after acute initials, but remained as MC *-jon* after grave initials:

(60) 然 *rán* < *nyen* < **njan* 'to burn; thus'

(61) 言 *yán* < *ngjon* < **ngjan* 'word'

(MC *-jon*, phonetically probably [jʌn], is derived from OC **-jan* by the change ****a*-raising**.)

Eventually, the independent division-III finals merged with other, more fully-distributed finals; for example, EMC *-jon* merged with *-jen* in Late Middle Chinese.

Mixed division-III finals

I call this group the mixed division-III finals because they are placed in divisions II, III, or IV of the rhyme tables, according to their initials. Their arrangement may be diagrammed as in Table 2.26, using the final *-jang* as an example.

Table 2.26. Mixed division-III finals in the rhyme tables

	P-	*T(r)-*	*K-*	*TS(r,y)-*	*l-*	*y-*
I	—	—	—	—	—	—
II	—	—	—	*TSrjang*	—	—
III	*Pjang*	*Trjang*	*Kjang*	*TSyang*	*ljang*	—
IV	—	—	—	*TSjang*	—	*yang*

The finals of this group are listed in Table 2.27, with their *Qièyùn* rhymes.

Table 2.27. The mixed division-III finals

MC finals		Karlgren		*Qièyùn* rhymes
-i		*-i*		之 Zhī (Tsyi)
-ing	*-wing*	*-i̯əng*	*-i̯wəng*	蒸 Zhēng (Tsying)
-ju		*-i̯u*		虞 Yú (Ngju)
-jo		*-i̯wo*		魚 Yú (Ngjo)
-ja	*-jwa*	*-i̯ɑ̂*	*-i̯wɑ̂*	歌 Gē (Ka)
-jæ		*-i̯a*		麻 Má (Mæ)
-jang	*-jwang*	*-i̯ang*	*-i̯wang*	陽 Yáng (Yang)
-juw		*-i̯ɐu*		尤 Yóu (Hjuw)
-juwng		*-i̯ung*		東 Dōng (Tuwng)
-jowng		*-i̯wong*		鍾 Zhōng (Tsyowng)

Although most of these occur in separate *Qièyùn* rhymes by themselves, a few occur in rhymes with division-I or division-II finals:

- The 歌 Gē (Ka) rhyme includes both the division-I finals *-a* and *-wa* and the rare division-III finals *-ja* and *-jwa*.
- The 麻 Má (Mæ) rhyme includes both the division-II finals *-æ* and *-wæ* and the mixed division-III final *-jæ*.
- The 東 Dōng (Tuwng) rhyme includes both the division-I final *-uwng* and the mixed division-III final *-juwng*.

Labial initials become labiodental before the finals *-ju*, *-jang*, *-juw*, *-juwng*, and *-jowng*, but not before *-i* or *-ing*; before the other finals of this group, labial initials do not occur.

Chóngniǔ finals

The traditional term *chóngniǔ* 重紐 'repeated button' refers to pairs of syllables in certain *Qièyùn* rhymes which have the following characteristics:[58]

- Both syllables begin with the same initial (always grave).
- Both syllables have division-III finals (in the broad sense of finals which induced palatalized allophones).
- The syllables do not contrast with each other as *kāikǒu* (no *-w-*) versus *hékǒu* (with *-w-*).
- The syllables are given distinct *fǎnqiè* spellings.[59]
- In the rhyme tables, one of the syllables is placed in division III, and one in division IV.

These pairs are the so-called *chóngniǔ* doublets, and their finals are called *chóngniǔ* finals; the finals of the *chóngniǔ* words which are placed in division III are called "division-III *chóngniǔ* finals", and the finals of the *chóngniǔ* words which are placed in division IV are called "division-IV *chóngniǔ* finals". The *Qièyùn* rhymes containing *chóngniǔ* doublets (which we may call "*chóngniǔ* rhymes") also contain acute-initial words, which show no such contrasts; the acute-initial words are assigned to divisions in the same way as acute-initial words with mixed division-III finals.

In my notation, the *chóngniǔ* words placed in division III are spelled with *-j-* or *-i-*, but not both, while those placed in division IV are spelled with both *-j-* and *-i-*. For clarity, I will also usually add "(III)" or "(IV)" to call attention to *chóngniǔ* finals. Here is a selection of examples of *chóngniǔ* contrasts from various rhymes:

In the 支 Zhī (Tsye) rhyme:

(62) 陂 *bēi* < *pje* (III) 'river bank; dyke'

(63) 卑 *bēi* < *pjie* (IV) 'low; humble'

(64) 虧 *kuī* < *khjwe* (III) 'to fail, lack'

(65) 窺 *kuī* < *khjwie* (IV) 'to pry, spy'

In the 脂 Zhī (Tsyij) rhyme:

(66) 器 *qì* < *khijH* (III) 'vessel; instrument'

(67) 棄 *qì* < *khjijH* (IV) 'to throw away'

(68) 媚 *mèi* < *mijH* (III) 'love; flatter'

(69) 寐 *mèi* < *mjijH* (IV) 'to sleep'

(70) 軌 *guǐ* < *kwijX* (III) 'wheel-axle ends; rut'

(71) 癸 *guǐ* < *kjwijX* (IV) '10th heavenly branch'

In the 真 Zhēn (Tsyin) rhyme:

(72) 貧 *pín* < *bin* (III) 'poor'

(73) 頻 *pín* < *bjin* (IV) 'river bank; frequently'

(74) 麇 *jūn* < *kwin* (III) 'fallow-deer'

(75) 均 *jūn* < *kjwin* (IV) 'even, equal'

(76) 筆 *bǐ* < *pit* (III) 'writing implement'

(77) 必 *bì* < *pjit* (IV) 'necessarily'

(78) 密 *mì* < *mit* (III) 'silent; dense'

(79) 蜜 *mì* < *mjit* (IV) 'honey'

(80) 乙 *yǐ* < *ʔit* (III) '2nd heavenly branch'

(81) 一 *yī* < *ʔjit* (IV) 'one'

In the 仙 Xiān (Sjen) rhyme:

(82) 弁 *biàn* < *bjenH* (III) 'cap'

(83) 便 *biàn* < *bjienH* (IV) 'comfortable; convenient'

(84) 眷 *juàn* < *kjwenH* (III) 'look on with affection'

(85) 絹 *juàn* < *kjwienH* (IV) 'kind of silk stuff'

In the 宵 Xiāo (Sjew) rhyme:

(86) 喬 *qiáo* < *gjew* (III) 'high; rising'

(87) 翹 *qiáo* < *gjiew* (IV) 'long tail-feather; piled up'

(88) 夭 *yāo* < *ʔjew* (III) 'beautiful; supernatural'

(89) 腰 *yāo* < *ʔjiew* (IV) 'waist; demand'

In the 侵 Qīn (Tshim) rhyme:

(90) 音 *yīn* < *ʔim* (III) 'sound'

(91) 愔 *yīn* < *ʔjim* (IV) 'mild, peaceful'

In the 鹽 Yán (Yem) rhyme:

(92) 淹 *yān* < *ʔjem* (III) 'submerge'

(93) 厭 *yān* < *ʔjiem* (IV) 'contented, tranquil'

By relying on the rhyme tables and on *fǎnqiè* spellings, it is usually possible to identify the division-III and division-IV *chóngniǔ* finals even for syllables which do not show minimal contrasts. For example, the word

(94) 巾 *jīn* < *kin* (III) 'kerchief'

is listed in division III of the *Yùnjìng*; we may assign it the division-III *chóngniǔ* final *-in* even though there is no contrasting division-IV *kjin* in *píngshēng*. Conversely, in *shǎngshēng* we have

(95) 緊 *jǐn* < *kjinX* (IV) 'to bind tight'

which the *Yùnjīng* places in division IV; we may assign it the division-IV *chóngniǔ* final *-jin* even though there is no contrasting division-III *kinX* in *shǎngshēng*.

The interpretation of these contrasts has been a matter of controversy for some time. The first point of controversy is whether the distinction needs to be represented at all in a reconstruction of Middle Chinese. The philologist Zhāng Bǐnglín 章炳麟 (1867–1936) believed that the *chóngniǔ* distinctions, like many of the other distinctions in the *Qièyùn*, were artificially retained in the *Qièyùn* from an earlier period. In this view he was followed by Wáng Lì, who omitted the *chóngniǔ* distinctions in his reconstructions of Middle Chinese.[60] Karlgren also failed to mark the *chóngniǔ* distinctions in his Ancient Chinese reconstruction, without clearly stating his reasons.

The *chóngniǔ* distinctions have been largely lost in modern dialects, and it is not implausible that they had already been lost in some Middle Chinese dialects; but it is hardly likely that they were merely an archaism in the *Qièyùn*. Traces of the *chóngniǔ* distinctions are found in Sino-Vietnamese and Sino-Korean, in the *man'yōgana* script used to write Old Japanese, and even in Yuán dynasty transcriptions of Old Mandarin in the 'Phags-pa

alphabet. There are also some corresponding distinctions in the Mǐn dialects (though it should be remembered that these separated from the other dialects before the *Qièyùn* period).[61]

A second issue is which, if either, of the *chóngniǔ* finals occurring after grave initials should be identified with the finals which occur after acute initials in the same rhymes. For example, in the 真 Zhēn (Tsyin) rhyme, along with *chóngniǔ* syllables like

(96) 貧 *pín* < *bin* (III) 'poor'

and

(97) 頻 *pín* < *bjin* (IV) 'river bank; frequently',

there are acute-initial words like

(98) 真 *zhēn* < *tsyin* 'real'.

Should the final in 真 *zhēn* < *tsyin* be identified with the final in 貧 *pín* < *bín* (III), or with the final in 頻 *pín* < *bjin* (IV)? Possible positions include the following:

1. That the words 真 *zhēn* < *tsyin* and 頻 *pín* < *bjin* (IV) had the same final, contrasting with that of 貧 *pín* < *bin* (III). This position was taken by Dǒng Tónghé (1948a [1974]) and Zhōu Fǎgāo (1948a [1968]) in their early papers on the *chóngniǔ* problem; Lǐ Róng (1956) also takes this position.
2. That the words 真 *zhēn* < *tsyin* and 貧 *pín* < *bin* (III) had the same final, contrasting with that of 頻 *pín* < *bjin* (IV). Shào Róngfēn takes this position (1982: 70–80).
3. That some acute-initial syllables had the same final as 貧 *pín* < *bin* (III), while others had the same final as 頻 *pín* < *bjin* (IV). Lù Zhìwéi took this position (1947 [1971]: 24–29): he identified the division-III *chóngniǔ* finals with the finals of the same rhymes which occur with retroflex initials and *l*-, and the division-IV *chóngniǔ* finals with the finals of the remaining acute-initial syllables. This position finds some support in *fǎnqiè* spellings.
4. That the distinction between the finals of 貧 *pín* < *bin* (III) and 頻 *pín* < *bjin* (IV) is simply neutralized after acute initials. This is the safest (and weakest) position, if one's phonological theory allows it.

For the present, I am content to adopt the last position, which at least does not conflict with the facts. In my Middle Chinese transcription, it is the

division-IV *chóngniǔ* finals which are specially marked, by being written with both *-j-* and *-i-*. But although this appears to favor the second position above, it is merely a graphic device and should not be taken as a phonological interpretation.

A third point of controversy is what part of the syllable the *chóngniǔ* contrasts should be assigned to. On this point there are two main positions:

1. that the distinction resides in the main vowel, and
2. that the distinction resides in the prevocalic medial.

The main-vowel solution, adopted by Dǒng Tónghé (1948a [1974]) and Zhōu Fǎgāo (1948a [1968]), is supported by the fact that the *chóngniǔ* distinctions can often be correlated with distinctions in Old Chinese rhyming. For example, division-IV 頻 *pín* < *bjin* and division-III 貧 *pín* < *bin* belong to different Old Chinese rhyme groups in the Qīng phonologists' analysis (traditionally labeled 真 Zhēn and 文 Wén respectively; see Chapter 4 below). It was correlations such as this that led Zhāng Bǐnglín to regard the distinctions as archaic and artificial in the *Qièyùn*.

But the medial solution, proposed by Kōno Rokurō (1939), Arisaka Hideyo (1937–39 [1957], 1962), Lù Zhìwéi 1947 [1971]: 24–29), and others, is supported by the fact that the *chóngniǔ* pairs are placed in the same *Qièyùn* rhymes. Both 頻 *pín* < *bjin* and 貧 *pín* < *bin* are in the *Qièyùn*'s rhyme 真 Zhēn (Tsyin), and it has been widely assumed that the *Qièyùn* authors, who drew very fine distinctions in assigning words to rhymes, would not put words with different main vowels in the same rhyme.[62] It is common, however, to have words with different medials in the same rhyme.

It is possible that both solutions are correct, but for different dialects or different time periods. The interpretation of the *chóngniǔ* distinctions will be discussed further in Chapter 7, where we will see that the *chóngniǔ* distinctions of Middle Chinese reflect Old Chinese distinctions in both the medial and the main vowel.

The *chóngniǔ* finals are listed in Table 2.28, with the *Qièyùn* rhymes in which they occur.

Table 2.28. The Middle Chinese *chóngniǔ* finals

Qièyùn rhyme		MC finals	Karlgren
支 Zhī (Tsye)	III:	*-je, -jwe*	*-iɛ̨, iwɛ̨*
	IV:	*-jie, -jwie*	
脂 Zhī (Tsyij)	III:	*-ij, -wij*	*-i, -wi*
	IV:	*-jij, -jwij*	
祭 Jì (TsjejH)	III:	*-jejH, -jwejH*	*-i̯āi-, i̯wāi-*
(*qùshēng* only)	IV:	*-jiejH, -jwiejH*	
真 Zhēn (Tsyin)	III:	*-in, -win*	*-i̯ĕn, -i̯wɛ̨n*
	IV:	*-jin, -jwin*	*-i̯ĕn, -i̯uĕn*
仙 Xiān (Sjen)	III:	*-jen, -jwen*	*-i̯ān, -i̯wān*
	IV:	*-jien, -jwien*	
宵 Xiāo (Sjew)	III:	*-jew*	*-i̯äu*
	IV:	*-jiew*	
侵 Qīn (Tshim)	III:	*-im*	*-i̯əm*
	IV:	*-jim*	
鹽 Yán (Yem)	III:	*-jem*	*-i̯äm*
	IV:	*-jiem*	
庚 Gēng (Kæng)	III:	*-jæng, -jwæng*	*-i̯ʊng, i̯wʊng*
清 Qīng (Tshjeng)	IV:	*-jieng, -jwieng*	*-i̯āng, -i̯wāng*
幽 Yōu (ʔJiw)	IV:	*-jiw*	*-i̯ĕu*

Table 2.28 includes three sets of finals which may be regarded as *chóngniǔ* finals in an extended sense:

1. The finals *-jæng* and *-jwæng* of the 庚 Gēng (Kæng) rhyme may be considered division-III *chóngniǔ* finals; the finals *-jieng* and *-jwieng* of the 清 Qīng (Tshjeng) rhyme may be considered the corresponding division-IV *chóngniǔ* finals. These finals bear the same relation to each other as the other division-III and division-IV *chóngniǔ* finals, except that they happen to have been put into separate *Qièyùn* rhymes. They are all division-III finals in the broad sense, and unlike the independent division-III finals, they did not cause labial initials to become labiodental. The finals *-jæng* and *-jwæng* are found in division III of the rhyme tables, while *-jieng* and *-jwieng* are found in division IV. To be consistent with the transcription of the other division-IV *chóngniǔ* finals, I write *-jieng* and *-jwieng* with both *-j-* and *-i-* when they occur after grave initials. The 清 Qīng (Tshjeng) rhyme

also includes syllables with acute initials; I write the final of such syllables as *-jeng*. There is no final *-jweng* after acute initials.

2. The 幽 Yōu (ʔJiw) rhyme (final *-jiw*) may be considered a division-IV *chóngniǔ* final. The *Qièyùn*'s 幽 Yōu (ʔJiw) rhyme includes mostly words with grave initials, which are placed in division IV of the rhyme tables. The *fǎnqiè* spellings of these words indicate that they had palatalized or "yodised" allophones, so their final must be regarded as a division-III final (in the broad sense) rather than a pure division-IV final. Since the grave-initial words are placed in division IV, I write the final of this rhyme as *-jiw*, with both *-j-* and *-i-*, and include this final among the division-IV *chóngniǔ* finals even though there is no contrasting division-III final in the same rhyme. The 幽 Yōu (ʔJiw) rhyme also includes a few acute-initial words, whose final I write as *-iw*.[63]

2.4.2. Summary of Middle Chinese finals

Traditionally, the finals of Middle Chinese are often classified according to sixteen categories called *shè* 攝 'gatherings' which originate in the rhyme-table tradition. The grouping by *shè* is probably based on phonetic similarity in Late Middle Chinese rather than Early Middle Chinese; for example, although *-on* and *-won* rhyme with *-jon* and *-jwon* in Early Middle Chinese (and are in adjacent rhymes in the *Qièyùn*), they belong to different *shè*. Nevertheless, the traditional arrangement by *shè* is a useful way to summarize the finals of Middle Chinese by placing similar finals together. The finals of Middle Chinese are summarized by *shè* in Table 2.29. Within each *shè*, finals are listed by division. Karlgren's Ancient Chinese reconstruction is given for comparison.

Table 2.29. Middle Chinese finals summarized by *shè*

	Baxter	Karlgren	*Qièyùn* rhyme
		1. 通攝 Tōng (Thuwng) *shè*	
I	*-uwng*	*-ung*	東 Dōng (Tuwng)
	-owng	*-uong*	冬 Dōng (Towng)
III	*-juwng*	*-i̯ung*	東 Dōng (Tuwng)
	-jowng	*-i̯wong*	鍾 Zhōng (Tsyowng)
		2. 江攝 Jiāng (Kæwng) *shè*	
II	*-æwng*	*-ɖng*	江 Jiāng (Kæwng)
		3. 止攝 Zhǐ (Tsyix) *shè*	
III	*-j(w)(i)e*	*-(w)i̯ɛ*	支 Zhī (Tsyɛ)
	-(j)(w)ij	*-(w)i*	脂 Zhī (Tsyij)
	-i	*-i*	之 Zhī (Tsyi)
	-j(w)i̯j	*-(w)ɐi*	微 Wēi (Mjɨj)

Note: In Karlgren's system, the finals *-ɐi* and *-wɐi* are always preceded by *-j-*, but strictly speaking this represents the "yodisation" of the initial, not part of the final.

		4. 遇攝 Yù (NgjuH) *shè*	
I	*-u*	*-uo*	模 Mú (Mu)
III	*-jo*	*-i̯wo*	魚 Yú (Ngjo)
	-ju	*-i̯u*	虞 Yú (Ngju)

Continued on next page

Table 2.29, continued

	Baxter	Karlgren	*Qièyùn* rhyme
		5. 蟹攝 Xiè (Hɛix) *shè*	
I	*-oj*	*-ậi*	咍 Hāi (Xoj)
	-woj	*-uậi*	灰 Huī (Xwoj)
	-(w)ajH	*-(w)âi-*	泰 Tài (ThajH) (*qùshēng* only)
II	*-(w)ɛj*	*-(w)ăi*	皆 Jiē (Kɛj)
	-(w)ɛi	*-(w)ai*	佳 Jiā (Kɛi)
	-(w)æjH	*-(w)ai-*	夬 Guài (KwæjH) (*qùshēng* only)
III	*-jw(i)ejH*	*-i̯(w)ăi-*	祭 Jì (TsjejH) (*qùshēng* only)
	-j(w)ojH	*-i̯(w)ɒi-*	廢 Fèi (PjojH) (*qùshēng* only)
IV	*-(w)ej*	*-i(w)ei*	齊 Qí (Dzej)
		6. 臻攝 Zhēn (Tsrin) *shè*	
I	*-on*	*-ən*	痕 Hén (Hon)
	-won	*-uən*	魂 Hún (Hwon)
III	*-in*	*-i̯ɛn*	臻 Zhēn (Tsrin)
	-(j)(w)in	*-i̯(w)ĕn*, *-i̯uĕn*	真 Zhēn (Tsyin)
	-jin	*-i̯ən*	殷 Yīn (ʔJin)
	-jun	*-i̯uən*	文 Wén (Mjun)

Note: Karlgren wrote the division-III *chóngniǔ* final *-win* as *-i̯wĕn*, and the division-IV *chóngniǔ* final *-jwin* (and *-win* after acute initials) as *-i̯uĕn*, because the former is in the same *Guǎngyùn* rhyme as *-in* and *-jin* (his *-i̯ĕn*), while the latter is in a separate *Guǎngyùn* rhyme. This is the only case where Karlgren's notation reflects the distinction between division-III and division-IV *chóngniǔ* finals.

Continued on next page

Table 2.29, continued

	Baxter	Karlgren	*Qièyùn* rhyme
		7. 山攝 Shān (Srɛn) *shè*	
I	*-(w)an*	*-(u)ân*	寒 Hán (Han)
II	*-(w)æn*	*-(w)an*	刪 Shān (Sræn)
	-(w)ɛn	*-(w)ăn*	山 Shān (Srɛn)
III	*-j(w)(i)en*	*-i̯(w)ăn*	仙 Xiān (Sjen)
	-j(w)on	*-i̯(w)ɒn*	元 Yuán (Ngjwon)
IV	*-(w)en*	*-i(w)en*	先 Xiān (Sen)
		8. 效攝 Xiào (HæwH) *shè*	
I	*-aw*	*-âu*	豪 Háo (Haw)
II	*-æw*	*-au*	肴 Yáo (Hæw)
III	*-j(i)ew*	*-i̯ău*	宵 Xiāo (Sjew)
IV	*-ew*	*-ieu*	蕭 Xiāo (Sew)
		9. 果攝 Guǒ (KwaX) *shè*	
I	*-(w)a*	*-(u)â*	歌 Gē (Ka)
III	*-j(w)a*	*-i̯(w)â*	歌 Gē (Ka)
		10. 假攝 Jiǎ (KæX) *shè*	
II	*-(w)æ*	*-(w)a*	麻 Má (Mæ)
III	*-jæ*	*-i̯a*	麻 Má (Mæ)
		11. 宕流 Dàng (DangH) *shè*	
I	*-(w)ang*	*-(w)âng*	唐 Táng (Dang)
III	*-j(w)ang*	*-i̯(w)ang*	陽 Yáng (Yang)

Continued on next page

Table 2.29, continued

	Baxter	Karlgren	*Qièyùn* rhyme
		12. 梗攝 Gěng (Kængx) *shè*	
II	*-(w)æng*	*-(w)ɒng*	庚 Gēng (Kæng)
	-(w)ɛng	*-(w)ɛng*	耕 Gēng (Kɛng)
III	*-j(w)æng*	*-i̯(w)ɒng*	庚 Gēng (Kæng)
	-j(w)(i)eng	*-i̯(w)ăng*	清 Qīng (Tshjeng)
IV	*-(w)eng*	*-i(w)eng*	青 Qīng (Tsheng)
		13. 曾攝 Zēng (Tsong) *shè*	
I	*-(w)ong*	*-(w)əng*	登 Dēng (Tong)
III	*-(w)ing*	*-i̯(w)əng*	蒸 Zhēng (Tsying)
		14. 流攝 Liú (Ljuw) *shè*	
I	*-uw*	*-u̯*	侯 Hóu (Huw)
III	*-juw*	*-i̯u̯*	尤 Yóu (Hjuw)
	-(j)iw	*-i̯ĕu*	幽 Yōu (ʔJiw)
		15. 咸攝 Xián (Hɛm) *shè*	
I	*-om*	*-ậm*	覃 Tán (Dom)
	-am	*-âm*	談 Tán (Dam)
II	*-ɛm*	*-ăm*	咸 Xián (Hɛm)
	-æm	*-am*	銜 Xián (Hæm)
III	*-j(i)em*	*-i̯ăm*	鹽 Yán (Yem)
	-jæm	*-i̯ɒm*	嚴 Yán (Ngjæm)
	-jom	*-i̯wɒm*	凡 Fán (Bjom)
IV	*-em*	*-iem*	添 Tiān (Them)
		16. 深攝 Shēn (Syim) *shè*	
III	*-(j)im*	*-i̯əm*	侵 Qīn (Tshim)

Chapter 3

Rhymes as evidence in historical phonology

The present chapter deals with some of the methodological problems which arise in using rhymes in general, and Old Chinese rhymes in particular, as evidence in historical phonology. To use rhymes in this way, one must make some assumptions, explicit or implicit, about how rhyme and phonology are related. It is sometimes assumed that two linguistic strings rhyme if and only if suitably defined substrings are phonemically identical; we may call this the "phonemic identity hypothesis". Life would be simplest for phonologists if this hypothesis were always true; but among the world's literatures there are rhyming systems which conflict with it in various ways. Nevertheless, we will conclude that for Old Chinese it is safe to assume a somewhat weaker hypothesis which still allows us to use the *Shījīng* rhyme evidence in reconstructing Old Chinese phonology. These issues are discussed in section 3.1.

Other problems in analysis arise from the existence of irregular rhymes and from the limited size of the available corpus. Occasional irregular rhymes may obscure the difference between otherwise distinct rhyme categories; we need some way of ensuring that such rhymes do not lead us astray. But even if all the rhymes in a corpus agreed with assumed ideal patterns, our ability to test hypotheses reliably would be limited by the size of the corpus, since the actually occurring rhymes are only a small proportion of the theoretically possible ones. Section 3.2 addresses these problems and proposes statistical procedures for testing hypotheses about rhyming patterns. These procedures are illustrated with actual examples in section 3.3.

The analysis of Old Chinese rhyming was a major part of the traditional Chinese philology which flourished in the Qīng dynasty. This tradition, to be discussed in Chapter 4, rightly commands great respect from modern scholars, who in attempting to reconstruct Old Chinese phonology have seldom questioned the Qīng scholars' results. Nevertheless, it is a major theme of this study that the traditional analysis overlooks some rhyme distinctions which are important to a correct reconstruction of Old Chinese. The statistical tools introduced in this chapter will assist us in reexamining and refining this traditional analysis.

3.1. Rhyme and phonological structure

Verse is typically (though not invariably) distinguished from prose by the presence of certain structural constraints. For example, there may be a constraint on the number of syllables in a line, or the number of lines in a stanza, or it may be required that certain lines rhyme. In addition to such structural constraints, various ornamental devices may be used in verse at the poet's discretion, without being structurally required. These constraints and ornaments mark verse as a special form of discourse. Both the structural constraints and the ornamental devices may be anchored in almost any aspect of language which poets can bring to awareness: phonology, as in rhyme, alliteration, meter, etc.; word boundaries, required or forbidden at certain positions in a line; syntactic categories, as when grammatical parallelism is required between certain lines; semantic categories, as when words of the same semantic field are required in corresponding structural units;[64] and aspects of the script, as in the acrostic psalms of the Hebrew Bible (e.g. Psalms 111 and 112), in which lines begin with successive letters of the Hebrew alphabet. Complex combinations of these devices occur also.

Rhyme is one of several poetic devices involving relations of phonological equivalence. Other such devices include alliteration (involving equivalence of initial consonants), assonance (involving equivalence of vowels only), and consonance (involving equivalence of consonants in noninitial position). Depending on the verse form, these relations may be used either ornamentally and optionally, or as defining characteristics of the verse form itself. Shakespeare's dramatic verse sometimes rhymes, but it is the meter rather than the rhyme which seems to be the defining characteristic of the form. But in the sonnet, the use of rhyme is part of the definition of the form (though the English sonnet shows a variety of rhyme schemes). In modern English poetry, alliteration is mostly an ornamental device, but in earlier Germanic verse it was required by the verse form, and occurred at predictable places in the line. Nicholas Poppe mentions a Mongolian verse form in which it is required that every line of a quatrain begin with the same consonant (Poppe 1970, quoted in Molino & Tamine 1982: 57). In most Chinese poetry, rhyme is a constituent part of the verse form; however, in some of the early poems found in the *Zhōu sòng* 周訟 section of the *Shījīng,* rhyme occurs unpredictably if at all, and may be regarded as ornamental.

3.1.1. Defining rhyme

It is no simple matter to find a definition of rhyme which is valid for different languages and poetic traditions. We may begin by describing rhyme as a relation on linguistic strings. Mathematically, a relation such as "rhymes with" may be formally represented as a set of ordered pairs, so that the statement "*A* rhymes with *B*", where *A* and *B* are linguistic strings, is formally equivalent to the statement "The ordered pair <*A*, *B*> is an element of the relation 'rhymes with'". If we abbreviate "rhymes with" as "*R*", we may write "<*A*, *B*> ∈ *R*" or, by analogy to notations like "$a = b$" or "$a < b$", "*A R B*".

The relation "rhymes with" must be differently defined for different languages and different times, and for different styles of verse, if it is to correspond to the normal use of the word "rhyme"; instead of defining a single relation *R* on all linguistic strings, regardless of what languages they are drawn from, we must assume a whole series of rhyme relations $R_{Chinese}$ ("rhymes with in Chinese"), R_{French} ("rhymes with in French"), and so forth. Even $R_{Chinese}$ is far from specific enough, for we will have to distinguish the relations "rhymes with in regulated verse", "rhymes with in Beijing opera", and so forth. When we speak in general terms about rhyming, then, we are speaking not of a single relation, but of a whole class of relations for different languages, times, and genres.

What properties do rhyme relations have? Again, the mathematical approach to relations may be helpful. It seems clear that rhyme relations are symmetric: that is, if *A* rhymes with *B*, then *B* rhymes with *A*, or

$$A\,R\,B \Rightarrow B\,R\,A.$$

Rhyming is also generally assumed to be transitive: that is, if *A* rhymes with *B* and *B* rhymes with *C*, then *A* rhymes with *C*:[65]

$$(A\,R\,B)\ \&\ (B\,R\,C) \Rightarrow A\,R\,C.$$

Are rhyme relations reflexive? That is, does every string rhyme with itself? Several approaches to this question are possible. Some traditional definitions of rhyme say that a word does not make a good rhyme with itself. For example, Wáng Lì states that in the *shī* 詩 and *cí* 詞 genres of Chinese poetry, rhyming a word with itself is excluded, but the restriction is relaxed in *qǔ* 曲 poetry, where long rhyme sequences (lasting through the whole act of a play, for example) often include the same word more than once (Wáng Lì 1957 [1973]: 762). The reason for such restrictions seems to be that rhyming a word with itself is considered too easy to be aesthetically

pleasing. When defining a rhyme relation formally, it seems simplest to agree that a string does rhyme with itself, but that such rhymes are deemed inappropriate in certain genres.

If we agree that rhyme relations are reflexive, then we find that they fit the mathematical definition of equivalence relations—relations that are symmetric, transitive, and reflexive. By a well-known mathematical result, any equivalence relation on a set partitions that set into disjoint equivalence classes—that is, into nonoverlapping subsets with the characteristic that every member of any of the subsets is in the relation R with every member of that subset, including itself, and with nothing else. In other words, a rhyme relation defines a set of nonoverlapping rhyme categories of strings such that all the members of one category rhyme with each other, and with nothing else.[66] One way of specifying a rhyme relation, then, is to specify the rhyme categories and their membership; and in fact this is how standards for rhyming in Chinese have traditionally been stated, in rhyme books such as the *Qièyùn* 切韻 of A.D. 601 (for Early Middle Chinese) or the *Zhōngyuán yīnyùn* 中原音韻 of A.D. 1324 (for Old Mandarin).

So far, I have described rhyme relations somewhat vaguely as equivalence relations on "linguistic strings". What kinds of strings are rhymes defined on, and what must we know about two strings in order to determine whether they rhyme or not? I will not attempt to give a precise formal answer, but we can clarify matters somewhat. The word "rhyme" is sometimes used of single words, sometimes of whole lines. When we speak of two lines rhyming with each other, though, it is only the last parts of the lines that are relevant; we may call these parts the "rhyming portions" of the lines. Although shorter than a full line, the rhyming portion is sometimes longer than a conventional word. For example, in W. S. Gilbert's "Nightmare", "plunder you" rhymes with "under you":

> For your brain is on fire—the bedclothes conspire of usual
> slumber to plunder you:
> First your counterpane goes, and uncovers your toes, and
> your sheet slips demurely from under you.

In Jonathan Swift's "On Poetry, A Rhapsody", "bite 'em" rhymes with "ad infinitum":

> So, naturalists observe, a flea
> Hath smaller fleas that on him prey;
> And these have smaller still to bite 'em;
> And so proceed ad infinitum.

In Chinese poetry, too, rhyme sometimes involves more than one syntactic word. An example is Ode 98, stanza 1 of the *Shījīng*, where the rhyme word is third from the end in each line, the last two words being identical (translation adapted from Karlgren 1974):

俟我於著乎而　*sì wǒ yú ZHÙ HŪ ÉR*
充耳以素乎而　*chōng ěr yǐ SÙ HŪ ÉR*
尚之以瓊華乎而　*shàng zhī yǐ qióng HUÁ HŪ ÉR*

Lo! He waited for me in the SPACE BETWEEN THE SCREENING WALL AND THE GATE.
Lo! He had ear-stoppers of WHITE (material).
On them he had (the FLOWER of =) the most exquisite of *qióng* stones.

Though the examples cited above involve more than one word as conventionally defined, one could argue that in these cases the words after the first rhyme are enclitic, and that only a single phonological word is involved in each case. A common statement for English is that two lines rhyme if they match from the last stressed vowel to the end; this is a reasonable interpretation for most other languages also.

But what is it about these substrings that must match, and how closely must it match? Traditional Western descriptions of rhyme often speak simply of identity of "sound"; Chinese descriptions sometimes speak of rhyme words as being "harmonious [héxié 和諧]". When modern linguists developed the notion of the phoneme as a unit of sound which was psychologically real for the speaker, it was natural to suppose that rhyme was normally defined in terms of these units. This would explain some cases where phonetically different sounds rhyme with each other. Baudouin de Courtenay argued out that the Russian vowels transcribed as *i* and *y*, although phonetically different, represent the same phoneme (being conditioned by the preceding consonant), and also form a "perfect rhyme" (1903 [1963]: 37). The hypothesis that rhyme is based on phonemic identity may be formulated as follows:[67]

> Phonemic identity hypothesis: Linguistic strings *A* and *B* rhyme if and only if they are phonemically identical from the rightmost stressed vowel to the end.

Since this is an "if and only if" statement, we can separate it into an "if" part and an "only if" part. The "only if" part amounts to saying

> Rhyme equivalence implies phonemic identity.

The "if" part is

Phonemic identity implies rhyme equivalence.

It would be most convenient for phonologists if both statements were always true, for then rhyming would mirror phonology directly. Unfortunately, neither statement is true in general.

The phonemic identity hypothesis assumes that the rhyme relations used in literature may be defined in purely phonological terms. In some cases, this may be true. But relations defined in purely phonological terms are sometimes unsuitable for poetic use, for several reasons:

1. Phonology changes with time and varies from place to place, but literary traditions may persist over several centuries, and may encompass more than one dialect area. For this reason, phonological criteria for rhyme are often supplemented by nonphonological conventions which are intended to make poetic practice standard and consistent over a long period of time and in a large geographic area. These conventions may lead poets to rhyme, or attempt to rhyme, according to dialects other than their own—and not necessarily in a consistent fashion.

2. Categories based solely on phonology sometimes place heavy burdens on the poet; after all, the distribution of the relevant linguistic elements is not planned with the convenience of poets in mind. For this reason, literary conventions may include what we might call "gentlemen's agreements" to allow certain phonologically inexact rhymes in order to make the poet's job easier, even if these rhymes would not be exact in any dialect.

3. Conversely, in some cases, rhyme categories based purely on phonology may make the poet's job so easy as to render the result facile and uninteresting. This is probably the basis for the stipulation in many traditions that a word cannot rhyme with itself. In inflected languages, it is sometimes considered inelegant, at least, to take the easy way out by rhyming words which share the same inflectional endings. In French verse (as also in Russian), rhymes consisting of a single final vowel are not allowed unless the preceding consonants are the same also; the effect is to require that the matching portions of two rhyming strings be at least two segments long. Languages such as Japanese, whose phonological pattern allows only a very limited number of possible rhymes, may eschew the poetic use of rhyme entirely.

For these reasons, the rhyme system used in a particular literary tradition may violate either part of the phonemic identity hypothesis. The statement

that rhymes must match phonemically is violated in German verse, for example, where the front rounded vowels [y:], [y], [ø:], and [œ] are commonly allowed to rhyme with the corresponding front unrounded vowels [i:], [i], [e:], and [ɛ] (Manaster Ramer n.d.). This is a clear case of different phonemes being allowed to rhyme.[68] On the one hand, this follows the model of famous poets of the past (such as Goethe) whose dialects apparently lacked this distinction, and who freely made such rhymes; for example, in *Faust,* Goethe rhymes *zieht* with *blūht* (standard German [tsi:t] / [bly:t]). On the other hand, such a convention makes it easier for the poet to find rhymes. In this case, imitation of tradition, dialect compromise, and a gentlemen's agreement in the poet's favor are all involved.

Rhyme systems violate the "if" part of the phonemic identity hypothesis if they make distinctions between phonemically identical strings. One way to do this would be to define rhyming phonetically rather than phonologically; such would be the case in Russian, for example, if a rhyming distinction were made between the vowels *i* and *y*. It is difficult to find clear examples of such subphonemic rhyming; most apparent cases turn out to depend on controversial decisions in phonological analysis. For example, according to Hartman's analysis of Mandarin (1944 [1957]), the Mandarin high open-syllable finals [ɨ], [i], [u], and [y] are analyzed as /i/, /yi/, /wi/, and /ywi/, with the same main vowel /i/ (which simply indicates the feature [+ high]). If this /i/ is taken seriously as the main vowel, then the phonemic identity hypothesis would suggest that these four finals should rhyme. But they do not: in particular, rhymes of [i] with [u] (i.e., Hartman's /yi/ with /wi/) are unknown. If Hartman's analysis is correct, this would be a case of a subphonemic rhyming distinction; but it is not clear that this is the correct analysis.

Except for cases like this, it appears that rhyming rarely if ever recognizes subphonemic distinctions.[69] If phonemes really are psychologically real units of sound, it is easy to see why this is true: to observe subphonemic distinctions in rhyming, poets would have to use phonetic differences which native speakers do not normally notice.

Though the recognition of subphonemic distinctions in rhyming is at least rare, there are other ways of violating the "if" part of the phonemic identity hypothesis. For example, strings which are phonologically and phonetically identical may not be considered a good rhyme because of entirely non-phonetic factors such as spelling, etymology, or tradition. Rhyme in French verse of the classical style, for example, is defined partly by sound and

partly by orthography: final consonants represented in the spelling affect rhyming, even when they are not pronounced. For example, the pair

soi [swa] 'oneself'
vois [vwa] 'see (1 sg.)'

is not considered a good rhyme because of the orthographic *-s* in *vois*. This practice presumably imitates poetry written at a time when the consonants were still pronounced.[70]

The Chinese poetic tradition supplies examples of systems which simultaneously violate both the "if" and the "only if" parts of the phonemic identity hypothesis. For example, traditional *jìntǐ shī* 近體詩 'new-style verse' (which includes both *lǜshī* 律詩 'regulated verse' and the related *juéjù* 絕句 form) is supposed to be written according to the categories of the *Píngshuǐ yùn* 平水韻, a rhyme standard codified under the Jīn 金 dynasty (1115–1234), and archaic even then, being based in part on the categories of earlier rhyme books such as the *Qièyùn*. In the *Píngshuǐ yùn* there are 106 rhymes, distributed among the four tones (thirty in *píngshēng*, twenty-nine in *shǎngshēng*, thirty in *qùshēng*, and seventeen in *rùshēng*). An example of the artificiality of this standard is that words with the Middle Chinese finals *-on* and *-won* are supposed to rhyme with those in Middle Chinese *-jon* and *-jwon*, just as they did in Early Middle Chinese times, and all these words are combined in the thirteenth *píngshēng* category 元 Yuán (MC *Ngjwon*)—even though *-jon* has long since merged with *-jen* and *-en*, and *-jwon* has merged with *-jwen* and *-wen*. Thus a word like

(99) 言 *yán* < *ngjon* 'word'

must rhyme in the 元 Yuán category, with words like

(100) 根 *gēn* < *kon* 'root'

and

(101) 村 *cūn* < *tshwon* 'village'.

But the word

(102) 妍 *yán* < *ngen* 'beautiful',

which in modern speech is a homonym of 言 *yán* 'word', rhymes in the 先 Xiān category. This has led to the popular term "gāi sǐ de shísān Yuán 該死的十三元 [damned number 13 Yuán]" for the troublesome Yuán 元 category. Note that this rhyme practice violates both parts of the phonemic identity hypothesis: the homonyms 妍 *yán* and 言 *yán* do not rhyme with

each other, while 言 *yán* and 根 *gēn,* usually analyzed with different main vowels, do rhyme.

The different types of violations of the phonemic identity hypothesis often reflect different literary and cultural contexts. Cases where phonologically different strings are allowed to rhyme may be somewhat less natural than purely phonological rhyming, but such conventions are relatively easy to learn, and make life easier for the poet, so they may persist for a long time. To rhyme in the traditional way, a German poet need only learn which pairs of vowels are considered equivalents for rhyming purposes; he does not need to carry around a rhyme book or memorize long lists of rhyme words and their categories. Conventions of this kind may be dropped, however, if a movement toward standardization introduces stricter attitudes about rhyming. The *Qièyùn*—or at least the use to which it was put in the Táng dynasty—probably represented such a movement.

While conventions allowing phonologically different strings to rhyme are rather common, phonologically artificial rhyming distinctions are generally harder to learn, and presuppose the existence of a literature prescribing what may rhyme with what. Such a literature could be oral, but the system is probably easier to maintain if it is written down. The conventions of classical verse in French and Chinese are of this kind. Systems of this type are generally harder on the poet, and as phonological changes accumulate, so will the pressure to abandon the ever more artificial classical standards and bring poetry closer to ordinary pronunciation. This has happened more than once in the history of Chinese verse.

How do these considerations affect the use of rhymes as evidence about phonology? Clearly, it is risky (though not always wrong) to infer phonological identity from rhyme equivalence; by this assumption we would falsely conclude that German front rounded vowels had disappeared long ago. Similarly, in Mandarin verse, the finals [ɨ], [i], and [y] are traditionally allowed to rhyme, and this too would lead us to false conclusions about Mandarin phonology.[71]

It is somewhat less risky to infer phonological distinctions from rhyming distinctions. As we have seen, it is possible for rhyme systems to incorporate artificial distinctions not reflected in phonology, but many forces work against such distinctions: they are hard to learn and use, and they probably require the support of a prescriptive literature telling how poetry should be written. Still, in the right conditions, artificial rhyme distinctions can be preserved over many centuries, as French classical poetry and Chinese *jìntǐ shī* illustrate. If we assumed that the distinctions of these systems reflected

contemporary phonology, we would be led to a number of errors. Fortunately for phonologists, such artificial conventions often apply only to certain genres; there may be other contemporary genres whose rhyming reflects phonology more directly.

We are probably safe in assuming that Old Chinese poetry is relatively free of artificial rhyming distinctions. We have no direct evidence for a literature about poetry which might have been the vehicle for enforcing such distinctions. Also, the social context of Old Chinese poetry is quite different from that of Táng times and later, when the ability to compose poetry in standardized forms was part of the qualification for employment as an official. The phonological diversity found in the *Shījīng* also suggests that the forces of standardization were not very strong.[72] Under these circumstances, clear rhyme distinctions in Old Chinese poetry can probably be taken to represent distinctions in contemporary phonology.

I suspect, however, that the *Shījīng* may include some inexact but traditional stock rhymes which reflect an even older stage of phonology. The repetitive, formulaic nature of parts of the *Shījīng* has often been noticed, and suggests that the composition of these parts was at least partly oral. In oral poetry which relies largely on meter, such as the Homeric epics, the poet uses a stock of traditional expressions, longer than a single word, which fit the prescribed meter. Similarly, in orally composed poetry employing rhyme, we would expect to find stock rhyme sequences which would help the poet compose extemporaneously. I leave aside the issue of how much of the *Shījīng* may have been composed in this way; in any case, the existence of stock repeated expressions is clear to any reader of the text.

Once such stock rhyme sequences became part of the literary tradition, they might continue to be used even if sound changes made them imperfect as rhymes. I believe this may have happened in the case of the following words:

(103) 懷 *huái* < MC *hwɛj* < **gruj* 'to yearn'

(104) 歸 *guī* < MC *kjwɨj* < **kʷjɨj* 'to return'

I will show in section 10.1.8 that a rhyming distinction between **-uj* and **-ɨj* must be recognized for Old Chinese, and that to account for the overall rhyming pattern of these two words, we must reconstruct **-uj* in 懷 *huái* and **-ɨj* in 歸 *guī*.[73] However, in Odes 68.1–3, 101.1, and 251.2, 歸 *guī* appears to rhyme as **-uj*. Two of these rhymes, 68.1–3 and 101.1, are with 懷 *huái*. I suspect that 歸 *guī* < **kʷjɨj* dissimilated from an earlier **kʷjuj* (which otherwise does not exist in my system), and that this traditional

rhyme pair, created at a time when the two words rhymed phonologically, remained in use after the dissimilation which made them an inexact rhyme. (These inexact traditional rhymes are not numerous enough, however, to obscure the otherwise clear separation of *-*uj* and *-*ij*.)

3.2. A statistical method for analyzing rhyme data

The previous section discussed how rhyming systems may be related to phonology. Whether a given rhyme system is based strictly on phonology or on other considerations as well, we assume that it provides poets with a pattern to follow in constructing verse. Let us now consider the question of how we may test hypotheses about this pattern, on the basis of the rhymes in a given corpus.

Between a rhyme system and the rhymes of a particular corpus there is a relation similar to that drawn in linguistics between *langue* and *parole* or between competence and performance. The rhymes actually found in a corpus may deviate from the prescribed rhyme system for a variety of reasons. It may be impossible to find rhyme words which fit both what the system requires and what the poet wishes to express; or the poet may be unskillful or lax in rhyming; or the poet may wish to flout convention deliberately. This is only a partial list; there is no end to the variety of ways of respecting, flirting with, playing with, or pretending to ignore a set of literary conventions once they are established. For example, one could deliberately rhyme in a rather broad way to create the impression of informality or rusticness (if that is what broad rhyming connotes for the culture in question); this broad rhyming could in turn become a kind of convention to be played with, and so on.

Given such complex possibilities in the use of a rhyme system, how can we use actual texts to test hypotheses about rhyming? A typical hypothesis about rhyming is a statement that two groups of words, say, *A* and *B*, do or do not rhyme with each other freely. Presumably, to decide whether such a statement is true or not, we count something. But what do we count? Usually, it is rhyme sequences: we count the number of unmixed sequences (which involve only *A* words or only *B* words) and the number of mixed sequences (in which *A* and *B* words occur together). To argue that *A* and *B* are separate rhyme groups, we might point out that there are more unmixed sequences than mixed sequences; or that the mixed sequences are only such-and-such a percentage of the total, or that rhymes mixing *A* and *B* words do not occur at all.

Arguments of this kind are common in Chinese historical phonology when rhymes are used as evidence. For example, Wáng Lì (1937) proposed that the Old Chinese rhyme group traditionally called 脂 Zhī should be divided into a 脂 Zhī group and a 微 Wēi group. He summed up his discussion of the *Shījīng* rhyme evidence as follows:

> Of the 110 examples [of rhyme sequences] above, 脂 Zhī and 微 Wēi can be regarded as rhyming separately in eighty-four, about three-fourths of the total; 脂 Zhī and 微 Wēi can be regarded as rhyming together in twenty-six which is less than one-fourth of the whole....
>
> Especially worthy of notice are examples of long unmixed rhyme sequences. [Several examples are given of unmixed 脂 Zhī or 微 Wēi sequences, five to eight words in length.] These cannot be considered a chance phenomenon [zhèxie dōu bùnéng rènwéi ǒurán de xiànxiàng 這些都不能認爲偶然的現象]. (Wáng Lì 1937 [1980]: 146)[74]

There are many unresolved problems with arguments of this kind. For example:

1. Wáng Lì recognizes that longer unmixed rhyme sequences carry more weight than shorter ones, as the quotation above shows. But when counting rhyme sequences, he does not distinguish rhyme sequences of different lengths. Even intuitively, it should be clear that the rhyme sequence is not a suitable unit to count unless sequences of different lengths are somehow treated differently.

2. Simply comparing the numbers of unmixed and mixed sequences also fails to take into account the relative frequency of occurrence of groups *A* and *B*. Some words are more likely to occur as rhymes than others, and this affects the likelihood that unmixed rhyme sequences will occur by chance alone. For example, if *A* words are much more frequent than *B* words, then unmixed sequences involving *A* words will be rather frequent, and sequences mixing *A* and *B* words will be infrequent, simply because *B* words are infrequent.

3. In Chinese, if tone categories are ignored, as if often done in analyzing rhymes, then simply comparing mixed and unmixed sequences can sometimes be misleading. For example, suppose that most of the *A* words happen to be in *píngshēng*, and most of the *B* words happen to be in *shǎngshēng*. Then in poetry where tone affects rhyme, a rhyming distinction between *A* and *B* may appear to exist when the only relevant distinction is tone.

4. Finally, and most fundamentally, some irregular rhymes are likely to exist, for the reasons we have outlined; and most investigators would agree that a few rhymes mixing *A* and *B* words are not enough to compel us to combine *A* and *B* into a single rhyme group. But there is no agreement on how many mixed rhymes would be enough to force this conclusion. Wáng Lì offers the judgment that the data he cites "cannot be considered a chance phenomenon", and I believe he was right;[75] but he offers no actual arguments that this is the case. The question of what configurations of data can and cannot be attributed to chance is precisely the domain of probability and statistics.

The main purpose of this section is to present a statistical method for testing hypotheses about rhyming. This method avoids the problems just described, and is a refinement of previous efforts of mine in this direction (Baxter 1979, 1982, 1986b). Sections 3.2.1 through 3.2.6 develop and illustrate the method with simple hypothetical examples; section 3.2.7 discusses several problems with practical application of the method. In section 3.3, the proposed method is illustrated, using actual Old Chinese examples taken from the *Shījīng*.

The method described here inevitably involves a certain amount of mathematics, which I have attempted to explain as straightforwardly as possible. Readers with little patience for mathematics may be reassured that not all the arguments about Old Chinese rhyming to be presented in the remainder of the study require a thorough understanding of the details of this method; most can be grasped intuitively as well. Also, I do not claim that the method invalidates all the results of previous, nonmathematical studies of rhyming, many of which are very insightful. But a fully adequate analysis of Old Chinese rhyming cannot ignore the statistical issues involved.

The basic idea behind the statistical method presented here is this: two groups of words *A* and *B* can be regarded as belonging to separate rhyme categories if they rhyme with each other significantly less often than would be expected by chance. After counting the number of mixed rhymes in a sample, we calculate whether this number is significantly less than we would expect under the assumption—called the "null hypothesis"—that *A* and *B* do rhyme with each other freely. (Since the probability of getting a mixed sequence is different for rhyme sequences of different lengths, sequences of different lengths must be analyzed separately and the results combined mathematically, by the method introduced in section 3.2.4.) If the observed number of mixed rhymes is significantly smaller than expected,

then *A* and *B* probably do not rhyme with each other freely. This allows us to distinguish free, regular rhyming from occasional irregular rhyming.

The general procedure for testing hypotheses statistically can be summarized as follows. A statistical model is developed for the phenomena under investigation; this model takes the form of a mathematical structure called a "probability space", defined on a set Ω corresponding to the possible outcomes of the experiment being investigated. For example, if the experiment is drawing a card at random from a deck, then Ω includes the fifty-two cards of the deck. The probability space Ω is designed in such a way that a probability (a number between zero and one) can be assigned to each subset of Ω. Thus, if *A* is a subset of Ω, representing some possible event, then a probability function **P** is designed in such a way that **P**[*A*] is a number between zero and one, corresponding to the likelihood that the event *A* will occur. For example, if Ω represents a deck of cards, the thirteen-element set consisting of all the spades in the deck represents the outcome that a card drawn at random will be a spade; the probability 13/52 = 0.25 will be assigned to this event. Since every set is a subset of itself, **P**[Ω] is defined, and is equal to one; likewise the empty set $\varnothing$ is a subset of all sets, so **P**[$\varnothing$] is defined, and is equal to zero. (For a more detailed discussion of these concepts, see Hoel, Port, & Stone 1971, chapter 1.)

3.2.1. A model of rhyme-word choice

In order to test hypotheses about rhyming, then, we must develop a statistical model of the procedure by which a poet chooses rhyme words, so that an appropriate probability space can be designed. Of course, many factors affect a poet's choice of words, but we are interested only in those factors which are part of the rhyme system. For our purposes we may assume that once the poet chooses the rhyme group from which a rhyme sequence is to come, his or her choice of words within that rhyme group is random. It is traditional in probability and statistics to use the drawing of balls from an urn as a model of random choice. Thus, let us imagine an Old Chinese poet surrounded by a number of large urns—one for each of the Old Chinese rhyme groups. Each urn contains a large number of balls, and on each ball is written a Chinese character which can be used as a rhyme word. All the balls within any one urn belong to the same rhyme group, and rhyme with each other freely.

If the poet wants to choose a rhyme word, he or she simply reaches into one of the urns, pulls out one of the balls, writes down the word written on

it, and returns the ball to the urn from which it came. To choose rhyme words for a couplet, the poet repeats this procedure twice with the same urn; and so on. We assume that each ball in a given urn is as likely to be picked as any other, but clearly some words are more likely to be used as rhyme words than others; so we assume that some words are represented by more balls than others. For any word, the number of balls with that word written on them is proportional to the probability that that word will be chosen as a rhyme word.

Suppose we wish to test the hypothesis that two groups of words, *A* and *B*, do not rhyme with each other freely—that is, that they are stored in different urns. It is difficult to test this hypothesis directly. We know that groups *A* and *B* may rhyme with each other occasionally even if they are basically separate rhymes; because of the "performance factors" mentioned above, our poet is likely to reach into the wrong urn occasionally. But we have no way of predicting how often this will happen. We can, however, test the contrary hypothesis that *A* and *B* do rhyme with each other freely: if we assume that *A* and *B* words are put together in the same urn, then it is relatively simple to calculate how often our poet will pick rhyme sequences mixing *A* and *B* words. This prediction can then be compared with the number of mixed rhymes we actually find in the corpus. If the mixed rhymes are significantly fewer than expected, we can conclude that *A* and *B* do not rhyme with each other freely. In this case, the hypothesis that *A* and *B* do rhyme with each other freely—that they are in the same urn—is the null hypothesis. Let us see in detail how such a hypothesis is tested.

3.2.2. Modeling individual rhyme sequences

We can model the situation where the *A* and *B* words are in the same urn by supposing that in one urn, the balls are marked not only with Chinese characters, but also with a letter *A* or *B*. (Our poet pays no attention to these letters.) If the poet uses this urn many times, how often will the words chosen be *A* words, and how often will they be *B* words?

To calculate this, we must first estimate the relative frequency of *A* and *B* words in the urn. We are not allowed to look into the urns directly; but if we have a sample of the poetry the poet has written using this urn, we can use the relative frequencies of *A* and *B* words in this sample as estimates of the probability of choosing an *A* word or a *B* word. For simplicity, let us suppose that our sample contains fifty couplets, i.e., one hundred rhyme-word occurrences; and suppose that seventy of these one hundred words are

A words, while thirty are *B* words. We will use the notation **P**[*A*] to denote the probability that an *A* word will be chosen. (In general, **P**[*X*] represents the probability of some event denoted by *X*.) Then we can estimate **P**[*A*] as 70/100 = 0.7, and **P**[*B*] as 30/100 = 0.3. (The question of how reliable these estimates are is examined in section 3.2.5 below.)

If we follow this model, the choice of a single rhyme word is what is called a Bernoulli trial—a random trial with two possible outcomes (in this case, an *A* word or a *B* word).[76] In discussing Bernoulli trials, it is customary to identify one of the outcomes as "success" and the other as "failure"; we may arbitrarily call the choice of an *A* word success and the choice of a *B* word failure. The probability of success (in our example, the true value of **P**[*A*]) is traditionally written as lower-case *p*; the probability of failure (in our example, the true value of **P**[*B*]) is written as *q*. The probability space involved may be represented as a set with the two elements {success, failure}, with $p = \mathbf{P}[\{\text{success}\}]$ and $q = \mathbf{P}[\{\text{failure}\}]$. (Since these are the only two possible outcomes, clearly $p + q = 1$ and $q = 1 - p$.) The notion of a Bernoulli trial will come up several times in the discussion below.

Now suppose that our poet is writing couplets using the balls in this urn. What is the probability that a couplet will not mix *A* and *B*—that either two *A* words or two *B* words will be chosen? Choosing a couplet can be regarded simply as a repetition of the basic process of choosing a single rhyme word. If both words of a couplet are to have the same letters, then the poet must choose either *AA* or *BB*. According to elementary probability theory, the probability that two independent events will occur is the product of their probabilities. Thus, we can easily compute **P**[*AA*] and **P**[*BB*]:

$$\mathbf{P}[AA] = (\mathbf{P}[A])(\mathbf{P}[A]) = (0.7)(0.7) = 0.49$$

$$\mathbf{P}[BB] = (\mathbf{P}[B])(\mathbf{P}[B]) = (0.3)(0.3) = 0.09$$

The probability of choosing an unmixed couplet—that is, of choosing *AA* or *BB*—is simply the sum of **P**[*AA*] and **P**[*BB*]. Let us call this probability **P**[*unmixed*] or **P**[*U*]:

$$\mathbf{P}[U] = \mathbf{P}[AA] + \mathbf{P}[BB] = 0.49 + 0.09 = 0.58$$

The probability that the couplet will mix *A* and *B*, which we may call **P**[*mixed*] or **P**[*M*], can be computed similarly. A mixed sequence can be either an *A* word followed by a *B* word (*AB*) or a *B* word followed by an *A* word (*BA*). Thus we compute

$$\begin{aligned}\mathbf{P}[M] &= \mathbf{P}[AB] + \mathbf{P}[BA] \\ &= (\mathbf{P}[A])(\mathbf{P}[B]) + (\mathbf{P}[B])(\mathbf{P}[A]) \\ &= (0.7)(0.3) + (0.3)(0.7) \\ &= 0.21 + 0.21 = 0.42.\end{aligned}$$

Note that the choice of a rhyme couplet is also a Bernoulli trial, with the two possible outcomes M and U (mixed and unmixed). In this case, we will call M "success" and U "failure"; thus p, the probability of success, is the true value of $\mathbf{P}[M]$, and q, the probability of failure, is the true value of $\mathbf{P}[U]$. And as before, since a rhyme sequence must be either unmixed or mixed, the sum of $\mathbf{P}[U]$ and $\mathbf{P}[M]$ must be one. Therefore, another way of calculating $\mathbf{P}[M]$ is to subtract $\mathbf{P}[U]$ from 1:

$$\mathbf{P}[M] = 1 - \mathbf{P}[U] = 1 - 0.58 = 0.42.$$

Similar reasoning can be extended to calculate the probability that sequences of greater length will be mixed or unmixed. For sequences of three words, for example, we may calculate the probability of getting an unmixed sequence as follows:

$$\mathbf{P}[U] = \mathbf{P}[AAA] + \mathbf{P}[BBB] = \mathbf{P}[A]^3 + \mathbf{P}[B]^3 = (0.7)^3 + (0.3)^3 = 0.37$$

There are six ways to get a mixed sequence: *AAB, ABA, BAA, ABB, BAB,* and *BBA*; so we can calculate

$$\begin{aligned}\mathbf{P}[M] &= \mathbf{P}[AAB] + \mathbf{P}[ABA] + \mathbf{P}[BAA] + \mathbf{P}[ABB] + \mathbf{P}[BAB] + \mathbf{P}[BBA] \\ &= 3\mathbf{P}[A]^2\mathbf{P}[B] + 3\mathbf{P}[A]\mathbf{P}[B]^2 \\ &= (3)(0.7)^2(0.3) + (3)(0.7)(0.3)^2 \\ &= 0.63,\end{aligned}$$

or, more simply, since a sequence is mixed unless it is unmixed, we have

$$\mathbf{P}[M] = 1 - \mathbf{P}[U] = 1 - 0.37 = 0.63.$$

Notice that $\mathbf{P}[U]$, the probability of an ummixed sequence, is less for three-word sequences (0.37) than for two-word sequences (0.58). This agrees with our intuition that long unmixed sequences are less likely to occur by chance than short ones.

In general, for a sequence of length n, we can compute $\mathbf{P}[U]$ and $\mathbf{P}[M]$ by the following formulas:

$$\mathbf{P}[U] = \mathbf{P}[A]^n + \mathbf{P}[B]^n$$

$$\mathbf{P}[M] = 1 - \mathbf{P}[U]$$

3.2.3. Evaluating samples of sequences

Now let us turn to the question of whether the number of mixed sequences in a sample is significantly less than the null hypothesis predicts. To begin with, suppose that we have a sample of only five couplets, with $\mathbf{P}[A] = 0.7$ and $\mathbf{P}[B] = 0.3$ as above. Of these five couplets, all five could be unmixed (*UUUUU*), or all mixed (*MMMMM*), or some could be mixed and some unmixed (e.g. *UUMMU*, *MMMUU*). Let us use the notation "$\mathbf{P}[M = m]$" for the probability that exactly m of our five couplets are mixed.

What is $\mathbf{P}[M = 0]$, the probability that there will be no mixed couplets at all? We have already calculated $\mathbf{P}[U] = 0.58$ and $\mathbf{P}[M] = 0.42$ for two-word sequences. The probability space involved may be represented as the set of all strings of length five made up of *U*'s and *M*'s. Reasoning as above, we have

$$\begin{aligned}\mathbf{P}[M = 0] &= \mathbf{P}[UUUUU] \\ &= (\mathbf{P}[U])(\mathbf{P}[U])(\mathbf{P}[U])(\mathbf{P}[U])(\mathbf{P}[U]) \\ &= (0.58)^5 = 0.0656.\end{aligned}$$

What about $\mathbf{P}[M = 1]$, the probability that exactly one of the five couplets will be mixed? There are five ways to get one mixed couplet: the mixed couplet may be the first (*MUUUU*), the second (*UMUUU*), the third (*UUMUU*), the fourth (*UUUMU*), or the fifth (*UUUUM*). Each of these five outcomes has a probability of

$$(\mathbf{P}[M])(\mathbf{P}[U])^4 = (0.42)(0.58)^4 = 0.0475.$$

Since there are five ways to get exactly one mixed couplet, the probability of getting one mixed couplet is

$$\mathbf{P}[M = 1] = 5(\mathbf{P}[M])(\mathbf{P}[U])^4 = (5)(0.0475) = 0.238.$$

In general, $\mathbf{P}[M = m]$ for a sample of five couplets can be calculated by the formula

$$\mathbf{P}[M = m] = \mathrm{C}_m^5\, \mathbf{P}[M]^m\, \mathbf{P}[U]^{5-m}.$$

where the notation "C_m^5" stands for the number of combinations of five things taken m at a time. Some readers may recognize the expression above as the $\mathbf{P}[M]^m$ term in the binomial expansion of

$$(\mathbf{P}[M] + \mathbf{P}[U])^5.$$

This is not a coincidence; each couplet represents a Bernoulli trial (with possible outcomes "mixed" and "unmixed"), and the variable $\mathbf{P}[M = m]$ defined on repeated Bernoulli trials has what is known as a binomial distribution.[77] More generally, if the total number of couplets is n, then the probability that exactly m of the n couplets will be mixed is

$$\mathbf{P}[M = m] = C_m^n \, \mathbf{P}[M]^m \, \mathbf{P}[U]^{n-m}.$$

Let us now consider some concrete (but hypothetical) examples to illustrate these calculations.

3.2.3.1. Example 1: five couplets, of which one is mixed

Suppose that $\mathbf{P}[A] = 0.7$ and $\mathbf{P}[B] = 0.3$ as above, and that our sample consists of five couplets, of which only one mixes A and B words. Can we treat this mixed rhyme as irregular, and conclude that A and B are still separate rhyme groups? We have seen above that even if A and B rhyme with each other freely, there is a 0.238 probability that there will be exactly one mixed rhyme in such a sample, and a 0.0656 probability that there will be no mixed rhymes at all. Thus, even if A and B rhyme with each other freely, the probability that we will have one or fewer mixed couplets is

$$\mathbf{P}[M \leq 1] = \mathbf{P}[M = 0] + \mathbf{P}[M = 1] = 0.0656 + 0.238 = 0.304.$$

That is, this small a number of mixed couplets will occur by chance about 30% of the time, even if A and B rhyme with each other freely (are in the same urn). Such a sample is not sufficient to show that A and B are separate groups.

3.2.3.2. Example 2: five couplets, of which none are mixed

Even if a sample of five couplets contains no mixed rhymes at all, we might not consider this statistically significant by itself. As we just saw, the probability that five unmixed couplets will occur by chance is

$$\mathbf{P}[M = 0] = \mathbf{P}[UUUUU] = 0.0656,$$

or about one chance in fifteen, even if A and B rhyme freely with each other. There are no hard and fast rules about how low such probabilities must be in order for the result to be considered significant, but in social science

applications it is common to require that they be at least as small as 0.05, or five percent (one chance in twenty). This illustrates that for small samples, a hypothesis may fail to be confirmed, even if all the data are consistent with it. Note, however, that a value of **P** greater than 0.05 does not mean that the null hypothesis is true; it only means that the data are not sufficient to disconfirm it.

More generally, if we observe m mixed couplets in a total sample of n couplets, we will wish to know how often this small a number of mixed couplets would be expected by chance in a sample of this size, if A and B rhymed with each other freely. This is not the probability that there will be exactly m mixed rhymes, but rather the probability that there will be m or fewer mixed rhymes; that is, it is not $\mathbf{P}[M = m]$ but $\mathbf{P}[M \leq m]$. We can calculate $\mathbf{P}[M \leq m]$ by taking the sum of $\mathbf{P}[M = i]$ for all values of i less than or equal to m:

$$\mathbf{P}[M \leq m] = \mathbf{P}[M = 0] + \mathbf{P}[M = 1] + \cdots + \mathbf{P}[M = m - 1] + \mathbf{P}[M = m],$$

or in more compact notation,

$$\mathbf{P}[M \leq m] = \sum_{i=0}^{m} \mathbf{P}[M = i] = \sum_{i=0}^{m} C_i^n \, \mathbf{P}[M]^i \, \mathbf{P}[U]^{n-i} .$$

The number $\mathbf{P}[M \leq m]$, which we may simply call **P**, is a measure of how unlikely it is that our sample was chosen according to the null hypothesis. If **P** is very small, say, less than 0.05, then we are entitled to reject the null hypothesis and conclude that A and B do not rhyme with each other freely. Notice that the value of **P** depends not only on the number of mixed and unmixed sequences, but also on the relative frequency of the A and B words, the length of the rhyme sequences being considered (two in our examples so far, but see below for the more general case), and the size of the sample. Thus it avoids the problems of simpler measures such as simple ratios or percentages of rhyme sequences.

3.2.3.3. Example 3: twenty couplets, of which four are mixed

Still assuming that $\mathbf{P}[A] = 0.7$ and $\mathbf{P}[B] = 0.3$, suppose now that instead of a sample of five couplets of which one is mixed (as in example 1), we have a sample of twenty couplets of which four are mixed. In this example, the

proportion of mixed rhymes is that same as in example 1 (20%), but the sample is larger. In this case, $n = 20$ and $m = 4$, so we calculate

$$\mathbf{P}[M \leq 4] = \sum_{i=0}^{4} \mathbf{P}[M = i] = \sum_{i=0}^{4} C_i^{20} \, \mathbf{P}[M]^i \, \mathbf{P}[U]^{20-i} .$$

Assuming the same values for $\mathbf{P}[U]$ and $\mathbf{P}[M]$ as above, the result comes to

$$\mathbf{P} = 0.035.$$

In other words, if A and B rhymed freely with each other, we would expect a sample of twenty couplets to have four or fewer mixed couplets only 3.5% of the time. If we use $\mathbf{P} < 0.05$ as a criterion of significance, then this sample is significant evidence that A and B rhyme separately.

Notice that although the proportion of mixed rhymes is the same in this example as in example 1 (20% in both cases), the larger sample is significant evidence that groups A and B rhyme separately, while the smaller sample is not. By contrast, the method which simply computes the proportion of mixed rhymes, used by Wáng Lì in the passage quoted earlier, is insensitive to the effects of sample size.

3.2.4. Combining results for sequences of different lengths

In the examples so far, we have assumed that the sample of rhyme sequences to be tested consists entirely of couplets (two-word rhyme sequences). In practice, however, the samples we use often include sequences of various lengths. To illustrate this possibility, let us imagine a sample consisting of five two-word rhyme sequences and four three-word rhyme sequences; and suppose that none of the two-word sequences mix A words with B words, but that there is one mixed three-word sequence. (We will assume $\mathbf{P}[A] = 0.7$ and $\mathbf{P}[B] = 0.3$ as above.) Our procedure will be to calculate the value of $\mathbf{P}$ for the two-word sequences (call this $\mathbf{P}_2$) and separately for the three-word sequences (call this $\mathbf{P}_3$), and then combine them mathematically.

Let us write M_2 and M_3 to represent the number of mixed sequences among the two- and three-word sequences respectively. The two-word sequences in this sample are just like example 2 above, so

$$\mathbf{P}_2 = \mathbf{P}[M_2 \leq 0] = 0.0656.$$

To calculate $\mathbf{P}_3 = \mathbf{P}[M_3 \leq 1]$, we must first calculate $\mathbf{P}[U]$ for a three-word sequence:

$$\mathbf{P}[U] = \mathbf{P}[A]^3 + \mathbf{P}[B]^3 = (0.7)^3 + (0.3)^3 = 0.343 + 0.027 = 0.370.$$

From this, we can calculate $\mathbf{P}[M]$ for a three-word sequence:

$$\mathbf{P}[M] = 1 - \mathbf{P}[U] = 0.630.$$

Proceeding as before, we may calculate $\mathbf{P}[M_3 = 0]$ and $\mathbf{P}[M_3 = 1]$ as follows:

$$\mathbf{P}[M_3 = 0] = \mathbf{P}[UUUU] = (0.370)^4 = 0.0187$$

$$\begin{aligned}\mathbf{P}[M_3 = 1] &= \mathbf{P}[MUUU] + \mathbf{P}[UMUU] + \mathbf{P}[UUMU] + \mathbf{P}[UUUM] \\ &= 4\mathbf{P}[M]\mathbf{P}[U]^3 \\ &= 4(0.63)(0.37)^3 = 0.1276.\end{aligned}$$

With these figures, we can calculate $\mathbf{P}_3 = \mathbf{P}[M_3 \leq 1]$:

$$\begin{aligned}\mathbf{P}_3 &= \mathbf{P}[M_3 \leq 1] = \mathbf{P}[M_3 = 0] + \mathbf{P}[M_3 = 1] \\ &= 0.0187 + 0.1276 = 0.146.\end{aligned}$$

Note that neither $\mathbf{P}_2$ (= 0.0656) nor $\mathbf{P}_3$ (= 0.146) by itself is small enough to be significant by our criterion, since both are above the 0.05 cutoff level. That is, neither the five two-word sequences nor the four three-word sequences, by themselves, show sufficient separation of *A* and *B* to disconfirm the null hypothesis that *A* and *B* rhyme with each other freely. But how do we evaluate the two samples together?

Essentially, the method we have used so far tests the null hypothesis by evaluating a sample of rhyme sequences to see how extreme the distribution of mixed and unmixed sequences is. We measure the extremeness of a sample by counting the number of mixed and unmixed sequences: the smaller the number of mixed sequences, the more extreme we judge the sample to be. We reject the null hypothesis if the probability of getting such an extreme sample is less than 0.05. That is, if M, the number of mixed sequences in our sample, is observed to be m, then we evaluate $\mathbf{P}[M \leq m]$ to see whether it is less than 0.05.

Notice that the value of $\mathbf{P}[M \leq m]$ itself could also be used as a measure of the extremeness of a particular observed value m; the smaller the value of $\mathbf{P}[M \leq m]$, the more extreme the value m is. The function $F(m) = \mathbf{P}[M \leq m]$ is called the "distribution function" of the random variable M.

Now if our sample includes five sequences of lengths two and four sequences of length three, we can think of the outcome of each trial as an ordered pair $\langle m_2, m_3 \rangle$, where m_i is the number of mixed sequences of length i in the sample. The probability space which represents the possible outcomes of this experiment is the following set of ordered pairs:

$$\Omega = \{\langle m_2, m_3 \rangle \mid m_2 \in \{0, 1, 2, 3, 4, 5\}, m_3 \in \{0, 1, 2, 3, 4\}\}$$

Each ordered pair $\langle m_2, m_3 \rangle$ can be thought of as representing a point in the finite two-dimensional space Ω; there are 6·5 or 30 such points in all. The probability of any particular point $\langle m_2, m_3 \rangle$ is simply the product of the probabilities of its components m_2 and m_3:

$$\mathbf{P}[\langle m_2, m_3 \rangle] = (\mathbf{P}[M_2 = m_2])\,(\mathbf{P}[M_3 = m_3]).$$

To test hypotheses using samples of such ordered pairs (or points), we must have a suitable measure of the extremeness of any particular ordered pair $\langle m_2, m_3 \rangle$. As we have seen, it will not do to simply count $m_2 + m_3$, the total number of mixed sequences observed, without regard to the length of the sequences, since it is easier to get a mixed three-word sequence by chance than a mixed two-word sequence. Instead, we will measure the extremeness of a point $\langle m_2, m_3 \rangle$ by evaluating the statistic

$$F(\langle m_2, m_3 \rangle) = (\mathbf{P}[M_2 \leq m_2])\,(\mathbf{P}[M_3 \leq m_3]);$$

that is, we will use the product of the distribution functions of the random variables M_2 and M_3 evaluated at the point $\langle m_2, m_3 \rangle$. This measure reflects the extremeness of each component of the ordered pair, taking both the length of the sequences and the size of the samples into consideration; the lower the value of $F(\langle m_2, m_3 \rangle)$, the more extreme the pair $\langle m_2, m_3 \rangle$ is.

Now that we can measure the extremeness of a particular ordered pair $\langle m_2, m_3 \rangle$, our next step is to find the probability of getting such an extreme pair by chance, under the null hypothesis. We calculate this probability by identifying all the pairs which are as extreme as the observed pair, and summing up their individual probabilities. In the example we are considering, the observed values are $m_2 = 0$ and $m_3 = 1$, that is, the ordered pair $\langle 0, 1 \rangle$. Let E represent the set of all pairs at least as extreme as the pair $\langle 0, 1 \rangle$:

$$E = \{\langle m_2, m_3 \rangle \mid \langle m_2, m_3 \rangle \in \Omega \text{ and } F(\langle m_2, m_3 \rangle) \leq F(\langle 0, 1 \rangle)\}$$

Then the probability of getting a pair as extreme as $\langle 0, 1 \rangle$ by chance is the sum of the individual probabilities of each pair in the set E:

$$\mathbf{P}[\mathrm{F}(<m_2, m_3>) \leq \mathrm{F}(<0, 1>)]$$

$$= \mathbf{P}[(\mathbf{P}[M_2 \leq m_2])(\mathbf{P}[M_3 \leq m_3]) \leq (\mathbf{P}[M_2 \leq 0])(\mathbf{P}[M_3 \leq 1])]$$

$$= \sum_{<m_2, m_3> \in E} (\mathbf{P}[M_2 = m_2])\,(\mathbf{P}[M_3 = m_3])\,.$$

The values of $\mathbf{P}[M_2 = m_2]$ and $\mathbf{P}[M_2 \leq m_2]$ for the two-word portion of the sample are given in Table 3.1; the values of $\mathbf{P}[M_3 = m_3]$ and $\mathbf{P}[M_3 \leq m_3]$ for the three-word portion of the sample are given in Table 3.2. (The figures in both tables are rounded to four decimal places.)

Table 3.1. $\mathbf{P}[M_2 = m_2]$ and $\mathbf{P}[M_2 \leq m_2]$ for five sequences ($\mathbf{P}[A] = 0.7$, $\mathbf{P}[B] = 0.3$)

m_2	$\mathbf{P}[M_2 = m_2]$	$\mathbf{P}[M_2 \leq m_2]$
0	0.0656	0.0656
1	0.2376	0.3033
2	0.3442	0.6475
3	0.2492	0.8967
4	0.0902	0.9869
5	0.0131	1.0000

Table 3.2. $\mathbf{P}[M_3 = m_3]$ and $\mathbf{P}[M_3 \leq m_3]$ for four sequences ($\mathbf{P}[A] = 0.7$, $\mathbf{P}[B] = 0.3$)

m_3	$\mathbf{P}[M_3 = m_3]$	$\mathbf{P}[M_3 \leq m_3]$
0	0.0187	0.0187
1	0.1276	0.1463
2	0.3260	0.4724
3	0.3701	0.8425
4	0.1575	1.0000

The extremeness of the observed ordered pair <0, 1> is measured by $F(<0, 1>)$, defined as the product of the distribution functions of the components of <0, 1>:

$$F(<0, 1>) = (\mathbf{P}[M_2 \leq 0])\,(\mathbf{P}[M_3 \leq 1])$$
$$= (0.0656)\,(0.1463) = 0.009597$$

The next step is to sum the probabilities of all the points in our probability space Ω which are as extreme as the point <0, 1>, as measured by the function F. There are three such points: <0, 0>, <0, 1> itself, and <1, 0>, as shown in Table 3.3.

Table 3.3. Points of Ω for which $F(<m_2, m_3>) \leq F(<0, 1>)$

$<m_2, m_3>$	$\mathbf{P}[M_2 \leq m_2]$	$\mathbf{P}[M_3 \leq m_3]$	$F(<m_2, m_3>)$	$\mathbf{P}[<m_2, m_3>]$
<0, 0>	0.0656	0.0187	0.001227	0.001227
<0, 1>	0.0656	0.1463	0.009597	0.008371
<1, 0>	0.3033	0.0187	0.005672	0.004443

Note that the $F(<m_2, m_3>)$ column of Table 3.3 is simply the product of the two preceding columns.

The probability of getting by chance a point in the probability space which is as extreme as <0, 1> is thus the sum of the probabilities of these three points (i.e. the sum of the last column of Table 3.3):

$$\mathbf{P} = \mathbf{P}[<0, 0>] + \mathbf{P}[<0, 1>] + \mathbf{P}[<1, 0>]$$
$$= 0.001227 + 0.008371 + 0.004443$$
$$= 0.01404.$$

Since this **P** is less than 0.05, we may conclude that this sample shows significant evidence that A and B rhyme separately, even though neither the two-word sequences nor the three-word sequences are significant by themselves.

We often need to apply this procedure to combine results from samples of different lengths and from different tone categories. In practice, this normally requires using a computer, since the probability spaces for such samples may be multidimensional, and the computations may need to be done on many thousands of points. For this study I have written a Pascal program which implements this procedure to combine results from more than one sample.[78]

3.2.5. The accuracy of the initial estimates of frequency

Recall that the series of calculations outlined above begins with estimates of $\mathbf{P}[A]$ and $\mathbf{P}[B]$, the relative frequencies of A and B words respectively. The "true" value of $\mathbf{P}[A]$ would be the relative frequency of A words in a very large sample of rhyme sequences. But the value of $\mathbf{P}[A]$ that we actually use is the frequency of A words in the sample we have available. The smaller our sample of rhyme words, the less likely it is that this estimate of the true value of $\mathbf{P}[A]$ is accurate. The accuracy of this estimate affects the accuracy of all our subsequent calculations.

Fortunately, statistical methods can also be used to estimate how accurate this initial estimate is. There are several ways to do this; I will discuss two: (1) a direct estimate using the binomial distribution, suitable for smaller samples, and (2) an approximation using the DeMoivre-Laplace theorem, suitable for larger samples (for which the calculations of the first method become excessively complex).

3.2.5.1. Estimating accuracy by using the binomial distribution

Suppose that we have a sample consisting of only ten rhyme words, of which seven are A words and three are B words. Our estimate of $\mathbf{P}[A]$ based on this sample is $7/10 = 0.7$. We wish to find out how good this estimate is. The method for doing this is based on calculating how much and how often the number of A words in a sample of this size will vary from the expected value.

Again we regard this sample as a set of repeated Bernoulli trials, with two possible outcomes: "success" (an A word) and "failure" (a B word). We write the probability of success—the "true" value of $\mathbf{P}[A]$—as p, the size of the sample as n, and the number of A words in any given sample as X. Our estimate of p based on such a sample, which we may write as $\bar{p}$, is X/n. In this case, $n = 10$ and $X = 7$, so our estimate is $7/10 = 0.7$.

Now even if 0.7 is the true value of p (i.e. the value we would obtain from a sample where n is very large), not every random sample of ten rhyme words will have exactly seven A words in it. Although seven is the single most likely value for X, X might take any value from zero (no A words) to ten (all A words). Let us write the probability that X takes the value x as $\mathbf{P}[X = x]$. We can calculate $\mathbf{P}[X = x]$ for the various values of x, in the same way that we calculated the values of $\mathbf{P}[M = m]$, the number of mixed sequences in a sample of n rhyme sequences, above.

Writing p for the "true" value of $\mathbf{P}[A]$, and q $(= 1 - p)$ for the true value of $\mathbf{P}[B]$, the probability that all ten words will be A words is

$$\mathbf{P}[X = 10] = p^{10} = (0.7)^{10} = 0.02825,$$

while the probability that none of the ten words will be A words is

$$\mathbf{P}[X = 0] = q^{10} = (0.3)^{10} = 0.000006.$$

There are ten ways of getting exactly one A word (*ABBBBBBBBB*, *BABBBBBBBB*, *BBABBBBBBB*, and so forth), so the probability of getting one A word is

$$\mathbf{P}[X = 1] = 10pq^9 = 10(0.7)(0.3)^9 = 0.000138.$$

And in general, the random variable X, based on numbers of successes in ten repeated Bernoulli trials, has a binomial distribution, with probabilities given by the formula

$$\mathbf{P}[X = x] = C_x^{10} p^x q^{10-x}.$$

The values of $\mathbf{P}[X = x]$ for this example are given in Table 3.4.

Table 3.4. Values of $\mathbf{P}[X = x]$ for $p = 0.7, n = 10$

x	$\mathbf{P}[X = x]$
0	0.000006
1	0.000138
2	0.001447
3	0.009002
4	0.036757
5	0.102919
6	0.200121
7	0.266828
8	0.233474
9	0.121061
10	0.028248

We can see that, as expected, $\mathbf{P}[X = x]$ is largest for $x = 7$, with a probability of about 0.27; but $x = 6$ and $x = 8$ are only slightly less likely, with probabilities of about 0.20 and 0.23 respectively. A value of X as low as zero or one is quite unlikely, however, and a value of ten will occur only about three percent of the time.

Note that since $\bar{p}$, our estimate of the true value of p, is calculated by dividing X by n, $\bar{p}$ is also a random variable with the same distribution as X:

that is, since there is a probability of 0.27 that X will take the value 7, there is also a probability of 0.27 that $\bar{p}$ will take the value 7/10 = 0.7; similarly, the probability is 0.20 that $\bar{p}$ will take the value 0.6, 0.23 that $\bar{p}$ will take the value 0.8, and so on.

Although this table was calculated on the assumption that 0.7 was the true value of **P**[*A*], it can also be used to estimate how close to 0.7 the true value is. Thus if our sample has seven *A* words, the true value of **P**[*A*] might easily be 0.6 or 0.8, but is quite unlikely to be lower than 0.4, for example. By summing up the probabilities for values of X near seven, we establish what is called a confidence interval for our estimate of the true value of **P**[*A*]. For example, the probability that X is between 5 and 9 is calculated as follows:

$$\begin{aligned}\mathbf{P}[5 \leq X \leq 9] &= \mathbf{P}[X = 5] + \mathbf{P}[X = 6] + \mathbf{P}[X = 7] + \mathbf{P}[X = 8] + \mathbf{P}[X = 9] \\ &= 0.103 + 0.200 + 0.267 + 0.233 + 0.121 \\ &= 0.924.\end{aligned}$$

Since the distribution of $\bar{p}$ is the same as that of X, this is also the probability that p, the true value of **P**[*A*], lies in the range 0.5 to 0.9. This gives us what we wanted: a measure of how accurate our estimate of **P**[*A*] is.

How do we use this information in testing hypotheses about rhyming? After calculating **P** using our best estimate of **P**[*A*], we can also calculate **P** from whatever value of **P**[*A*] within the confidence interval gives us the maximum value for **P**. This will give us the value of **P** in the worst possible case: that an error in our initial estimate of **P**[*A*] biased our results towards rejecting the null hypothesis. If this maximum value of **P** is still below 0.05, then the null hypothesis may be rejected with considerable confidence. (This method is illustrated with examples in section 3.3 below.)

3.2.5.2. Estimating accuracy using the DeMoivre-Laplace theorem

For large samples, the method just described in section 3.2.5.1 becomes rather complex, and a quicker method gives satisfactory results. This method uses the DeMoivre-Laplace theorem, which basically states that the binomial distribution (based on n repeated Bernoulli trials) approaches a normal distribution as n becomes large.[79] Suppose, as before, that we have n Bernoulli trials, where p is the probability of success, q is the probability of failure, and $\bar{p}$ is X/n, the estimate of p based on this sample. Then it follows from the DeMoivre-Laplace theorem that the statistic

$$Z = \frac{(\bar{p} - p)}{\sqrt{pq/n}}$$

approaches a normal distribution for large values of n.[80] Thus, according to the properties of the normal distribution, the probability is about 0.95 that Z will lie in the interval from −1.96 to 1.96:

$$-1.96 \leq \frac{(\bar{p} - p)}{\sqrt{pq/n}} \leq 1.96.$$

This inequality can be solved for $|\bar{p} - p|$, the distance from $\bar{p}$ to the "true" value p; we get

$$\left|\bar{p} - p\right| \leq (1.96)\sqrt{pq/n}\,.$$

This formula can be used, as an alternative to the direct method described in section 3.2.5.1, to calculate confidence intervals for $\bar{p}$ when n is large.[81] To illustrate this, suppose that we have a sample of one hundred rhyme words, of which seventy are *A* words and thirty are *B* words; i.e. p and q are estimated at 0.7 and 0.3 as before. We wish to establish confidence intervals for these estimates. According to the theorem, there is a 0.95 probability that

$$\left|\bar{p} - p\right| \leq (1.96)\sqrt{\frac{(0.7)\,(0.3)}{100}}\,,$$

that is, the probability is 0.95 that

$$\left|\bar{p} - p\right| \leq 0.09.$$

We conclude that the probability is 0.95 that the true value of p lies within 0.09 of 0.70; thus the 95% confidence interval is from 0.61 to 0.79.[82] (Compare this with the 0.5 to 0.9 confidence interval calculated above for a sample of ten.) In addition to calculating **P** from our best estimate of **P**[*A*],

then, we may examine the maximum value **P** takes for values of **P**[*A*] within this confidence interval.

3.2.6. A method for small samples with no mixed sequences

The methods just described work best with large samples, and in cases where **P**[*A*] is not greatly different from **P**[*B*]. A problem arises in small samples where **P**[*A*] or **P**[*B*] is very small. For example, if **P**[*A*] is very small, then **P**[*U*] will be rather large; that is, if *A* words are very infrequent, then sequences mixing *A* and *B* will be infrequent for that reason alone, and not because of any tendency for *A* and *B* to rhyme separately. Even if none of the sequences in the sample are mixed, the sample may be quite consistent with the null hypothesis.

Consider an actual example which will arise in Chapter 10. Group *A* are the words I reconstruct with **-en*, and group *B* are the words I reconstruct with **-an* or **-on*. We wish to test whether group *A* is a separate rhyming category. (Whether **-an* is distinct from **-on* is discussed separately.) The probability of getting a group-*A* word is

$$p = \mathbf{P}[\text{*-}en] = 0.039;$$

the probability of getting a group-*B* word is

$$q = \mathbf{P}[\text{*-}an \text{ or } \text{*-}on] = 0.961.$$

Let us consider a sample consisting of thirteen two-word rhyme sequences, none of which mix *A* and *B* words: twelve sequences involve *B* words only, and one involves *A* words only.[83] Does such a sample provide significant evidence that *A* and *B* rhyme separately? If we use the method described above to examine the number of unmixed sequences, we will not get a significant result. Specifically, the probability that a two-word sequence will be unmixed is

$$\mathbf{P}[U] = p^2 + q^2 = (0.039)^2 + (0.961)^2 = 0.925.$$

(This agrees with our intuition that if *A* words are infrequent, then sequences mixing *A* and *B* will be infrequent also.)

The probability that a sample of thirteen two-word sequences will all be unmixed is

$$\mathbf{P}[M = 0] = \mathbf{P}[U]^{13} = (0.925)^{13} = 0.363.$$

Thus we would expect there to be no mixed sequences in such a sample a little over one-third of the time, just by chance, even if *A* and *B* rhymed with

each other freely. The fact that all thirteen sequences are unmixed is not in itself significant evidence of a rhyming separation between A and B. The reason is that in this sample, even the most extreme outcome recognized in our procedure (namely the event that $M = 0$) has a probability greater than the criterion level of 0.05.

However, this calculation overlooks the important fact that one of the unmixed sequences matches an A word with another A word. Intuitively, since A words are rare, it should be even rarer for them to occur together just by chance. If A and B rhymed with each other freely, then if there are any A words in the sample at all, we should expect to find them rhyming most of the time with B words, not with other A words. The technique outlined above, which measures only the number of unmixed rhymes without considering whether they are A rhymes or B rhymes, overlooks this fact. A more sensitive test is useful for small samples such as that just described, which have the following characteristics:

1. $\mathbf{P}[A]$ is small,
2. there are no mixed sequences, and
3. there is at least one unmixed A sequence.

In such cases, rather than measuring the probability that there will be no mixed sequences, we can measure the probability of a still more extreme event: that all the sequences are unmixed, and that, in addition, at least one of the unmixed sequences is an A sequence. Since this situation occurs more than once in this study, I will derive a general formula to handle it.

Let p be $\mathbf{P}[A]$, the probability that a word of type A will be chosen as a rhyme word, and let $q = 1 - p$ be $\mathbf{P}[B]$, the probability that a B word will be chosen. In a sample of n sequences, each of length L, let $\mathbf{P}$ be the probability that there will be no sequences mixing A words and B words, and that at least one sequence will be an unmixed A sequence. How can we find $\mathbf{P}$? We saw earlier that the probability that all of a sample of n sequences of length L will be unmixed is

$$\mathbf{P}[M = 0] = \mathbf{P}[U]^n = (p^L + q^L)^n.$$

Now consider the event in which all n sequences are unmixed, and furthermore that all of them are B sequences. Since q is the probability of choosing a B word, the probability of this event is

$$\mathbf{P}[\textit{unmixed } B = n] = (q^L)^n.$$

This event is a subset of the previous event in which $M = 0$. The probability that all sequences will be unmixed, but not all will be B sequences (i.e. that at least one will be an unmixed A sequence) is simply the difference of the probabilities of these two events:

$$\mathbf{P} = \mathbf{P}[M = 0] - \mathbf{P}[\textit{unmixed } B = n] = (p^L + q^L)^n - (q^L)^n.$$

This is the formula we seek. It measures the probability of an even more extreme event than getting only unmixed sequences—namely, getting only unmixed sequences, at least one of which is from the less common of A and B. Applying it to the particular case just cited, we can calculate the probability of getting thirteen unmixed couplets, of which at least one is an A couplet, as follows:

$$\begin{aligned}\mathbf{P} &= (p^L + q^L)^n - (q^L)^n \\ &= [(0.039)^2 + (0.961)^2]^{13} - [(0.961)^2]^{13} \\ &= 0.008.\end{aligned}$$

This is well below our criterion level of 0.05, and can thus be considered significant evidence that groups A and B do not rhyme freely with each other in the sample under consideration.

It is interesting, and fortunate, that the value of this statistic is not very dependent on the accuracy of the initial estimate of p;[84] this makes it especially useful for small samples which meet the criteria outlined above, since the estimates of p and q in such samples are not very accurate.

3.2.7. Issues of implementation

The discussion above used mostly hypothetical examples to describe a statistical method for testing hypotheses about rhyming. In applying this method to actual data, a number of additional problems arise which affect the accuracy of our results and our confidence in them. The present section discusses a number of these problems.

3.2.7.1. Independence of rhyme-word choice

In constructing the method above, we assumed that a rhyme sequence was formed by repeatedly drawing balls from a single urn. Crucial to this model is the assumption that each rhyme-word choice is independent. In some cases in the *Shījīng*, this is assumption is clearly untrue, for the structure of

some poems involves repetition of the same rhyme word in more than one place in the poem. For example, consider Ode 46 (*Yōng fēng* 鄘風: *Qiáng yǒu cí* 牆有茨). The translation of this and the following examples is from Karlgren (1974); rhyme words are capitalized and transcribed on the right in Middle Chinese:

Stanza 1:

牆有茨	*qiáng yǒu cí*	
不可埽道	*bù kě SǍO yě*	埽 *sawX*
中冓之言	*zhōng gòu zhī yán*	
不可道也	*bù kě DÀO yě*	道 *dawX*
所可道也	*suǒ kě DÀO yě*	道 *dawX*
言之醜也	*yán zhī CHǑU yě*	醜 *tsyhuwX*

On the wall there is the Tribulus,
it cannot be BRUSHED AWAY;
the words of the (inner trellis-work =) inner chamber,
they cannot be TOLD;
what can be TOLD
is (still) the UGLIEST of tales.

Stanza 2:

牆有茨	*qiáng yǒu cí*	
不可襄也	*bù kě XIĀNG yě*	襄 *sjang*
中冓之言	*zhōng gòu zhī yán*	
不可詳也	*bù kě XIÁNG yě*	詳 *zjang*
所可詳也	*suǒ kě XIÁNG yě*	詳 *zjang*
言之長也	*yán zhī CHÁNG yě*	長 *drjang*

On the wall there is the Tribulus,
it cannot be REMOVED;
the words of the inner chamber,
they cannot be TOLD IN DETAIL;
what can be TOLD IN DETAIL
is (still) the LONGEST of tales.

Stanza 3:

牆有茨	*qiáng yǒu cí*	
不可束也	*bù kě SHÙ yě*	束 *syowk*
中冓之言	*zhōng gòu zhī yán*	
不可讀也	*bù kě DÚ yě*	讀 *duwk*
所可讀也	*suǒ kě DÚ yě*	讀 *duwk*
言之辱也	*yán zhī RǓ yě*	辱 *nyowk*

On the wall there is the Tribulus,
it cannot be BUNDLED;
the words of the inner chamber,
they cannot be RECITED;
what can be RECITED
is (still) the most SHAMEFUL of tales.

The rhyme words of each stanza are

stanza 1: 埽 *sǎo* / 道 *dào* / 道 *dào* / 醜 *chǒu*

stanza 2: 襄 *xiāng* / 詳 *xiáng* / 詳 *xiáng* / 長 *cháng*

stanza 3: 束 *shù* / 讀 *dú* / 讀 *dú* / 辱 *rǔ*

Notice that in each stanza, the second and third rhyme words are the same. This is part of a patterned repetition which is central to the structure of the poem. Once having decided to construct the poem in this way, the poet did not choose the second and third rhyme words of each stanza independently; rather, it is as if he or she picked a single ball from the urn and copied it down twice. For purposes of statistical analysis, sequences like these should be regarded as three-word sequences, not four-word sequences; otherwise, if they happen to be unmixed according to the hypothesis we are testing, they will carry more weight than they should. To guard against this problem, for statistical purposes it is probably best to count only the first occurrence of each word in a rhyme sequence, omitting any repeated words.

A similar problem occurs with lines which are repeated in more than one stanza. Consider Ode 21 (*Shào nán* 召南: *Xiǎo xīng* 小星):

Stanza 1:

嘒彼小星	*huì bǐ xiǎo XĪNG*	星 *seng*
三五在東	*sān wǔ zài DŌNG*	東 *tuwng*
肅肅宵正	*sù sù xiāo ZHĒNG*	正 *tsyeng*
夙夜在公	*sù yè zài GŌNG*	公 *kuwng*
寔命不同	*shí mìng bù TÓNG*	同 *duwng*

Minute are those little STARS,
the Triad and the Quint are in the EAST;
hurriedly we walk in the NIGHT,
in the early morning and in the late night we are in the PALACE;
truly, our lot is not the SAME (as hers).

Stanza 2:

嘒彼小星	*huì bǐ xiǎo XĪNG*	星 *seng*
維參與昴	*wéi shēn yǔ MǍO*	昴 *mæwX*
肅肅宵正	*sù sù xiāo ZHÈNG*	正 *tsyeng*
抱衾與裯	*bào qīn yǔ CHÓU*	裯 *drjuw*
寔命不猶	*shí mìng bù YÓU*	猶 *yuw*

Minute are those little STARS,
there are only (visible) the *Shēn* and the *MǍO*;
hurriedly we walk in the NIGHT,
we carry in the arms the coverlet and the (night)
CHEMISE;
truly our lot is not LIKE (hers).

Here there are two rhyme sequences in each stanza, which we may label A and B:

21.1A: 星 *xīng* / 正 *zhēng*

21.1B: 東 *dōng* / 公 *gōng* / 同 *tóng*

21.2A: 星 *xīng* / 正 *zhēng*

21.2B: 昴 *mǎo* / 裯 *chóu* / 猶 *yóu*

Note that 21.1A and 21.2A are the same, while 21.1B and 21.2B are different. The A rhymes in each stanza tie the two stanzas together; it is certainly not by chance that they are identical, and they should not be counted as independent rhyme sequences for statistical purposes. In testing hypotheses about rhyming, such lines should be counted only once.

Another case in which rhyme choices might fail to be independent would be stock rhyme sequences in which the rhyme words are chosen together as a unit (discussed in section 3.1 above). Such cases would invalidate our assumption that each rhyme word is chosen independently; once one of the words was chosen, the rest would be predictable. Such stock rhymes might be expected to preserve the phonology of an earlier period in some cases.

3.2.7.2. The danger of circular reasoning

In at least two kinds of situations, the hypothesis we are testing and the data used to test it statistically may be interdependent in a way that introduces an element of circularity into the use of the statistical method. The first case is if the rhyme data themselves are used to decide how to assign words to group *A* or *B*; in the second, the hypothesis being tested is used to decide

which words are intended as a rhyme sequence. I will discuss both situations briefly.

Using rhyme data to reconstruct phonologically ambiguous words

To test a hypothesis using the method described above, the hypothesis must tell us which words to assign to group *A* and which to group *B*; we can then estimate the likelihood that any tendency we find for *A* and *B* to rhyme separately could be due to chance. A problem of potential circularity arises when we must rely in part on rhyme evidence to decide which words to assign to *A* and which to *B*.

In a typical hypothesis about Old Chinese rhyming, we can assign some words to group *A* or group *B* on the basis of their Middle Chinese pronunciations alone; in other cases, the Middle Chinese pronunciation is not sufficient to determine which group the word should be assigned to, and other evidence must be used. (This is the case when there has been a merger between the Old and Middle Chinese stages.) It is when rhymes are the only other evidence available that the problem of circularity may arise.

For example, I argue later that a significant rhyming distinction exists within the traditional 文 Wén rhyme group between words that I reconstruct with **-in* and words that I reconstruct with **-un*. With some words the choice of **-in* or **-un* is dictated by their Middle Chinese forms; for example, MC *kon* can reflect only **kin* in my system, and MC *twon* can reflect only **tun*. These are the unambiguous cases. Other syllables could reflect either **-in* or **-un*, and must be reconstructed on the basis of other evidence. For example, a syllable like MC *kwon* might reflect either **k^win* or **kun*; there is no way of deciding this from the Middle Chinese pronunciation alone. If we reconstruct a phonologically ambiguous word according to whether it rhymes with **-in* words or with **-un* words, is it not circular to use those same rhymes as a measure of the separation of **-in* and **-un*?

Exactly how circular this reasoning is depends on a statistical problem which I have not yet solved. It is one thing to ask, given two groups *A* and *B* identified by independent criteria, whether *A* and *B* rhyme with each other so seldom that their separation cannot be due to chance. It is another to ask how easy it is to find a way to divide the rhyme words of a particular sample into two groups in such a way that they rarely overlap. If it is likely that such a division can be found by chance, then a significant rhyming separation based on rhyme data alone (rather than on any independent evidence) might be a chance phenomenon of no phonological significance.

Although I do not have a general solution to this latter problem, it is clear that the answer depends on the size and composition of the sample, the size of the group from which it is chosen, and the frequency distribution of words within the group. Note that there are 2^n ways of dividing a group of n objects into two groups, and 2^n is very large even for moderately small values of n. The question would be whether, for a given sample, one or more of these 2^n divisions results in groups that rarely overlap in rhyming. Intuitively, this seems unlikely to happen by chance if the size of the sample is large relative to the number of words in the rhyme group—in other words, if the same rhyme words are used over and over again; it is more likely to happen if the sample consists of many rhyme words of low frequency. If these judgments are correct, it might be possible to show that the danger of circularity is minimal for samples of certain types.

Nevertheless, the best way to avoid the possible circularity arising from phonologically ambiguous words is simply to exclude such words from statistical analysis. If we have a three-word rhyme sequence consisting of two phonologically unambiguous words and one phonologically ambiguous word, we will treat it as a two-word sequence for statistical purposes. In most cases, there are enough rhymes involving phonologically unambiguous words that hypotheses can be tested on these alone. Once a rhyming distinction has been confirmed in this way, then we can use whatever evidence is available, including rhymes, to reconstruct the phonologically ambiguous words.

Of course, in some cases, eliminating phonologically ambiguous words will leave us with no rhyme data at all. For example, my reconstruction system predicts that there should be a distinction between *-*aj* and *-*oj* in the 歌 Gē rhyme group of the traditional analysis; but there is only a single rhyme sequence in *-*oj* in the entire *Shījīng* (Ode 85.1B), which involves one word which can only be reconstructed with *-*oj* (吹 *chuī* < *tsyhwe* < **thjoj* 'blow') and one phonologically ambiguous word (和 *hè* < *hwaH* 'respond in singing', which could reflect **g*^{w}*ajs*, **wajs* or **gojs*). If we reconstruct 和 *hè* on the basis of this one rhyme, then we would reconstruct it as **gojs*; but it would be circular to say that this example proves the existence of the *-*aj* / *-*oj* distinction. There are other good arguments that the distinction did exist, including the overall pattern of rounded vowels in the system (see further discussion in section 10.1.3), but this sample offers no statistical support for it.[85] Examples such as this illustrate that the statistical method outlined here works best for large groups of rhyme data; it is often silent about individual items.

Circularity in identifying rhyme sequences

Another form of circularity arises because sometimes we have no way of deciding which words in a *Shījīng* poem were intended to rhyme except by relying on our hypotheses about what may rhyme with what. If we include in our sample only those sequences which are consistent with our hypothesis, it is of course circular to argue that this sample supports the hypothesis; in traditional Chinese terms, it is *xuē zú shì lǚ* 削足適履 'trimming the feet to fit the sandals'. It is often difficult to avoid this problem completely, but it can be minimized by avoiding the use of controversial hypotheses to identify rhyme sequences for statistical purposes, and using other criteria wherever possible.

For example, consider Wáng Lì's treatment of the second stanza of Ode 41 (*Bèi fēng* 邶風: *Běi fēng* 北風) in his 1937 study of Old Chinese rhyming (translation from Karlgren 1974):

Stanza 2:

北風其喈	*běi fēng qí JIĒ*	喈 *kɛj*
雨雪其霏	*yù xuě qí FĒI*	霏 *phjij*
惠而好我	*huì ér hǎo wǒ*	
攜手同歸	*xí shǒu tóng GUĪ*	歸 *kjwij*
其虛其邪	*qí xū qí XÚ*	邪 *zjo*
既亟只且	*jì jí zhǐ JŪ*	且 *tsjo*

The North wind is CHILLY,
the falling snow is THICK;
if you are affectionate and love me,
I will hold your hand and GO HOME with you;
you are so modest, you are so SLOW,
but OH, there is urgency!

Scholars have generally identified two rhyme sequences in this stanza:

41.2A: 喈 *jiē* / 霏 *fēi* / 歸 *guī*

41.2B: 邪 *xú* / 且 *jū*

However, according to Wáng Lì's reconstruction, 喈 *jiē* belongs to the 脂 Zhī rhyme group, while 霏 *fēi* and 歸 *guī* belong to the 微 Wēi rhyme group, so the sequence as traditionally analyzed is irregular in his system. He argued that the sequence 41.2A consists only of 霏 *fēi* and 歸 *guī*, and that 喈 *jiē* in line 1 was not intended as a rhyme word (1937 [1980]: 145). (This proposal would be consistent with the general principle that rhyme is often optional in odd-numbered lines in the *Shījīng*.) He therefore counted

41.2A as an unmixed 微 Wēi sequence, supporting his hypothesis that 脂 Zhī and 微 Wēi rhyme separately.

The overall structure of the poem argues against this analysis, however, as becomes apparent when we examine the other two stanzas:

Stanza 1:

北風其涼	*běi fēng qí LIÁNG*	涼 *ljang*
雨雪其雱	*yù xuě qí PĀNG*	雱 *phang*
惠而好我	*huì ér hào wǒ*	
攜手同行	*xí shǒu tóng XÍNG*	行 *hæng*
其虛其邪	*qí xū qí XÚ*	邪 *zjo*
既亟只且	*jì jí zhǐ JŪ*	且 *tsjo*

The North wind is COLD,
the falling snow is VOLUMINOUS;
if you are affectionate and love me,
I will hold your hand and GO with you;
you are so modest, you are so SLOW,
but OH, there is urgency!

Stanza 3:

莫赤匪狐	*mò chì fěi HÚ*	狐 *hu*
莫黑匪烏	*mò hēi fěi WŪ*	烏 *ʔu*
惠而好我	*huì ér hào wǒ*	
攜手同車	*xí shǒu tóng JŪ*	車 *kjo*
其虛其邪	*qí xū qí XÚ*	邪 *zjo*
既亟只且	*jì jí zhǐ JŪ*	且 *tsjo*

Nothing is so red as the FOX,
nothing is so black as the RAVEN;
if you are affectionate and love me,
I will hold your hand and go with you in your CARRIAGE;
you are so modest, you are so SLOW,
but OH, there is urgency!

Notice that lines 3, 5, and 6 are identical in all three stanzas, and that in stanzas 1 and 3, there are rhymes in lines 1, 2, and 4, and in the repeated lines 5 and 6; the only nonrhyming line is the repeated line 3. This strongly suggests that the second stanza has the same structure, and that 霏 *fēi* is therefore a rhyme word. Moreover, in stanzas 1 and 2, the first lines are both of the form "běi fēng qí X 北風其 X", differing only in the last word. Partial repetition of lines from stanza to stanza, with only the rhyme words changing, is a very common pattern in the *Shījīng* (compare line 4 in each

stanza, "xí shǒu tóng X 攜手同 X"). These formal features are strong evidence that 霏 *fēi* is a rhyme word in 41.2A, and that Wáng Lì's attempt to fit the data to his hypothesis should be rejected.[86]

Whenever possible, our identification of rhyme words should be based on formal criteria such as the repetitive patterns illustrated in this example. Not all poems provide such clear formal criteria; the longer narrative poems found in the *Xiǎo yǎ* section (Odes 161–234), for example, tend to have a looser rhyme structure, with less repetition from stanza to stanza; the even-numbered lines almost always rhyme, but the odd-numbered lines often do not.[87] To avoid circularity, one can simply exclude odd-numbered rhymes for statistical purposes in analyzing poems like these; but if we do this, we should do so for all items, not just those which are inconsistent with our hypothesis.

3.2.7.3. Irregular rhymes

Another problem is how to count rhyme sequences which include irregular items. Tonal irregularities illustrate this problem. There is a general tendency for rhymes in the *Shījīng* to observe tone categories, and for this reason, as explained above, lumping all tone categories together can bias the results. However, there are still quite a number of rhymes which appear to mix words of different tone categories.[88] For example, consider the rhyme sequence 92.2B (*Zhèng fēng* 鄭風: *Yáng zhī shuǐ* 揚之水):

薪 *xīn* < *sin* 'firewood'
人 *rén* < *nyin* 'person'
信 *xìn* < *sinH* 'trustworthy'

Here the first two words are *píngshēng,* but the third is *qùshēng* according to our Middle Chinese sources.[89] In cases like this there are three options:

1. ignore the irregularity, treating the sequence as a three-word *píng-shēng* sequence; or
2. omit the irregular word, treating the sequence as a two-word *píng-shēng* sequence; or
3. omit the sequence entirely.

The proper treatment probably depends on the individual case. The major consideration is not to make such decisions in such a way as to bias the results. For example, if mixed rhymes show up only in rhymes which hap-

pen to be tonally irregular, then it is best to include the sequence in order to be fair to the null hypothesis. On the other hand, if there are plenty of data already, and omitting the irregular sequences would introduce no bias, it is safe to omit them. The same is true for irregularities of other types, as long as they are irrelevant to the hypothesis being tested.

3.2.7.4. The role of statistical analysis

The considerations in the preceding paragraphs must have made it clear that the method of statistical rhyme analysis proposed here does not automate the process of analyzing rhyme data; it is merely a tool for measuring how likely it is that particular characteristics of the data could have arisen by chance. Basically, what it does is to provide a more objective basis for judgments like that of Wáng Lì, cited above, that the tendency of the 脂 Zhī group and the 微 Wēi group to rhyme separately "cannot be considered a chance phenomenon". Like any tool, it must be used with care if it is to give valid results. I will close this section with a few additional caveats.

First, note that this statistical method is a way of testing hypotheses, not a way of generating them. In other words, it provides (in part) an evaluation measure, not a discovery procedure. Normally, the hypotheses we check reflect complex chains of reasoning based not only on the rhyme data, but also on the phonological structure of Middle Chinese, the patterns of the Old Chinese writing system, notions of plausible phonological structure and phonological change, and so on. So far, we cannot simply input the raw rhyme data into a computer and pick up our reconstructions at the output window.

Second, statistical analysis of rhymes is not the only way of evaluating hypotheses about Old Chinese reconstruction. Sometimes we should accept hypotheses for which we have persuasive arguments, even if the rhyme evidence for them is not statistically significant. (In my judgment, the distinction between **-aj* and **-oj* is such a case.) Hypotheses must be judged by how they clarify the total picture of Chinese phonological history, not by the rhyme evidence alone.

Third, even if the statistics tell us that the separate rhyming of groups *A* and *B* is very unlikely to have occurred by chance, this does not prove that we have drawn the boundary between *A* and *B* in exactly the right place. There may be several different ways of dividing a group of words into an *A* group and a *B* group which will give a significantly low value for **P**; if we have placed a few *A* words in the *B* group by mistake, the tendency of *A* and

B to rhyme separately may still be very strong. We have a concrete illustration of this in Wáng Lì's 脂 Zhī / 微 Wēi hypothesis: although I will argue later that he did not draw the boundary between these two groups in quite the right place, there is still a statistically significant tendency for the 脂 Zhī and 微 Wēi groups, as he defined them, to rhyme separately. (I omit these calculations here.) Nor can we be sure that the hypothesis which gives the lowest value of **P** will necessarily turn out to be the best when evidence other than the rhyme data is considered.

Though these limitations must be kept in mind, statistical arguments are ultimately the only way to establish whether the patterns we find in our data are significant or not. I will now turn to two concrete illustrations of the method with actual data.

3.3. Illustrative examples

To illustrate the application of this method of rhyme analysis, I will discuss two examples of proposals about rhyming which can be tested statistically. They are

- the proposal that the traditional 冬 Dōng and 侵 Qīn rhyme groups are actually a single group, and
- a hypothetical proposal that the words of the traditional 真 Zhēn rhyme group should be split into two groups, according to whether they had a high or mid vowel in Middle Chinese.

In the first case, we will find that there is in fact a significant rhyming distinction between 冬 Dōng and 侵 Qīn, in spite of occasional contacts. In the second case, we will fail to find a significant rhyming distinction; I include this to illustrate a negative result from the method.

3.3.1. The 冬 Dōng and 侵 Qīn rhyme groups

One well-known controversy in Old Chinese rhyme analysis has been whether the traditional distinction between the 冬 Dōng and 侵 Qīn rhyme groups is valid. As traditionally described, the 冬 Dōng group includes

- all words in MC *-owng*, from the 冬 Dōng (Towng) rhyme
- some words in MC *-æwng*, from the 江 Jiāng (Kæwng) rhyme
- most words in MC *-juwng*, from the 東 Dōng (Tuwng) rhyme

I reconstruct this group with **-ung*; Li Fang-kuei reconstructed it with **-əngw* (see section 10.2.15 below).

The traditional 侵 Qīn group includes

- most words in MC *-om*, from the 覃 Tán (Dom) rhyme
- most words in MC *-ɛm*, from the 咸 Xián (Hɛm) rhyme
- all words in MC *-im*, from the 侵 Qīn (Tshim) rhyme
- a few labial-initial words in MC *-juwng*, from the 東 Dōng (Tuwng) rhyme, such as 風 *fēng* < *pjuwng* 'wind' (an original final *-m* is assumed to have dissimilated under the influence of the labial initial).

Li Fang-kuei reconstructed **-əm* in this group. I reconstruct **-im*, **-um*, and **-im* (see section 10.3.3 below), but for the time being we may treat it as a single group as in the traditional analysis.

According to Wáng Lì, the Qīng scholar Yán Kějūn 嚴可均 (1762–1843) was first to propose that these two rhyme groups should be combined. This proposal was later accepted by Zhāng Bǐnglín 章炳麟 (1869–1936), Yú Xǐngwú 于省吾, and Wáng Lì himself. This proposal is based on a number of rhyme contacts between the two groups in the *Shījīng*, such as the following rhyme sequences (translations from Karlgren 1974):

From Ode 128.2 (*Qín fēng* 秦風: *Xiǎo róng* 小戎):

騏駵是中	*qí liú shì ZHŌNG*	中 *trjuwng*
騧驪是驂	*guā lí shì CĀN*	驂 *tshom*

The black-mottled greys and the black-maned bays are in the CENTRE (in the yoke),
the black-nosed yellows and the blacks go as OUTSIDE HORSES.

From Ode 255.1 (*Dà yǎ* 大雅: *Dàng* 蕩):

天生烝民	*tiān shēng zhēng mín*	
其命匪諶	*qí mìng fěi CHÉN*	諶 *dzyim*
靡不有初	*mǐ bù yǒu chū*	
鮮克有終	*xiǎn kè yǒu ZHŌNG*	終 *tsyuwng*

Heaven gives birth to the multitudinous people,
but its charge is not to be RELIED ON;
there is nobody who has not a beginning,
but few can have a (normal) END.

In these examples, 中 *zhōng* < *trjuwng* and 終 *zhōng* < *tsyuwng* are from the traditional 冬 Dōng group, while 驂 *cān* < *tshom* and 諶 *chén* < *dzyim*

are from the 侵 Qīn group. Because of examples such as these, Wáng Lì was persuaded that these two formed a single rhyme group in the *Shījīng*, though they separated later as a result of a sound change. Wáng Lì reconstructed these items as follows:[90]

中 **tiuəm*
驂 **tsəm*
諶 **zjiəm*
終 **tjiuəm*

His proposal was that by the Warring States period (475–221 B.C.), final **-m* dissimilated to **-ng* under the influence of a preceding *-u-*, causing the two groups to split at that time (Wáng Lì 1980b: 8, 12–13).

Let us test Wáng Lì's hypothesis against the rhymes of the *Shījīng* to see whether there is or is not a significant tendency for 冬 Dōng and 侵 Qīn to rhyme separately. To do this we must first identify the corpus of rhymes to be used for statistical analysis.

As I pointed out above, mixing sequences of different tones can bias the analysis. Since the great majority of *Shījīng* rhyme sequences from the 冬 Dōng and 侵 Qīn groups involve *píngshēng* words, I will restrict this analysis to *píngshēng* sequences only. As it happens, almost all of the rhyme sequences mixing 冬 Dōng and 侵 Qīn words occur in *píngshēng* rhymes anyway. The only exception is in Ode 250.4C (*Dà yǎ* 大雅: *Gōng liú* 公劉) where the *qùshēng* word

(105) 飲 *yìn* < *ʔimH* 'to give to drink'

rhymes with the *píngshēng* word

(106) 宗 *zōng* < *tsowng* 'ancestor'.

Possibly the second word originally had a *qùshēng* reading which has not survived in our Middle Chinese sources (it is used as a verb here, so perhaps it had a derivational affix); but in order to be sure that we are being fair to Wáng Lì's hypothesis, I will treat it as a *píngshēng* sequence mixing 冬 Dōng and 侵 Qīn. Otherwise, I will exclude any sequences involving non-*píngshēng* words.

Another problem arises with the word

(107) 風 *fēng* < *pjuwng* 'wind',

which from its Middle Chinese reading alone might be assigned to either 冬 Dōng or 侵 Qīn; it is traditionally assigned to 侵 Qīn because of its rhymes. There is really no doubt that 風 *fēng* belongs with 侵 Qīn, if 冬 Dōng and

侵 Qīn are to be separated at all; it rhymes only with 侵 Qīn words and never with 冬 Dōng words.[91] But since its Middle Chinese reading *pjuwng* is phonologically ambiguous, I will exclude all rhyme sequences involving this word so as to avoid possible circularity. I also exclude irregular rhymes of 侵 Qīn or 冬 Dōng words with words of other groups, since these have no bearing on the issue at hand.[92]

The first step in the analysis is to estimate the relative frequency of 侵 Qīn and 冬 Dōng words. According to my count, *píngshēng* words of the 侵 Qīn group occur sixty-two times as rhymes, while *píngshēng* words of the 冬 Dōng group occur thirty-three times, for a total of ninety-five. (The word 風 *fēng* < *pjuwng* is omitted from these figures as noted above.) Thus the probability that a single rhyme word chosen at random will be a 侵 Qīn-group word is

$$\mathbf{P}[\text{Qīn}] = 62/95 = 0.65,$$

and the probability that it will be a 冬 Dōng–group word is

$$\mathbf{P}[\text{Dōng}] = 33/95 = 0.35.$$

We may use the DeMoivre-Laplace method to calculate the accuracy of this estimate: there is a 0.95 probability that

$$\left|\bar{p} - p\right| \leq (1.96)\sqrt{pq/n}$$

$$= (1.96)\sqrt{\frac{(0.65)\,(0.35)}{95}}$$

$$= 0.10.$$

In other words, there is a 0.95 probability that the true value of **P**[Qīn] lies between 0.55 and 0.75 (and thus that the true value of **P**[Dōng] lies between 0.25 and 0.45).

Now we turn to analyzing the relevant rhyme sequences found in the *Shī-jīng*. First, consider the two-word sequences, beginning with the unmixed sequences. There are seventeen regular, unmixed two-word sequences from the 侵 Qīn group, listed below by ode and stanza, with "A" or "B" for the first and second rhyme sequences within a stanza (the actual rhyme sequences may be found in Appendix B):

7.3B, 20.2A, 32.1A, 32.4A, 33.2A, 144.1A, 149.3A, 164.7B, 186.4B, 218.5B, 229.4B, 229.6A, 240.1B, 241.4A, 252.1B, 264.7A, 299.6A

There are six regular unmixed two-word sequences from the 冬 Dōng group, as follows:

13.2A, 35.6A, 36.2B, 48.1B, 50.1A, 247.3A

Finally, there are five two-word sequences which mix 侵 Qīn and 冬 Dōng words (including the rhyme sequence in 250.4C which involves a *qùshēng* word):

128.2B, 154.8A, 240.3A, 250.4C, 255.1B

Thus we have a total of twenty-eight two-word sequences, of which five are mixed. We estimate the probability that any given sequence will be unmixed by computing

$$\mathbf{P}[U] = (0.65)^2 + (0.35)^2 = 0.55.$$

However, taking the extremes of our confidence intervals, the true value might be as low as

$$\mathbf{P}[U] = (0.55)^2 + (0.45)^2 = 0.51$$

or as high as

$$\mathbf{P}[U] = (0.75)^2 + (0.25)^2 = 0.63.$$

We will try all three of these values in the final calculation of **P**.

Now, since our sample includes five mixed two-word sequences, we wish to calculate $\mathbf{P}[M_2 \leq 5]$, the probability that five or fewer of a random sample of twenty-eight two-word sequences will be mixed. This is the following sum:

$$\mathbf{P}[M_2 \leq 5] = \sum_{i=0}^{5} C_i^{28}\, \mathbf{P}[M]^i\, \mathbf{P}[U]^{28-i}$$

The results are listed in Table 3.5.

Table 3.5. $\mathbf{P}[M_2 \leq 5]$ for $n = 28$

	$\mathbf{P}$[Qīn]	$\mathbf{P}[U]$	$\mathbf{P}[M_2 \leq 5]$
low estimate:	0.55	0.51	0.0007
best estimate:	0.65	0.55	0.0025
high estimate:	0.75	0.63	0.0243

This means that based on our best estimate of $\mathbf{P}$[Qīn], if 侵 Qīn and 冬 Dōng really did rhyme with each other freely, the probability is only about 0.0025 that we would find such a small number of mixed two-word rhymes in a sample of this size. Even if we use the value 0.63 (the upper limit of the 0.95 confidence interval) for $\mathbf{P}[U]$, the probability is still only 0.024 that such a low number of mixed rhymes would occur by chance—well below the criterion level of 0.05. (If we had included the rhymes of 風 *fēng* 'wind', these probabilities would be even lower.) This is strong evidence that although they rhyme with each other in a few cases, the 侵 Qīn and 冬 Dōng groups have a significant tendency to rhyme separately.

Now let us turn to the sequences which are more than two words long. Again excluding the phonologically ambiguous word 風 *fēng*, words from other rhyme groups, and words with tones other than *píngshēng*, there are three three-word sequences in the sample, all unmixed (28.3B, 91.1A, 220.2B). Our best estimate of the probability $\mathbf{P}[U]$ that an unmixed three-word sequence will occur by chance is 0.32, with a 0.95 confidence interval from 0.26 to 0.44. The calculations estimating $\mathbf{P}[M_3 = 0]$ are given in Table 3.6 below.

Table 3.6. $\mathbf{P}[M_3 = 0]$ for $n = 3$

	$\mathbf{P}$[Qīn]	$\mathbf{P}[U]$	$\mathbf{P}[M_3 = 0]$
low estimate:	0.55	0.26	0.018
best estimate:	0.65	0.32	0.033
high estimate:	0.75	0.44	0.085

Thus even apart from the two-word sequences, this small sample of three-word sequences is significant in itself ($\mathbf{P}[M_3 = 0] = 0.033$) if we use our best estimate of $\mathbf{P}$[Qīn]—though not if we take the extreme end of the confidence interval for $\mathbf{P}$[Qīn], in which case $\mathbf{P}[M_3 = 0]$ could be as high as 0.085.

Similarly, there are two four-word sequences, both unmixed: 161.3A and 248.4A. (Each is actually five words long, but they are counted as four-word sequences because one of the words is repeated in each case).[93] This sample too is significant by itself unless our estimate of **P**[Qīn] is far too low, as Table 3.7 shows.

Table 3.7. **P**$[M_4 = 0]$ for $n = 2$

	P[Qīn]	**P**[U]	**P**$[M_4 = 0]$
low estimate:	0.55	0.13	0.017
best estimate:	0.65	0.19	0.036
high estimate:	0.75	0.32	0.103

Finally, there is one unmixed five-word sequence (168.5A) and one sequence which can be treated as a five-word mixed sequence if we disregard one *qùshēng* word (258.2A).[94] Unsurprisingly, the results for these two sequences are not significant by themselves; the calculations are given in Table 3.8.

Table 3.8. **P**$[M_5 \leq 1]$ for $n = 2$

	P[Qīn]	**P**[U]	**P**$[M_5 \leq 1]$
low estimate:	0.55	0.07	0.135
best estimate:	0.65	0.12	0.226
high estimate:	0.75	0.24	0.422

When the results for the two-, three-, four-, and five-word sequences are combined by the method described in section 3.2.4, we get a value for the overall sample of

P = 0.00000522.

This value does not exceed 0.000577 for any values of **P**[Qīn] within the 0.95 confidence interval. Thus we may be quite confident that the distinction between the traditional 侵 Qīn and 冬 Dōng groups is valid.

We should take note of several points, however. First, the rhyme analysis does not prove that 冬 Dōng did not evolve from 侵 Qīn as Wáng Lì suggested; this could have happened at an earlier stage. In fact, parts of the *Shījīng* might reflect a phonological system for which Wáng Lì's hypothesis is correct. But the *Shījīng* rhymes, taken as a whole, show a clear and strong

tendency for 侵 Qīn and 冬 Dōng to rhyme separately, and this fact cannot be ignored in any satisfactory account of *Shījīng* rhyming.

Furthermore, although the rhyme analysis clearly refutes the null hypothesis that 侵 Qīn and 冬 Dōng rhyme with each other freely, it does not explain those cases in which they actually do rhyme with each other, and it does not excuse us from explaining such cases. Our goal should always be to give a satisfactory account of all the data. In section 10.3.3, I will consider the possibility that the rhyme contacts between 侵 Qīn and 冬 Dōng reflect a dialect in which **-m* merged with **-ng* in coda position.

3.3.2. A negative case: high and mid vowels in the 真 Zhēn group

As an example of a case where the null hypothesis is upheld, let us examine a possible hypothesis about the 真 Zhēn rhyme group. As traditionally defined, this group includes

- some words in MC *-ɛn* and *-wɛn,* from the 山 Shān (Srɛn) rhyme
- some words in MC *-in* and *-win,* and all words in MC *-jin* and *-jwin,* from the 真 Zhēn (Tsyin) rhyme
- some words in MC *-en* and *-wen,* from the 先 Xiān (Sen) rhyme
- a few irregular words with other finals (e.g. the word 命 *mìng* < *mjængH*), which we will ignore for purposes of this example.

For the Middle Chinese period, the vowels of the finals *-(w)ɛn* and *-(w)en* may be considered mid (or at least nonhigh), while the vowels of the finals *-(j)(w)in* may be considered high. For Old Chinese, however, I reconstruct all words of the 真 Zhēn group with a high-vowel rhyme **-in*; I assume that **-in* evolved as high or mid depending on whether the medial **-j-* was or was not present before the main vowel:

OC **-in* > *-in* after **-j-*
-en elsewhere

Judging from rhyming practice, this change (which I call **hi > mid**) occurred toward the end of Eastern Hàn, for its effects are already apparent in the rhyming of the Wèi-Jìn period (see Ting Pang-hsin 1975: 245–46). The contrast between MC *-(w)ɛn* and *-(w)en* developed later.

However, suppose we wanted to test the idea that the distinction between high and mid vowels in this group, which is found in Middle Chinese, was already present in *Shījīng* times, and affected *Shījīng* rhyming. Group *A*

would be the words of the 真 Zhēn group which turned up with the finals *-(w)ɛn* or *-(w)en* in Middle Chinese; group *B* would be the words with the finals *-(j)(w)in*. Is there a significant tendency for the *A* and *B* groups, defined in this way, to rhyme separately in the *Shījīng*?

In this case, as in the previous one, we will examine *píngshēng* rhymes only, and omit any irregular rhymes with other groups.

First we calculate **P**[*A*] and **P**[*B*], that is, **P**[mid] and **P**[high] for this rhyme group. According to my count, there are sixty-one occurrences of *píngshēng*, mid-vowel rhyme words in this group, and ninety-five occurrences of *píngshēng*, high-vowel rhyme words, for a total of 156. This gives

P[mid] = 61/156 = 0.39

P[high] = 95/156 = 0.61

Using the DeMoivre-Laplace theorem, we find that the 0.95 confidence interval for **P**[mid] extends from 0.31 to 0.47.

We examine two-word sequences first. We count five unmixed two-word sequences with mid vowels:

178.1B, 178.3A, 178.3D, 184.2A, 204.7A

There are ten unmixed two-word sequences with high vowels:

6.3A, 15.1A, 32.2A, 51.3A, 68.1A, 87.1A, 203.3B, 219.3A, 229.4A, 260.4B

We count twenty two-word sequences mixing high and mid vowels:

31.5B, 45.1B, 65.1D, 102.1A, 156.3C, 190.4B, 191.3B, 193.7B, 196.1A, 200.5B, 210.3B, 229.3A, 235.1A, 238.4A, 249.1B, 259.3B, 264.2A, 264.3B, 275.1B, 282.1E

This gives a total of thirty-five sequences, of which twenty are mixed. The results are given in Table 3.10.

Table 3.10. **P**[$M_2 \leq 20$] for $n = 35$

	P[mid]	**P**[*U*]	**P**[$M_2 \leq 20$]
low estimate	0.31	0.57	0.968
best estimate	0.39	0.52	0.895
high estimate	0.47	0.50	0.845

Thus the number of mixed two-word sequences is quite consistent with the null hypothesis—that Middle Chinese mid-vowel words and high-vowel words in this group rhymed with each other freely in Old Chinese. Twenty mixed sequences out of thirty-five is not lower than would be expected by chance; this number of mixed sequences (or fewer) would occur by chance about 85% of the time, even if our estimate of **P**[mid] is very poor. We must still examine the results for longer sequences, however.

For three-word sequences, we count one unmixed sequence (163.5A) and eight mixed sequences (24.3A, 77.1A, 118.1A, 152,4A, 234.2A, 239.3A, 258.1A, and 259.1A) for a total of nine. The results are given in Table 3.11.

Table 3.11. **P**[$M_3 \leq 8$] for $n = 9$

	P[mid]	**P**[U]	**P**[$M_3 \leq 8$]
low estimate	0.31	0.36	0.982
best estimate	0.39	0.29	0.954
high estimate	0.47	0.25	0.925

Here again, we cannot say that eight mixed sequences out of nine is less than would be expected by chance.

There are three four-word sequences, all mixed. A moment's reflection will show that **P**[$M_4 \leq 3$] = 1: that is, in a sample of three sequences, the number of mixed sequences must be less than or equal to three. Similarly, there is a single five-word sequence, which is mixed; clearly for this sample, **P**[$M_5 \leq 1$] = 1.

When the results for two-, three-, four-, and five-word sequences are combined by the procedure described in section 3.2.4, we get

$$\mathbf{P} = 0.985.$$

In fact, the value of **P** does not go below 0.965 for any value of **P**[mid] in the 0.95 confidence interval. This demonstrates that in *píngshēng*, at least, the number of *Shījīng* rhymes in the 真 Zhēn group mixing syllables which later had mid vowels with those which had high vowels is no less than would be expected by chance. We can conclude that the (Middle Chinese) mid-vowel words and the (Middle Chinese) high-vowel words of this group did indeed rhyme with each other freely in Old Chinese.

Chapter 4

Traditional research on Old Chinese rhyming

4.1. Traditional phonology: achievements and limitations

It was pointed out in Chapter 1 that the rhymes of Old Chinese poetry, especially those of the *Shījīng*, are a crucial part of the evidence used in reconstructing the Old Chinese phonological system. However, as the previous chapter has shown, analyzing a corpus of rhymes for the purpose of phonological reconstruction is a subtle matter; reliable results can be expected only if the statistical issues which arise are dealt with carefully and explicitly. Nor are statistical problems the only ones which arise; as with any ancient text, there are problems of textual transmission and interpretation as well.

One of the major themes of the present study is that previous analyses of Old Chinese rhyming are not fully adequate, and need to be reexamined. All twentieth-century research on Old Chinese reconstruction relies heavily on the research of traditional Chinese scholars of the Qīng dynasty. The present chapter summarizes their work and attempts a brief critique of it.

It is understandable that the work of the Qīng phonologists should inspire respect. The Qīng scholars had a knowledge of classical texts which is impossible for a modern scholar to equal. As part of their education, they simply memorized the essential texts, including the *Shījīng*. This enabled them to make connections and comparisons within the classical corpus which are beyond even the best-read modern scholars. Even with our concordances and, eventually, computerized access to the texts, we will not be able to match the erudition of a Duàn Yùcái or a Wáng Niànsūn. The works of these scholars are a seemingly inexhaustible source of insightful ideas and observations which continue to enrich modern work. It is quite right that we should view these forebears with respect and even awe.

However, the brilliant achievements of the Qīng phonologists' scholarship have tended to blind modern investigators to some of their limitations:

- Although they sometimes showed an impressive understanding of articulatory phonetics, the Qīng phonologists were handicapped by the lack of a convenient phonetic notation.

- Though they were well aware that language changed over time, they lacked the crucial notion of regular sound change which played so important a role in nineteenth-century European historical linguistics.
- Except for the important early influence of Sanskrit, traditional phonology was largely ignorant of languages other than Chinese.
- All but the last generation of traditional phonologists had no access to the present century's abundant discoveries and research in Chinese paleography.
- Finally, the Qīng scholars were understandably ill-equipped to handle the statistical issues involved in inferring rhyme groups from a corpus of rhymes.

It would be surprising if these limitations did not affect the validity of traditional scholars' conclusions about Old Chinese phonology and rhyming. Yet these conclusions have been subjected to surprisingly little scrutiny. With some exceptions,[95] most modern work accepts the rhyme categories of Wáng Niànsūn or Jiāng Yǒugào with little fundamental change; reconstructing Old Chinese is treated as a process of devising phonetic representations which are consistent with these categories and which can account for the syllables of Middle Chinese.

An analysis of Old Chinese rhyming typically specifies a set of rhyme categories, such that words in the same category are assumed to rhyme with each other. Such an analysis may fail to be adequate in two major ways:

1. It may predict that words do not rhyme when they actually do (by erroneously assigning them to different categories).
2. It may predict that words do rhyme when they actually do not (by erroneously assigning them to the same category).

Errors of the first type are easily exposed by the presence of rhymes in the corpus which conflict with the categories of the analysis. Errors of the second type are more difficult to discover, because they are revealed only by the absence of rhymes of certain types in the corpus. An analysis of rhyming may be adequate in the limited sense that no examples in the corpus contradict it, and yet still be subject to errors of this second type.

The inadequacies in the traditional analysis of Old Chinese rhyming are mostly of the second type; they are cases where the Qīng phonologists overlooked rhyming distinctions which would have led them to subdivide their rhyme categories further. In other words, the distinctions recognized by the traditional analysis are correct as far as they go; they simply do not

go far enough. We will see that the number of rhyme categories recognized by the Qīng scholars gradually increased over time as additional Old Chinese rhyming distinctions were discovered. The additional rhyme distinctions proposed in this study are a natural continuation of this tendency.

In order to describe the development of the traditional analysis conveniently, I present in section 4.2 a modern version of the traditional rhyme categories. As each category will be discussed in more detail in Chapter 10, I include only a brief summary here, sufficient for the purposes of this chapter. Section 4.3 summarizes the history of the traditional analysis. Although this topic is covered in a number of standard Chinese sources (e.g. Wáng Lì 1936–1937 [1957]: 269–451 and Dǒng Tónghé 1968: 237–62, on which I have relied heavily), I know of no systematic account in English; yet the history of this analysis gives much insight into both its achievements and its shortcomings. Finally, section 4.4 discusses how the constraints under which the Qīng phonologists worked may have shaped the conclusions they reached.

4.2. The traditional analysis—a modern version

Though most modern scholars accept the same basic set of Old Chinese rhyme categories, they use several slightly different sets of labels for these categories. The version of the traditional rhyme categories presented in this section follows Zhōu Zǔmó (1966b).[96] This system is basically that of Wáng Niànsūn and Jiāng Yǒugào, except that (1) Wáng Lì's proposed distinction between 脂 Zhī and 微 Wēi is added, and (2) separate categories are set up for *rùshēng* words.[97] Names of *Guǎngyùn* rhymes are traditionally used as labels for Old Chinese rhyme categories; for example, the words of the *Guǎngyùn*'s 之 Zhī (Tsyi) rhyme all belong to a single Old Chinese rhyme group, which is traditionally called the 之部 Zhī *bù*—that is, 'the 之 Zhī group' or 'the 之 Zhī category'. (Note that in Chinese, 韻 *yùn* 'rhyme' normally refers to a Middle Chinese rhyme of the *Qièyùn* or *Guǎngyùn*; 部 *bù* 'category' or 'group' refers to a rhyme category reconstructed for Old Chinese.)

An Old Chinese rhyme group is traditionally specified by listing the Middle Chinese finals it includes and the characters used as phonetic elements in *xiéshēng* characters for words of the group. Normally, all the words of a single *xiéshēng* series belong to the same Old Chinese rhyme group; in Duàn Yùcái's words, "tóng shēng bì tóng bù 同聲必同部 [if the phonetic is the same, the rhyme category must be the same]". By applying

this principle, even words which do not occur as rhymes in Old Chinese poetry can be assigned to a rhyme group, if another word in the same *xiéshēng* series does occur as a rhyme.[98]

The traditional rhyme categories are discussed individually and in detail in Chapter 10; in the summary below (Table 4.1), I will simply list the Middle Chinese finals assigned to each group, by division and *Qièyùn* rhyme, and refer to the section of Chapter 10 in which the group is discussed. Rare and irregular developments are omitted here. As the traditional character labels are somewhat confusing to the nonspecialist, in listing Old Chinese rhyme categories I also give the reconstruction of each category in the reconstruction system of Li Fang-kuei (1971 [1980]), which closely follows the traditional analysis. The reader should keep in mind that Li's reconstructions are included here only for mnemonic value; I will propose new and often rather different reconstructions in subsequent chapters.

Table 4.1. Old Chinese rhyme categories according to Zhōu Zǔmó (1966b)

Division	MC finals	*Qièyùn* rhyme
	1. 之 Zhī (Tsyi), Li's **-əg* (section 10.2.1)	
I	*-(w)oj*	咍 Hāi (Xoj), 灰 Huī (Xwoj)
	-uw	侯 Hóu (Huw)
II	*-(w)ɛj*	皆 Jiē (Kɛj)
III	*-i*	之 Zhī (Tsyi)
	-(w)ij	脂 Zhī (Tsyij)
	-juw	尤 Yóu (Hjuw)
	2. 職 Zhí (Tsyik), Li's **-ək* (section 10.2.2)	
I	*-(w)ok*	德 Dé (Tok)
II	*-(w)ɛk*	麥 Maì (Mɛk)
III	*-(w)ik*	職 Zhí (Tsyik)
	-juwk	屋 Wū (ʔUwk)

Continued on next page

Table 4.1, continued

Division	MC finals	*Qièyùn* rhyme
	3. 幽 Yōu (ʔJiw), Li's **-əgw* (section 10.2.13)	
I	*-aw*	豪 Háo (Haw)
	-uw	侯 Hóu (Huw)
II	*-æw*	肴 Yáo (Hæw)
III	*-juw*	尤 Yóu (Hjuw)
	-jiw	幽 Yōu (ʔJiw)
	-wij	脂 Zhī (Tsyij)
IV	*-ew*	蕭 Xiāo (Sew)
	4. 覺 Jué (Kæwk), Li's **-əkw* (section 10.2.14)	
I	*-owk*	沃 Wò (ʔOwk)
II	*-æwk*	覺 Jué (Kæwk)
III	*-juwk*	屋 Wū (ʔUwk)
IV	*-ek*	錫 Xī (Sek)
This group is sometimes known by the label 沃 Wò (ʔOwk).		
	5. 宵 Xiāo (Sjew), Li's **-agw* (section 10.2.16)	
I	*-aw*	豪 Háo (Haw)
II	*-æw*	肴 Yáo (Hæw)
III	*-j(i)ew*	宵 Xiāo (Sjew)
IV	*-ew*	蕭 Xiāo (Sew)
	6. 藥 Yào (Yak), Li's **-akw* (section 10.2.17)	
I	*-ak*	鐸 Duó (Dak)
	-owk	沃 Wò (ʔOwk)
	-uwk	屋 Wū (ʔUwk)
II	*-æwk*	覺 Jué (Kæwk)
III	*-jak*	藥 Yào (Yak)
IV	*-ek*	錫 Xī (Sek)

Continued on next page

Table 4.1, continued

Division	MC finals	*Qièyùn* rhyme
	7. 侯 Hóu (Huw), Li's **-ug* (section 10.2.10)	
I	*-uw*	侯 Hóu (Huw)
III	*-ju*	虞 Yú (Ngju)
	8. 屋 Wū (ʔUwk), Li's **-uk* (section 10.2.11)	
I	*-uwk*	屋 Wū (ʔUwk)
II	*-æwk*	覺 Jué (Kæwk)
III	*-jowk*	燭 Zhú (Tsyowk)
	9. 魚 Yú (Ngjo), Li's **-ag* (section 10.2.4)	
I	*-u*	模 Mú (Mu)
II	*-(w)æ*	麻 Má (Mæ)
III	*-jo*	魚 Yú (Ngjo)
	-ju	虞 Yú (Ngju)
	-jæ	麻 Má (Mæ)
	10. 鐸 Duó (Dak), Li's **-ak* (section 10.2.5)	
I	*-(w)ak*	鐸 Duó (Dak)
II	*-(w)æk*	陌 Mò (Mæk)
III	*-j(w)ak*	藥 Yào (Yak)
	-jek	昔 Xī (Sjek)
	11. 歌 Gē (Ka), Li's **-ar* (section 10.1.3)	
I	*-(w)a*	歌 Gē (Ka)
II	*-(w)æ*	麻 Má (Mæ)
III	*-j(w)e*	支 Zhī (Tsye)
	-jæ	麻 Má (Mæ)

Continued on next page

Table 4.1, continued

Division	MC finals	*Qièyùn* rhyme
	12. 支 Zhī (Tsye), Li's **-ig* (section 10.2.7)	
II	*-(w)ɛi*	佳 Jiā (Kɛi)
III	*-j(w)(i)e*	支 Zhī (Tsye)
IV	*-(w)ej*	齊 Qí (Dzej)
	13. 錫 Xī (Sek), Li's **-ik* (section 10.2.8)	
II	*-(w)ɛk*	麥 Mài (Mɛk)
III	*-j(w)(i)ek*	昔 Xī (Sjek)
IV	*-(w)ek*	錫 Xī (Sek)
	14. 脂 Zhī (Tsyij), Li's **-id* (section 10.1.8)	
II	*-ɛj*	皆 Jiē (Kɛj)
III	*-(j)ij*	脂 Zhī (Tsyij)
IV	*-(w)ej*	齊 Qí (Dzej)
	15. 質 Zhì (Tsyit) , Li's **-it* (section 10.1.6)	
II	*-(w)ɛt*	黠 Xiá (Hɛt)
III	*-(j)(w)it*	質 Zhì (Tsyit)
IV	*-(w)et*	屑 Xiè (Set)

The distinction between this group and the 微 Wēi group was first proposed by Wáng Lì, and has been accepted by most scholars. According to Wáng Lì, this group includes the following finals:

In Chapter 10, I propose that some of the words which Wáng Lì assigned to the 脂 Zhī group (Li's **-id*) should be assigned instead to 微 Wēi (Li's **-əd*). See section 10.1.8 for discussion.

Continued on next page

Table 4.1, continued

Division	MC finals	*Qièyùn* rhyme
	16. 微 Wēi (Mjɨj), Li's **-əd* (section 10.1.8)	
	This group was first proposed by Wáng Lì (1937). According to him, it includes the following finals:	
I	*-(w)oj*	咍 Hāi (Xoj), 灰 Huī (Xwoj)
II	*-wɛj*	皆 Jiē (Kɛj)
III	*-j(w)ɨj*	微 Wēi (Mjɨj)
	-wij	脂 Zhī (Tsyij)
	In Chapter 10, I will argue that this group also includes some words with the *kāikǒu* finals *-ij*, *-ɛj*, and *-ej*.	
	17. 物 Wù (Mjut), Li's **-ət* (section 10.1.7)	
I	*-(w)ot*	没 Mò (Mwot)
II	*-(w)ɛt*	黠 Xiá (Hɛt)
III	*-jɨt*	迄 Qì (Xjɨt)
	-jut	物 Wù (Mjut)
	-(w)it	質 Zhì (Tsyit)
IV	*-et*	屑 Xiè (Set)
	The label 術 Shù (Zywit) is sometimes used for this group.	
	18. 祭 Jì (TsjejH), Li's **-ad(h)* (section 10.1.2)	
I	*-(w)ajH*	泰 Tài (ThajH)
II	*-(w)æjH*	夬 Guài (KwæjH)
	-(w)ɛjH	*qùshēng* of 皆 Jiē (Kɛj)
III	*-j(w)ojH*	廢 Fèi (PjojH)
	-j(w)(i)ejH	祭 Jì (TsjejH)
IV	*-(w)ejH*	*qùshēng* of 齊 Qí (Dzej)
	This group includes only *qùshēng* words; it includes the words of several *Guǎngyùn* rhymes which occur only in *qùshēng*, with no counterparts in the other tones.	

Continued on next page

Table 4.1, continued

Division	MC finals	*Qièyùn* rhyme
	19. 月 Yuè (Ngjwot), Li's *-*at* (section 10.1.2)	
I	*-(w)at*	末 Mò (Mat)
II	*-(w)æt*	鎩 Xiá (Hæt)
	-ɛt	黠 Xiá (Hɛt)
III	*-j(w)ot*	月 Yuè (Ngjwot)
	-j(w)(i)et	薛 Xuē (Sjet)
IV	*-(w)et*	屑 Xiè (Set)
	20. 緝 Qī (Tship), Li's*-*əp* (section 10.3.4)	
I	*-op*	合 Hé (Hop)
II	*-ɛp*	洽 Qià (Hɛp)
III	*-(j)ip*	緝 Qī (Tship)
IV	*-ep*	帖 Tiē (Thep)
	21. 盍 Hé (Hap), Li's *-*ap* (section 10.3.2)	
I	*-ap*	盍 Hé (Hap)
II	*-æp*	狎 Xiá (Hæp)
	-ɛp	洽 Qià (Hɛp)
III	*-j(i)ep*	葉 Yè (Yep)
	-jæp	業 Yè (Ngjæp)
	-jop	乏 Fá (Bjop)
IV	*-ep*	帖 Tiē (Thep)

The label 葉 Yè (Yep) is also used for this group.

Continued on next page

Table 4.1, continued

Division	MC finals	*Qièyùn* rhyme
	22. 談 Tán (Dam), Li's **-am* (section 10.3.1)	
I	*-am*	談 Tán (Dam)
II	*-æm*	銜 Xián (Hæm)
	-ɛm	咸 Xián (Hɛm)
III	*-j(i)em*	鹽 Yán (Yem)
	-jæm	嚴 Yán (Ngjæm)
	-jom	凡 Fán (Bjom)
IV	*-em*	添 Tiān (Them)
	23. 侵 Qīn (Tshim), Li's **-əm* (section 10.3.3)	
I	*-om*	覃 Tán (Dom)
II	*-ɛm*	咸 Xián (Hɛm)
III	*-(j)im*	侵 Qīn (Tshim)
	-juwng	東 Dōng (Tuwng)
IV	*-em*	添 Tiān (Them)
	24. 蒸 Zhēng (Tsying), Li's **-əng* (section 10.2.3)	
I	*-(w)ong*	登 Dēng (Tong)
II	*-(w)ɛng*	耕 Gēng (Kɛng)
III	*-ing*	蒸 Zhēng (Tsying)
	-juwng	東 Dōng (Tuwng)
	25. 冬 Dōng (Towng), Li's **-əngw* (section 10.2.15)	
I	*-owng*	冬 Dōng (Towng)
II	*-æwng*	江 Jiāng (Kæwng)
III	*-juwng*	東 Dōng (Tuwng)

The label 中 Zhōng (Trjuwng) is also used for this group.

Continued on next page

Table 4.1, continued

Division	MC finals	*Qièyùn* rhyme
	26. 東 Dōng (Tuwng), Li's **-ung* (section 10.2.12)	
I	*-uwng*	東 Dōng (Tuwng)
II	*-æwng*	江 Jiāng (Kæwng)
III	*-jowng*	鍾 Zhōng (Tsyowng)
	27. 陽 Yáng (Yang), Li's **-ang* (section 10.2.6)	
I	*-(w)ang*	唐 Táng (Dang)
II	*-(w)æng*	庚 Gēng (Kæng)
III	*-j(w)ang*	陽 Yáng (Yang)
	-j(w)æng	庚 Gēng (Kæng)
	28. 耕 Gēng (Kɛng), Li's **-ing* (section 10.2.9)	
II	*-ɛng*	耕 Gēng (Kɛng)
III	*-j(w)(i)eng*	清 Qīng (Tshjeng)
	-j(w)æng	庚 Gēng (Kæng)
IV	*-eng*	青 Qīng (Tsheng)
	29. 真 Zhēn (Tsyin), Li's **-in* (section 10.1.4)	
II	*-(w)ɛn*	山 Shān (Srɛn)
III	*-(j)(w)in*	真 Zhēn (Tsyin)
IV	*-(w)en*	先 Xiān (Sen)
	30. 文 Wén (Mjun), Li's **-ən* (section 10.1.5)	
I	*-(w)on*	痕 Hén (Hon), 魂 Hún (Hwon)
II	*-(w)ɛn*	山 Shān (Srɛn)
III	*-jin*	殷 Yīn (ʔJin)
	-jun	文 Wén (Mjun)
	-(w)in	真 Zhēn (Tsyin)
IV	*-en*	先 Xiān (Sen)

The label 諄 Zhūn (Tsywin) is also used for this group.

Continued on next page

Table 4.1, continued

Division	MC finals	*Qièyùn* rhyme
	31. 元 Yuán (Ngjwon), Li's **-an* (section 10.1.1)	
I	*-(w)an*	寒 Hán (Han)
II	*-(w)æn*	刪 Shān (Sræn)
	-(w)ɛn	山 Shān (Srɛn)
III	*-j(w)on*	元 Yuán (Ngjwon)
	-j(w)(i)en	仙 Xiān (Sjen)
IV	*-(w)en*	先 Xiān (Sen)

4.3. The development of the traditional analysis

In this section we sketch the history of the traditional analysis of Old Chinese rhyming by briefly examining the work of the major figures of traditional phonology who investigated Old Chinese rhyming. We begin by studying the early theories of rhyming which preceded them.

4.3.1. The *xiéyùn* ('harmonizing rhymes') theory

In spite of changes in pronunciation, some of the *Shījīng* poems still rhyme in modern pronunciation, and have rhymed throughout the course of the history of Chinese. In Ode 6 (*Zhōu nán* 周南: *Táo yāo* 桃夭), for example, the rhyme words still rhyme in modern Mandarin:

stanza 1: 華 *huā* / 家 *jiā*
stanza 2: 實 *shí* / 室 *shì*
stanza 3: 蓁 *zhēn* / 人 *rén*

In other cases, it is clear from the structure of the poem which words were originally intended as rhymes, but some of the rhymes no longer work. An example is Ode 8 (*Zhōu nán* 周南: *Fúyǐ* 芣苢; translation adapted from Karlgren 1974):

采采芣苢　　*cǎi cǎi fóu yǐ*
薄言采之　　*bó yán CǍI zhī*　　采 *tshojX*
采采芣苢　　*cǎi cǎi fóu yǐ*
薄言有之　　*bó yán YǑU zhī*　　有 *hjuwX*

采采芣苢　　*cǎi cǎi fóu yǐ*
薄言掇之　　*bó yán DUŌ zhī*　　掇 *twat*
采采芣苢　　*cǎi cǎi fóu yǐ*
薄言捋之　　*bó yán LUŌ zhī*　　捋 *lwat*

采采芣苢　　*cǎi cǎi fóu yǐ*
薄言袺之　　*bó yán JIÉ zhī*　　袺 *ket*
采采芣苢　　*cǎi cǎi fóu yǐ*
薄言襭之　　*bó yán XIÉ zhī*　　襭 *het*

Colorful[99] is the plantain, we GATHER it;
colorful is the plantain, we HOLD it.

Colorful is the plantain, we PICK it;
colorful is the plantain, we PLUCK it.

Colorful is the plantain, we TAKE [IT] IN OUR HELD-UP FLAPS;
colorful is the plantain, we TAKE IT IN OUR TUCKED-UP FLAPS.

Here the second and third stanzas still rhyme perfectly:

stanza 2: 掇 *duō* / 捋 *luō*
stanza 3: 袺 *jié* / 襭 *xié*

The structure of the poem makes it clear that the rhyme words of the first stanza must be

stanza 1: 采 *cǎi* / 有 *yǒu*.

These words occupy the same positions in stanza 1 as the rhyme words do in stanzas 2 and 3; in fact, except for the words in these positions, the three stanzas are identical. But 采 *cǎi* < *tshojX* 'gather, pluck' and 有 *yǒu* < *hjuwX* 'have, hold' do not rhyme in either modern or Middle Chinese pronunciation, and probably have not rhymed in most dialects since before the Hàn dynasty.[100] In poems like this, which have a very tight and repetitive structure, the rhyme words are easy to identify in spite of pronunciation changes which spoil the rhyme for later readers.

Chinese readers of the *Shījīng* have doubtless noticed examples like this since early times, but it was not immediately obvious to them that Old Chinese pronunciation was systematically different from their own. Gradual

changes in pronunciation, more easily noticed in a language written alphabetically, were concealed by the relative stability of the Chinese script. One early way of dealing with the apparent failure of some *Shījīng* rhyme words to rhyme properly was simply to change one's pronunciation of the rhyme words when reciting the odes, in order to force them to rhyme. A famous example is Ode 28.3 (*Bèi fēng* 邶風: *Yàn yàn* 燕燕), where the following three words are used as rhymes:

音 *yīn* < *ʔim* 'sound'
南 *nán* < *nom* 'south'
心 *xīn* < *sim* 'heart'

Although 音 *yīn* < *ʔim* and 心 *xīn* < *sim* rhymed in Middle Chinese and still rhyme today, by the Northern and Southern dynasties period (420–589)—probably earlier in some dialects—南 *nán* < *nom* did not rhyme with them.[101] Shěn Zhòng 沈重, who wrote a sixth-century work on the *Shījīng*, is quoted in the *Jīngdiǎn Shìwén* as giving the fǎnqiè spelling "乃林反 nǎi lín fǎn", i.e. *nojX* + *lim* = *nim*, for 南 here, in order to "harmonize the lines [xié jù 協句]".

This practice of adjusting the pronunciation of rhyme words so that they rhyme in contemporary pronunciation has come to be called *xiéyùn* 叶韻 'harmonizing the rhymes'. It flourished in the Sòng dynasty; for example, Zhū Xī 朱熹's version of the *Shījīng*, called *Shī jí zhuàn* 詩集傳 [Collected commentaries on the *Shījīng*], indicates a great many *xiéyùn* pronunciations. In the case of Ode 8.1, cited above, Zhū Xī annotates the rhyme words as follows:

采 *cǎi* < *tshojX* 'to pick, pluck': Zhū Xī says "xié cǐ lǚ fǎn 叶此履反 [harmonized as *tshjeX* + *lijX*]".[102] This is probably intended to represent a "harmonized" pronunciation like [ts^{h}i], in *shǎng* tone.

有 *yǒu* < *hjuwX* 'to have, hold': Zhū Xī says "xié yǔ jǐ fǎn 叶雨己反 [harmonized as *hjuX* + *kiX*]"; this probably represents a harmonized pronunciation [i] or possibly [wi] (*shǎng* tone).

In Ode 28.3, Zhū Xī follows the pronunciation suggested by Shěn Zhòng, though he spells it differently:

南 *nán* < *nom* 'south': Zhū Xī says "xié ní xīn fǎn 叶尼心反 [harmonized as *nrij* + *sim*]"; this probably represents a pronunciation [nim], rhyming with 音 *yīn* < *ʔim* and 心 *xīn* < *sim*.

Apparently, wherever the words which Zhū Xī took as rhymes failed to rhyme in contemporary pronunciation, he included a *xiéyùn* notation of this

kind. It seems reasonable to conclude that in Zhū Xī's time there was a practice of employing such pronunciations when reciting the Odes aloud.

In itself, the practice of using *xiéyùn* pronunciations was not necessarily intended to represent the original Old Chinese pronunciations of the rhyme words; perhaps it was merely a device to make the *Shījīng* sound better when read aloud. But it is usually assumed that the users of *xiéyùn* pronunciations believed that the same adjustments in pronunciation were used in Old Chinese times also. This theory of Old Chinese pronunciation and rhyming runs into obvious difficulties. As critics have pointed out, Zhū Xī was apparently not troubled by giving several different *xiéyùn* pronunciations for the same word in different places; for example, in Ode 17 (*Shào nán* 召南: *Xíng lù* 行露), he gives two different *xiéyùn* pronunciations for different occurrences of 家 *jiā* 'family': *kuwk* in stanza 2 and *kuwng* in stanza 3.[103]

The Míng scholar Yáng Shèn 楊慎 (1488–1559) argued that the various *xiéyùn* pronunciations of a single character were used in ancient times to distinguish different meanings of a word.[104] But it is hard to see how Old Chinese language or poetry could work if the pronunciations of words were subject to such capricious variation. Dǒng Tónghé quotes the comments of the Míng scholar Jiāo Hóng 焦竑 (1540–1620):

> In this way, "east" can also be pronounced "west", "south" can also be pronounced "north", "up" can also be pronounced "down", "front" can also be pronounced "back"; characters have no correct readings, and the Odes have no correct characters. (Quoted in Dǒng Tónghé 1968: 238; my translation)

The other early approach to the problem of "unharmonious" rhymes was simply to assume that ancient rhyming standards were looser than contemporary ones. Lù Démíng, the author of the *Jīngdiǎn shìwén,* rejected Shěn Zhòng's reading of 南 *nán* < *nom* as *nim* in Ode 28.3, saying, "The ancients rhymed loosely; one needn't trouble to change the words."[105]

Neither the *xiéyùn* approach nor Lù Démíng's theory of "loose rhyming" recognized that the pronunciation of Chinese had changed in any fundamental way since Old Chinese times; it remained for later scholars to achieve this insight.

4.3.2. Wú Yù (ca. 1100–1154)

Several scholars of the Sòng dynasty wrote on the problem of ancient rhymes. The best-known, and the only one whose works survive today, is Wú Yù 吳棫.[106] His *Yùn bǔ* 韻補 [Rhyme supplement] arranged words in nine large rhyme classes (though the classes are not explicitly listed) and, using *xiéyùn*-like *fǎnqiè* spellings, specified ancient pronunciations for them. For example, since 江 *jiāng* < *kæwng* 'Yangtze' rhymed in Old Chinese with words in MC *-uwng*, Wú Yù gave it a *fǎnqiè* spelling "沽紅切 gū hóng qiè" (i.e. *ku* + *huwng* = *kuwng*), which in modern Mandarin would be *gōng*. On the face of it, this seems very similar to the *xiéyùn* theory described above. However, while *xiéyùn* readings were usually devised ad hoc to account for the rhyming of particular passages in the *Shījīng*, Wú Yù investigated Old Chinese rhyming more systematically to see which Middle Chinese categories typically rhymed with which. But he failed to do this in a consistent way, and many words appear in more than one category for no apparent reason. This confusion results in part from the inclusion of rhymes from a very long chronological period, all the way from *Shījīng* times to Northern Sòng—for which Wú Yù was criticized by later scholars.

4.3.3. Chén Dì (1541–1617)

The Míng scholar Chén Dì 陳第[107] is generally credited with making the first real progress towards a modern understanding of Old Chinese rhyming and of subsequent sound change. In his work *Máo Shī gǔ yīn kǎo* 毛詩古音攷 [Investigation of the ancient rhymes of the *Máo Shī*] (1606), he argued that the ancients did not freely change the pronunciations of words in order to make them rhyme; rather, they rhymed according to their ordinary pronunciations, which were, however, different from the modern ones. His description of sound change is often quoted:

> In time, there is ancient and modern; in space, there is south and north. Characters undergo changes, and sounds undergo shifts; this is an inevitable tendency. Therefore, when one reads ancient works with modern pronunciation, the result is unavoidably strange and irritating, and does not fit.[108]

In *Máo Shī gǔ yīn kǎo*, Chén Dì proposed ancient pronunciations which fit the pattern of Old Chinese rhyming; though these resemble the earlier *xié-*

yùn pronunciations, he showed that normally it is only necessary to reconstruct a single pronunciation in each case. For example, he said that

(108) 采 *cǎi* < *tshojX* 'to pick, to pluck'

was anciently pronounced like

(109) 洴 *cǐ* < *tshjeX* 'clear';

possibly this indicates a pronunciation like [ts^{h}i)] or [ts^{h}ɨ] (*shǎng* tone). For Chén Dì, this is not a variant pronunciation employed ad hoc to create a good rhyme; it is simply the original pronunciation of the word. This was a significant advance over the earlier *xiéyùn* theory.[109]

4.3.4. Gù Yánwǔ (1613–1682)

Gù Yánwǔ 顧炎武[110] was a scholar of late Míng and early Qīng, famous for his resistance to the Manchu conquerors and his refusal to serve the new dynasty in official capacity. Attributing the fall of the Míng dynasty partly to the influence of Neo-Confucianist philosophy, he advocated a more objective and original approach to classical scholarship which became known as the *Hànxué pài* 漢學派 'Hàn learning school' because of its admiration of Hàn-dynasty scholars and their methods (as opposed to the then orthodox Neo-Confucianist *Sòngxué pài* 宋學派 'Sòng learning school').

Although known for his accomplishments in many areas, Gù Yánwǔ is possibly best known for his phonological research, found in his *Yīn xué wǔ shū* 音學五書 [Five books on phonology], printed in 1667, comprising the following works:

- *Yīn lùn* 音論 [On sounds]
- *Shī běn yīn* 詩本音 [Original sounds of the *Shī*]
- *Yì yīn* 易音 [Sounds of the *Yìjīng*]
- *Táng yùn zhèng* 唐韻正 [Corrections to the *Táng yùn*]
- *Gǔ yīn biǎo* 古音表 [Table of ancient sounds]

In his *Gǔ yīn biǎo,* Gù Yánwǔ identified ten rhyme groups for Old Chinese, defined in terms of the rhymes of the *Guǎngyùn* (see Table 4.2). The treatment of *rùshēng* rhymes is, however, different from that in the *Guǎngyùn*; while the *Guǎngyùn* associates *rùshēng* rhymes like 職 Zhí (Tsyik) with the corresponding *yángshēng* (nasal-final) rhyme 蒸 Zhēng (Tsying), Gù Yánwǔ included 職 ZhíTsyik in the same Old Chinese category with

Table 4.2. Gù Yánwǔ's Old Chinese rhyme groups

Group	Contents
1	東 Dōng (Li's **-ung*) 冬 Dōng (Li's **-əngw*)
2	支 Zhī and 錫 Xī (Li's **-ig* and **-ik*) 脂 Zhī and 質 Zhì (Li's **-id* and **-it*) 之 Zhī and 職 Zhí (Li's **-əg* and **-ək*) 微 Wēi and 物 Wù (Li's **-əd* and **-ət*) 祭 Jì and 月 Yuè (Li's **-ad* and **-at*)
3	魚 Yú and 鐸 Duó (Li's **-ag* and **-ak*) 侯 Hóu and 屋 Wū (Li's **-ug* and **-uk*)
4	真 Zhēn (Li's **-in*) 文 Wén (Li's **-ən*) 元 Yuán (Li's **-an*)
5	宵 Xiāo and 藥 Yào (Li's **-agw* and **-akw*) 幽 Yōu and 覺 Jué (Li's **-əgw* and **-əkw*)
6	歌 Gē (Li's **-ar*)
7	陽 Yáng (Li's **-ang*)
8	耕 Gēng (Li's **-ing*)
9	蒸 Zhēng (Li's **-əng*)
10	侵 Qīn and 緝 Qī (Li's **-əm* and **-əp*) 談 Tán and 盍 Hé (Li's **-am* and **-ap*)

the *yīnshēng* (vocalic-coda) rhyme 之 Zhī (Tsyi). The association of *rùshēng* rhymes with *yīnshēng* rhymes is based upon *Shījīng* rhymes mixing Middle Chinese *rùshēng* and *yīnshēng* words, such as the following sequence from Ode 192.10:

輻 *fú* < *pjuwk* 'spokes'
載 *zài* < *tsojH* 'load'
意 *yì* < *ʔiH* 'think'

Gù Yánwǔ included all three of these words in his Group 2 (see Table 4.2). The connection of 意 *yì* < *ʔiH* with *rùshēng* is also supported by the fact that it is phonetic in (and surely cognate with)

(110) 憶 *yì* < *ʔik* 'to remember'.

The exception to this pattern is Gù's Group 10, in which *rùshēng* words with the coda *-p* are associated with *yángshēng* words in *-m*, as in the *Guǎngyùn*.[111] Gù Yánwǔ's rhyme groups are summarized in Table 4.2. In this table, for each of Gù Yánwǔ's groups, I list the corresponding traditional rhyme groups according to Zhōu Zǔmó's list (see Table 4.1 above), with Li Fang-kuei's reconstructions for reference.

As Table 4.2 shows, quite a number of distinctions remained for later scholars to discover. But Gù Yánwǔ had already clearly identified several of the rhyme groups of what later became the standard analysis. His careful and objective research became a model for his successors.

4.3.5. Jiāng Yǒng (1681–1762)

Jiāng Yǒng 江永[112] was a founder of the *Wǎn xuépài* 皖學派 or 'Ānhuī school' of classical studies. Unlike some of the Qīng phonologists, he was adept at rhyme-table phonology (*děngyùnxué* 等韻學). His works on phonology include

- *Gǔ yùn biāozhǔn* 古韻標準 [Standard for ancient rhymes]
- *Yīnxué biàn wēi* 音學辨微 [Fine distinctions in phonetics]
- *Sìshēng Qièyùn biǎo* 四聲切韻表 [Four-tone *Qièyùn* table]

Jiāng Yǒng's evaluation of Gù Yánwǔ's phonological research is often quoted: "His accomplishments in researching antiquity [*kǎo gǔ* 考古] were many; his accomplishments in discriminating sounds [*shěn yīn* 審音] were shallow."[113] Jiāng Yǒng discovered four major distinctions which Gù Yánwǔ had overlooked (see Table 4.3):

1. He divided Gù Yánwǔ's Group 4 (words ending in *-n*) into his Groups 4 and 5. Jiāng Yǒng's Group 4 can be thought of as the high-vowel portion of Gù Yánwǔ's Group 4, and corresponds to the 真 Zhēn and 文 Wén groups of the standard analysis (Li's **-in* and **-ən*). Jiāng Yǒng's Group 5, the low-vowel portion of Gù Yánwǔ's Group 4, corresponds to the 元 Yuán group (Li's **-an*).

2. Similarly, Jiāng Yǒng divided Gù Yánwǔ's Group 10 (words in final *-m*) into a high-vowel group and a low-vowel group: Jiāng Yǒng's Group 12 corresponds to the 侵 Qīn group in the later analysis (Li's **-əm*); his Group 13 corresponds to the 談 Tán group (Li's **-am*).

Table 4.3. Jiāng Yǒng's Old Chinese rhyme groups (non-*rùshēng*)

Jiāng Yǒng's group	Gù Yánwǔ's group	Contents
1	1	東 Dōng (Li's **-ung*) 冬 Dōng (Li's **-əngw*)
2	2 (*yīnshēng*)	支 Zhī (Li's **-ig*) 脂 Zhī (Li's **-id*) 之 Zhī (Li's **-əg*) 微 Wēi (Li's **-əd*) 祭 Jì (Li's **-ad*)
3	part of 3 (*yīnshēng*)	魚 Yú (Li's **-ag*)
4	4 (high-vowel part)	真 Zhēn (Li's **-in*) 文 Wén (Li's **-ən*)
5	4 (low-vowel part)	元 Yuán (Li's **-an*)
6	part of 5 (*yīnshēng*)	宵 Xiāo (Li's **-agw*)
7	6	歌 Gē (Li's **-ar*)
8	7	陽 Yáng (Li's **-ang*)
9	8	耕 Gēng (Li's **-ing*)
10	9	蒸 Zhēng (Li's **-əng*)
11	parts of 3 and 5 (*yīnshēng*)	侯 Hóu (Li's **-ug*) 幽 Yōu (Li's **-əgw*)
12	10 (high-vowel part)	侵 Qīn (Li's **-əm*)
13	10 (low-vowel part)	談 Tán (Li's **-am*)

3. Jiāng Yǒng also recognized the distinction between the 魚 Yú group (Li's **-ag*) and the 侯 Hóu group (Li's **-ug*) within Gù Yánwǔ's Group 3; the former goes in Jiāng Yǒng's Group 3, the latter in his Group 11.

4. Finally, Jiāng Yǒng discovered the distinction in Gù Yánwǔ's Group 5 between the 宵 Xiāo group (Li's **-agw*) and the 幽 Yōu group (Li's **-əgw*), which he included in his Groups 6 and 11 respectively.

Though he discovered these four distinctions, Jiāng Yǒng's Group 11 includes both the 侯 Hóu group (Li's **-ug*) and the 幽 Yōu group (Li's

-əgw); this was a step backward from Gù Yánwǔ, who had assigned the former to his Group 3 (with the 魚 Yú group, Li's *-ag*) and the latter to his Group 5 (with the 宵 Xiāo group, Li's *-agw*). The result is that Jiāng Yǒng recognized thirteen groups (10 plus 4 minus 1) where Gù Yánwǔ had recognized only ten. Also, unlike Gù Yánwǔ, Jiāng Yǒng set up eight additional categories for *rùshēng* words.[114] His thirteen non-*rùshēng* groups are summarized in Table 4.3. Jiāng Yǒng's eight *rùshēng* groups are parallel to the eight nasal-coda groups listed in Table 4.3 (Groups 1, 4, 5, 8, 9, 10, 12, and 13).

The additional rhyme distinctions proposed by Jiāng Yǒng are now universally recognized as correct. How did Gù Yánwǔ overlook them? I pointed out in section 4.1 that it is easy to spot Old Chinese rhymes that would not have been allowed in Middle Chinese; but Old Chinese rhyme distinctions among words which did rhyme in Middle Chinese are easily overlooked. In other words, splits are easier to discover than mergers. The problem was exacerbated by the Qīng scholars' tendency to think of *Guǎngyùn* rhymes as the natural units of analysis.

Consider, for example, Gù Yánwǔ's Group 3, which includes words with the Middle Chinese finals *-u, -ju,* and *-uw* (among others). Gù Yánwǔ would have noticed that in the *Shījīng*, MC *-u* rhymes with *-ju,* and *-ju* rhymes with *-uw*. For example, 徒 *tú* < *du* rhymes with 夫 *fū* < *pju* in 193.4B, and 驅 *qū* < *khju* rhymes with 侯 *hóu* < *huw* in 54.1A. So it was quite natural to assign MC *-u, -ju,* and *-uw* to the same rhyme group. What Gù Yánwǔ overlooked, and Jiāng Yǒng discovered, was that the words in MC *-ju* which rhyme with *-u* are not the same as the words in *-ju* which rhyme with *-uw;* in the previous example, 夫 *fū* < *pju* and 驅 *qū* < *khju* do not rhyme with each other in Old Chinese, even though they have the same final in Middle Chinese. Middle Chinese *-ju* represents the merger of finals from two different Old Chinese rhyme groups, and this merger led Gù Yánwǔ astray.

The other distinctions which Jiāng Yǒng added to Gù Yánwǔ's system had similarly been obscured by mergers. In Gù Yánwǔ's Group 4 (words ending in *-n*), Jiāng Yǒng discovered that the words in MC *-en* could be divided into two groups that did not rhyme with each other, making it possible to divide the whole group into two parts. The same is true of words in MC *-em* in Gù Yánwǔ's Group 10, and words in *-ew* in Gù Yánwǔ's Group 5. The gradual refinement of the Qīng scholars' analysis of Old Chinese rhyming was a process of discovering more and more such distinctions, as we shall see.

4.3.6. Duàn Yùcái (1735–1815)

The next major figure after Jiāng Yǒng was Duàn Yùcái 段玉裁.[115] In 1760, at the age of 25, he passed the provincial examinations and moved to Beijing to take the metropolitan examinations; it was there that he read the phonological works of Gù Yánwǔ and became interested in phonology. Though unsuccessful in the examinations, he remained in Beijing and met Dài Zhèn 戴震 (see below) there in 1763. Although Dài Zhèn was older, and Duàn Yùcái eventually became his disciple, Duàn Yùcái's major phonological discoveries apparently preceded those of Dài Zhèn, whose phonological works were written late in his life.[116] In addition to discovering additional Old Chinese phonological distinctions, Duàn Yùcái made major contributions to the study of the *Shuōwén jiězì*. His major phonological works are the following:

- *Liù shū yīn yùn biǎo* 六書音均表 [Phonological table of the six character types] (preface dated 1777)
- *Shuōwén jiězì zhù* 說文解字注 [Annotations on the *Shuōwén jiězì*] (1807)

Duàn Yùcái's major contributions to research on rhyming may be summarized as follows:

1. He extracted the 之 Zhī and 職 Zhí groups (Li's **-əg* and **-ək*) and the 支 Zhī and 錫 Xī groups (Li's **-ig* and **-ik*) from Group 2 of Gù Yánwǔ and Jiāng Yǒng's analysis.

2. He recognized 侯 Hóu (Li's **-ug*) as a separate group (his Group 4); Gù Yánwǔ had combined this group with 魚 Yú (Li's **-ag*), while Jiāng Yǒng combined it with 幽 Yōu (Li's **-əgw*).[117]

3. Finally, he discovered the distinction between 真 Zhēn (Li's **-in*) and 文 Wén (Li's **-ən*) (his Groups 12 and 13), which had hitherto been assigned to the same group (Jiāng Yǒng's Group 4, part of Gù Yánwǔ's Group 4).[118]

The result is a system of seventeen rhyme groups, which are grouped in six larger categories because of phonetic similarity and occasional irregular rhymes. Duàn Yùcái's rhyme groups are summarized in Table 4.4.

Though the connection between Old Chinese rhyming and *xiéshēng* series had been noticed for some time,[119] it was Duàn Yùcái who explicitly stated the principle that characters with the same phonetic element must be in the same rhyme group:

Table 4.4. Duàn Yùcái's Old Chinese rhyme groups

Category	Group	Contents
1	1	之 Zhī and 職 Zhí (Li's **-əg* and **-ək*)
2	2	宵 Xiāo and 藥 Yào (Li's **-agw* and **-akw*)
	3	幽 Yōu and 覺 Jué (Li's **-əgw* and **-əkw*) 屋 Wū (Li's **-uk*)
	4	侯 Hóu (Li's **-ug*)
	5	魚 Yú and 鐸 Duó (Li's **-ag* and **-ak*)
3	6	蒸 Zhēng (Li's **-əng*)
	7	侵 Qīn and 緝 Qī (Li's **-əm* and **-əp*)
	8	談 Tán and 盍 Hé (Li's **-am* and **-ap*)
4	9	東 Dōng (Li's **-ung*) 冬 Dōng (Li's **-əngw*)
	10	陽 Yáng (Li's **-ang*)
	11	耕 Gēng (Li's **-ing*)
5	12	真 Zhēn and 質 Zhì (Li's **-in* and **-it*)
	13	文 Wén (Li's **-ən*)
	14	元 Yuán (Li's **-an*)
6	15	脂 Zhī (Li's **-id*) 微 Wēi and 物 Wù (Li's **-əd* and **-ət*) 祭 Jì and 月 Yuè (Li's **-ad* and **-at*)
	16	支 Zhī and 錫 Xī (Li's **-ig* and **-ik*)
	17	歌 Gē (Li's **-ar*)

> One phonetic element can harmonize [i.e. serve as phonetic element in] ten thousand characters; but the ten thousand characters must be in the same rhyme group. Characters with the same phonetic element must be in the same rhyme group.[120]

Duàn Yùcái applied this principle in his *Shuōwén jiězì zhù* to assign each word to one of his seventeen rhyme groups, whether it occurred as a rhyme word in Old Chinese poetry or not.

Duàn Yùcái's contribution was thus not limited to the discovery of several new rhyming distinctions; by relating rhyme groups systematically to the writing system, he tied phonology and paleography together. In his study of the *Shuōwén,* he also pioneered in the study of semantic change, pointing out many cases where words had changed meanings since classical times. He was rightly one of the most influential of the Qīng phonologists.

4.3.7. Dài Zhèn (1724–1777)

Dài Zhèn 戴震[121] was a student of Jiāng Yǒng (also of Ānhuī province); he was older than Duàn Yùcái by some twelve years, and Duàn Yùcái formally regarded him as his teacher, but as we have seen, Dài acknowledged borrowing a number of ideas from the younger Duàn. His students also included Kǒng Guǎngsēn[122] and Wáng Niànsūn (see below), and he was a friend of the phonologist Qián Dàxīn 錢大昕 (1728–1804).[123] A philosopher and mathematician as well as a philologist, Dài Zhèn was a pivotal figure in Qīng intellectual history. In the course of his work on the imperial collection *Sìkù cóngshū* 四庫叢書, he was accused of plagiarism, generating a controversy which has extended into the present century.[124]

Dài Zhèn's major phonological works are the following:

- *Shēng lèi biǎo* 聲類表 [Table of sound categories] (printed in 1777 shortly before Dài's death)
- *Shēng yùn kǎo* 聲韻考 [Investigation of sounds and rhymes] (printed after his death)

Though Dài Zhèn recognized some of the distinctions discovered by Duàn Yùcái, his system of rhyme categories is somewhat different. In his *Shēng yùn kǎo,* Dài Zhèn recognized twenty-five rhyme groups, grouped into nine categories [*lèi* 類]; they are listed in Table 4.5, with Dài Zhèn's names for them (in both modern and Middle Chinese pronunciation) and their equivalents in the later standard analysis.

Table 4.5 shows that Dài Zhèn had a greater concern for phonological pattern than most of his contemporaries. Like his teacher Jiāng Yǒng, Dài Zhèn set up separate *rùshēng* categories, putting him in the *shěnyīn pài* [sound-discriminating school] rather than the *kǎogǔ pài* [antiquity-investigating school]. The names of his rhyme groups are most interesting: instead of using *Guǎngyùn* rhymes as names, he chose words beginning

Table 4.5. Dài Zhèn's Old Chinese rhyme groups

Category	Group	Contents
1	1: 阿 Ē < ʔa	歌 Gē (Li's **-ar*)
	2: 烏 Wū < ʔu	魚 Yú (Li's **-ag*)
	3: 堊 È < ʔak	鐸 Duó (Li's **-ak*)
2	4: 膺 Yīng < ʔing	蒸 Zhēng (Li's **-əng*)
	5: 噫 Yī < ʔi	之 Zhī (Li's **-əg*)
	6: 億 Yì < ʔik	職 Zhí (Li's **-ək*)
3	7: 翁 Wēng < ʔuwng	東 Dōng (Li's **-ung*)
		冬 Dōng (Li's **-əngw*)
	8: 謳 Ōu < ʔuw	侯 Hóu (Li's **-ug*)
		幽 Yōu (Li's **-əgw*)
	9: 屋 Wū < ʔuwk	屋 Wū (Li's **-uk*)
		覺 Jué (Li's **-əkw*)
4	10: 央 Yāng < ʔjang	陽 Yáng (Li's **-ang*)
	11: 夭 Yāo < ʔjaw	宵 Xiāo (Li's **-agw*)
	12: 約 Yuē < ʔjak	藥 Yào (Li's **-akw*)
5	13: 嬰 Yīng < ʔjieng	耕 Gēng (Li's **-ing*)
	14: 娃 Wá (ʔɛi)[a]	支 Zhī (Li's **-ig*)
	15: 戹 È < ʔɛk	錫 Xī (Li's **-ik*)
6	16: 殷 Yīn < ʔjin	真 Zhēn (Li's **-in*)
		文 Wén (Li's **-ən*)
	17: 衣 Yī < ʔjɨj	脂 Zhī (Li's **-id*)
		微 Wēi (Li's **-əd*)
	18: 乙 Yǐ < ʔit	質 Zhì (Li's **-it*)
		物 Wù (Li's **-ət*)
7	19: 安 Ān < ʔan	元 Yuán (Li's **-an*)
	20: 靄 Ǎi < ʔajʜ	祭 Jì (Li's **-ad*)
	21: 遏 È < ʔat	月 Yuè (Li's **-at*)
8	22: 音 Yīn < ʔim	侵 Qīn (Li's **-əm*)
	23: 邑 Yì < ʔjip	緝 Qī (Li's **-əp*)
9	24: 醃 Yān < ʔjem	談 Tán (Li's **-ɑm*)
	25: 諜 Yè < yep	盍 Hé (Li's **-ap*)

[a]This character's reading *wá* has no relation to its reading in the *Guǎngyùn*, MC *ʔɛi*.

with the Middle Chinese glottal-stop initial *ʔ-* (with one exception, in Group 25). His nine categories typically include a nasal-coda group along with the corresponding *yīnshēng* and *rùshēng* groups, though there are occasional exceptions.

Dài Zhèn's attention to phonological parallelism both helped and hindered his analysis. He recognized that 祭 Jì and 月 Yuè (Li's **-adh* and **-at*) were parallel to the nasal-final 元 Yuán (Li's **-an*), and created separate groups for them (his Groups 20 and 21, contrasting with 17 and 18). Here, concern for parallelism led him beyond Duàn Yùcái, who included these two groups in his Group 15 along with 脂 Zhī, 微 Wēi, and 物 Wù (Li's **-id, *-əd,* and **-ət*), even though he recognized the parallel nasal-final group 元 Yuán (Li's **-an*) as an independent group. But the same attention to parallelism led Dài Zhèn to reject Duàn Yùcái's discovery of the distinction between 真 Zhēn (Li's **-in*) and 文 Wén (Li's **-ən*), because the parallel distinction between 脂 Zhī (Li's **-id*) and 微 Wēi (Li's **-əd*) had not yet been discovered.

4.3.8. Kǒng Guǎngsēn (1752–1786)

Kǒng Guǎngsēn 孔廣森[125] lived only thirty-four years. His major phonological work was *Shī shēng lèi* 詩聲類 [Sound categories of the *Shī*]. Unlike his teacher Dài Zhèn, Kǒng Guǎngsēn set up no separate *rùshēng* categories; possibly influenced by his own northern dialect, he believed that *rùshēng* was a southern phenomenon not present in Old Chinese times. Like Dài Zhèn, however, he paid special attention to the symmetry of his rhyme categories, setting up eighteen categories: nine labeled *yīn* 陰 (that is, having vocalic codas) and nine labeled *yáng* 陽 (that is, having nasal codas). These are summarized in Table 4.6 with the corresponding groups of the later analysis.

As with Dài Zhèn, Kǒng Guǎngsēn's search for symmetry led to both good and bad consequences for his analysis. Kǒng Guǎngsēn's primary contribution was to discover the distinction between 東 Dōng (Li's **-ung*) and 冬 Dōng (Li's **-əngw*)—Kǒng's *yángshēng* categories 5 and 6—which is parallel to the distinction between 侯 Hóu (Li's **-ug*) and 幽 Yōu (Li's **-əgw*), the corresponding *yīnshēng* categories. Also, although the overall parallelism of the categories which Kǒng Guǎngsēn labeled as *yīn* and *yáng* had been noticed before, Kǒng apparently coined the term *yīn-yáng duìzhuǎn* 陰陽對轉 'interchange of *yīn* and *yáng*' to describe occasional contacts between them. For example, the character

Table 4.6. Kǒng Guǎngsēn's Old Chinese rhyme groups

Group	Contents
Yángshēng groups:	
1: 元 Yuán	元 Yuán (Li's **-an*)
2: 丁 Dīng	耕 Gēng (Li's **-ing*)
3: 辰 Chén	真 Zhēn (Li's **-in*) 文 Wén (Li's **-ən*)
4: 陽 Yáng	陽 Yáng (Li's **-ang*)
5: 東 Dōng	東 Dōng (Li's **-ung*)
6: 冬 Dōng	冬 Dōng (Li's **-əngw*)
7: 侵 Qīn	侵 Qīn (Li's **-əm*)
8: 蒸 Zhēng	蒸 Zhēng (Li's **-əng*)
9: 談 Tán	談 Tán (Li's **-am*)
Yīnshēng groups:	
1: 歌 Gē	歌 Gē (Li's **-ar*)
2: 支 Zhī	支 Zhī and 錫 Xī (Li's **-ig* and **-ik*)
3: 脂 Zhī	脂 Zhī and 質 Zhì (Li's **-id* and **-it*) 微 Wēi and 物 Wù (Li's **-əd* and **-ət*) 祭 Jì and 月 Yuè (Li's **-ad* and **-at*)
4: 魚 Yú	魚 Yú and 鐸 Duó (Li's **-ag* and **-ak*)
5: 侯 Hóu	侯 Hóu and 屋 Wū (Li's **-ug* and **-uk*)
6: 幽 Yōu	幽 Yōu and 覺 Jué (Li's **-əgw* and **-əkw*)
7: 宵 Xiāo	宵 Xiāo and 藥 Yào (Li's **-agw* and **-akw*)
8: 之 Zhī	之 Zhī and 職 Zhí (Li's **-əg* and **-ək*)
9: 合 Hé	緝 Qī (Li's **-əp*) 盍 Hé (Li's **-ap*)

(111) 寺 *sì* < *ziH* 'hall'

is the phonetic element in the character

(112) 等 *děng* < *tongX* 'step of a stair'.

The former is in the 之 Zhī group (Li's *-*əg*), the latter in the 蒸 Zhēng group (Li's *-*əng*); the first is Group 8 of Kǒng Guǎngsēn's *yīnshēng* groups, and the second is Group 8 of his *yángshēng* groups. Thus the phenomenon of *yīn-yáng duìzhuǎn* refers to a class of systematic exceptions to Duàn Yùcái's principle "tóng shēng bì tóng bù [same phonetic, same rhyme group]".

However, like Dài Zhèn, Kǒng Guǎngsēn ignored some rhyme distinctions in order to make his system of categories more orderly. For example, in his *yángshēng* Group 3 he combined 真 Zhēn and 文 Wén (Li's *-*in* and *-*ən*), as Dài Zhèn did, even though Duàn Yùcái had discovered that they were distinct; and in his *yīnshēng* Groups 3 and 9, he combined groups that were distinguished by his teacher Dài Zhèn. Moreover, the parallelism is not perfect: the relationship between *yángshēng* Group 7 (Li's *-*əm*) and *yīnshēng* Group 7 (Li's *-*agw* and *-*akw*) is not parallel to that between *yángshēng* Group 9 (Li's *-*am*) and *yīnshēng* Group 9 (Li's *-*ap* and *-*ap*).

4.3.9. Wáng Niànsūn (1744–1832)

Wáng Niànsūn 王念孫[126] was a student of Dài Zhèn, as we have seen. According to a letter he wrote to Jiāng Yǒugào, Wáng Niànsūn set up a system of twenty-one rhyme categories on his own after studying the works of Gù Yánwǔ and Jiāng Yǒng; it was only later that he saw the writings of Duàn Yùcái and discovered that he had apparently duplicated Duàn's discoveries independently.[127] (We will see below that according to Duàn Yùcái, the same discoveries were independently made a third time by Jiāng Yǒugào.) Wáng Niànsūn's major phonological works were the following:

- *Máo Shī qún jīng Chǔcí gǔ yùn pǔ* 毛詩羣經楚辭古韻譜 [Manual of ancient rhymes from the *Máo Shī*, the various classics, and the *Chǔcí*], also known by the title *Gǔ yùn pǔ* 古韻譜 [Manual of ancient rhymes]
- *Yùn pǔ* 韻譜 [Manual of rhymes]
- *Hé yùn pǔ* 合韻譜 [Manual of combined rhymes]

None of these were published during Wáng Niànsūn's lifetime. The *Máo Shī qún jīng Chǔcí yùn pǔ* is included in *Gāoyóu Wáng shì yí shū* 高郵王

Table 4.7. Wáng Niànsūn's Old Chinese rhyme groups

Group	Contents
1: 東 Dōng	東 Dōng (Li's **-ung*) 冬 Dōng (Li's **-əngw*)
2: 蒸 Zhēng	蒸 Zhēng (Li's **-əng*)
3: 侵 Qˉın	侵 Qīn (Li's **-əm*)
4: 談 Tán	談 Tán (Li's **-am*)
5: 陽 Yáng	陽 Yáng (Li's **-ang*)
6: 耕 Gēng	耕 Gēng (Li's **-ing*)
7: 真 Zhēn	真 Zhēn (Li's **-in*)
8: 諄 Zhūn	文 Wén (Li's **-ən*)
9: 元 Yuán	元 Yuán (Li's **-an*)
10: 歌 Gē	歌 Gē (Li's **-ar*)
11: 支 Zhī	支 Zhī and 錫 Xī (Li's **-ig* and **-ik*)
12: 至 Zhì	質 Zhì (Li's **-it*) and part of the *qùshēng* portion of 脂 Zhī (Li's **-id*)
13: 脂 Zhī	the remainder of 脂 Zhī (Li's **-id*) 微 Wēi and 物 Wù (Li's **-əd* and **-ət*)
14: 祭 Jì	祭 Jì and 月 Yuè (Li's **-ad* and **-at*)
15: 盍 Hé	盍 Hé (Li's **-ap*)
16: 緝 Qī	緝 Qī (Li's **-əp*)
17: 之 Zhī	之 Zhī and 職 Zhí (Li's **-əg* and **-ək*)
18: 魚 Yú	魚 Yú and 鐸 Duó (Li's **-ag* and **-ak*)
19: 侯 Hóu	侯 Hóu and 屋 Wū (Li's **-ug* and **-uk*)
20: 幽 Yōu	幽 Yōu and 覺 Jué (Li's **-əgw* and **-əkw*)
21: 宵 Xiāo	宵 Xiāo and 藥 Yào (Li's **-agw* and **-akw*)

氏遺書 [Posthumous writings of the Wáng clan of Gāoyóu] (preface dated 1925), collected by Luó Zhènyù 羅振玉.[128] The *Yùn pǔ* and *Hé yùn pǔ* are unpublished manuscripts, formerly owned by Luó Zhènyù and now said to

be in the collection of Beijing University.[129] Wáng Niànsūn is also known for *Dú shū zá zhì* 讀書雜誌 [Miscellaneous notes from reading] (printed 1812–1831), containing annotations on various classical texts, and *Guǎngyǎ shū zhèng* 廣雅疏證 [Annotations and evidence on the *Guǎngyǎ*].[130]

Wáng Niànsūn's original twenty-one rhyme groups are listed in Table 4.7, with the corresponding groups of Zhōu Zǔmó's list. The major differences between this analysis and the modern version presented in Table 4.1, other than occasional differences in labels, are as follows:

1. In the tradition of the *kǎogǔ pài* [antiquity-investigating school], Wáng Niànsūn did not set up separate *rùshēng* groups, but included *rùshēng* words in the corresponding *yīnshēng* groups (e.g. he included Li's **-ək* and **-əg* in the same group).

2. The other major difference is the existence of the group 至 Zhì. This group includes the *rùshēng* words which Li Fang-kuei reconstructed with **-it,* along with a few *qùshēng* words having strong *xiéshēng* connections with **-it* words. For example, the word

(113) 至 *zhì* < *tsyijH* 'arrive'

itself, used as a label for the group, is a *qùshēng* word, but it is used as phonetic in several *rùshēng* words, e.g.

(114) 室 *shì* < *syit* 'chamber'.

Li reconstructed these two words as **tjidh* and **sthjit* respectively.[131]

Wáng Niànsūn's distinction between 至 Zhì and 脂 Zhī foreshadows the distinction later proposed by Wáng Lì between the 脂 Zhī and 微 Wēi groups (Li's **-id* and **-əd*), but does not correspond to it exactly, even for *qùshēng* words. There are *qùshēng* words which Li (following Wáng Lì) reconstructed with **-id,* but which Wáng Niànsūn included in his 脂 Zhī group rather than his 至 Zhì group, e.g.

(115) 四 *sì* < *sijH* 'four', Li's **sjidh*

(116) 棄 *qì* < *khjijH* 'to abandon', Li's **khjidh*

(117) 惠 *huì* < *hwejH* 'kind, good', Li's **gwidh*

According to Wáng Lì's proposed distinction between 脂 Zhī and 微 Wēi (Li's **-id* and **-əd*), these three words, and others like them, should be included in the front-vowel 脂 Zhī group as Li's reconstruction implies (Wáng Lì 1937 [1980]: 130–34).

When consulting the works of Karlgren, it is important to note that, unlike most other modern scholars, he seems to have followed Wáng Niànsūn consistently on these points, and never accepted Wáng Lì's discovery. Thus he reconstructed 至 *zhì* < *tsyijH* as **tjĕd*, in his Group XI (which corresponds to the *qùshēng* portion of Wáng Niànsūn's 至 Zhì group), but he reconstructed the other three words above as **sjəd*, **k'jɛd*, and **g'iwəd* respectively, in his Group VI (which corresponds largely to the *qùshēng* portion of Wáng Niànsūn's 脂 Zhī group). Similarly, in non-*qùshēng* words he failed to distinguish Wáng Lì's 脂 Zhī and 微 Wēi; his **-ər* corresponds to both **-id* and **-əd* in Li's system. (This problem is discussed in more detail in section 10.1.8.)

3. Finally, in his original system of twenty-one rhyme groups, Wáng Niànsūn did not recognize the distinction between 東 Dōng (Li's **-ung*) and 冬 Dōng (Li's **-əngw*), discovered by Kǒng Guǎngsēn. However, in his late manuscript *Hé yùn pǔ*, he accepted this distinction, resulting in a system of twenty-two groups.[132]

In Wáng Niànsūn's analysis (and the almost identical analysis of Jiāng Yǒugào, described below) the development of the Qīng scholars' Old Chinese rhyme analysis reached its culmination. It is especially noteworthy that Wáng Niànsūn and Jiāng Yǒugào appear to have arrived at almost identical conclusions independently of each other, and even independently of Duàn Yùcái. Modern scholars have relied especially on the work of these two scholars, with very little modification, in devising reconstruction schemes for Old Chinese. Many of the discrepancies between the reconstructions of Karlgren on the one hand and Dǒng Tónghé and Li Fang-kuei on the other result from the fact that Karlgren followed Wáng Niànsūn especially closely.

4.3.10. Jiāng Yǒugào (d. 1851)

Jiāng Yǒugào 江有誥[133], having read the works of Gù Yánwǔ and Jiāng Yǒng, but apparently working independently of later scholars, came up with his own list of twenty Old Chinese rhyme groups, expanding it to twenty-one groups after accepting Kǒng Guǎngsēn's distinction between 東 Dōng (Li's **-ung*) and 冬 Dōng (Li's **-əngw*). In a preface to Jiāng Yǒugào's *Shījīng yùndú* 詩經韻讀 [Rhymes of the *Shījīng*], Duàn Yùcái says:

> In the spring of this year [1812], Mr. Jiāng Jìnsān [Yǒugào] of Shè xiàn sent me a manuscript on phonology. I know he had not seen the works

Table 4.8. Jiāng Yǒugào's Old Chinese rhyme groups

Group	Contents
1: 之 Zhī	之 Zhī and 職 Zhí (Li's **-əg* and **-ək*)
2: 幽 Yōu	幽 Yōu and 覺 Jué (Li's **-əgw* and **-əkw*)
3: 宵 Xiāo	宵 Xiāo and 藥 Yào (Li's **-agw* and **-akw*)
4: 侯 Hóu	侯 Hóu and 屋 Wū (Li's **-ug* and **-uk*)
5: 魚 Yú	魚 Yú and 鐸 Duó (Li's **-ag* and **-ak*)
6: 歌 Gē	歌 Gē (Li's **-ar*)
7: 支 Zhī	支 Zhī and 錫 Xī (Li's **-ig* and **-ik*)
8: 脂 Zhī	脂 Zhī and 質 Zhì (Li's **-id* and **-it*) 微 Wēi and 物 Wù (Li's **-əd* and **-ət*)
9: 祭 Jì	祭 Jì and 月 Yuè (Li's **-ad* and **-at*)
10: 元 Yuán	元 Yuán (Li's **-an*)
11: 文 Wén	文 Wén (Li's **-ən*)
12: 真 Zhēn	真 Zhēn (Li's **-in*)
13: 耕 Gēng	耕 Gēng (Li's **-ing*)
14: 陽 Yáng	陽 Yáng (Li's **-ang*)
15: 東 Dōng	東 Dōng (Li's **-ung*)
16: 中 Zhōng	冬 Dōng (Li's **-əngw*)
17: 蒸 Zhēng	蒸 Zhēng (Li's **-əng*)
18: 侵 Qīn	侵 Qīn (Li's **-əm*)
19: 談 Tán	談 Tán (Li's **-am*)
20: 葉 Yè	盍 Hé (Li's **-ap*)
21: 緝 Qī	緝 Qī (Li's **-əp*)

of Dài [Zhèn] and Kǒng [Guǎngsēn], but he held views which coincided with theirs; I marveled greatly at the fineness of his study. This autumn, in the ninth month, he visited me at Zhīyuán, brought out the work he had written, and asked me to write a preface for it. I looked carefully at his book, and found it fine and deep, profound and

> meticulous. Now Gù [Yánwǔ], Kǒng [Guǎngsēn] and I are united in investigating antiquity [*kǎo gǔ*], while Jiāng [Yǒng] and Dài [Zhèn] at the same time discriminate sounds [*shěn yīn*]; but [Jiāng] Jīnsān [Yǒugào] has attained profound results in both areas on his own.[134]

Aside from occasional differences in the characters chosen as labels, Jiāng Yǒugào's rhyme categories are the same as those of Wáng Niànsūn, except for Wáng's 至 Zhì category, which is included as part of the 脂 Zhī category in Jiāng Yǒugào's system. Thus, after the inclusion of Kǒng Guǎngsēn's distinction between 東 Dōng (Li's **-ung*) and 冬 Dōng (Li's **-əngw*), Jiāng Yǒugào has a total of twenty-one groups, compared with twenty-two in the final version of Wáng Niànsūn's system. Jiāng Yǒugào's rhyme groups are listed in Table 4.8. Except for the lack of Wáng Lì's distinction between 脂 Zhī and 微 Wēi, and the lack of separate categories for *rùshēng* words, this system is the same as the "modern" version of the Qīng rhyme categories introduced in section 4.2.

Jiāng Yǒugào was especially careful in specifying the relationship between Old and Middle Chinese categories, which is perhaps the reason for Duàn Yùcái's comment that he "attained profound results" in both investigating antiquity (*kǎo gǔ*) and in discriminating sounds (*shěn yīn*).

4.4. Discussion and interpretation

The traditional analysis of Old Chinese rhyming exemplified by the work of Wáng Niànsūn and Jiāng Yǒugào was a major intellectual achievement, but if we examine its history, we also find clues to its limitations. As we have seen, it was easy for Chinese readers to notice cases where Old Chinese rhyme groups had split, because in such cases words which originally rhymed no longer rhymed in modern pronunciation. Such cases gave the impression that, in the words of Lù Démíng, "the ancients rhymed loosely" (see section 4.3.1 above). Since the *Guǎngyùn* specified a very fine-grained system of 206 rhyme categories, it was understandable that, lacking a more convenient notation, the traditional phonologists would take *Guǎngyùn* rhymes as appropriate units for analyzing Old Chinese rhyming. At first they observed that in Old Chinese poetry, such-and-such a *Guǎngyùn* rhyme appeared to be used interchangeably with such-and-such another.

It was only gradually that they discovered more and more cases where words in the same *Guǎngyùn* rhyme had to be assigned to different Old Chinese rhyme categories: For example, Gù Yánwǔ discovered that the 麻

Má (Mæ) rhyme had two different origins (his Groups 3 and 6). Similarly, Jiāng Yǒng's identification of 元 Yuán (his Group 5, Li's **-an*) as a separate group involved recognizing that the words of the *Guǎngyùn*'s 先 Xiān (Sen) and 山 Shān (Srɛn) rhymes had more than one origin. As more such cases were discovered, it became possible to make a more fine-grained analysis of Old Chinese rhyming. Thus we observe a tendency for the number of recognized Old Chinese rhyme categories to increase over time: Chén Dì recognized nine categories, Gù Yánwǔ ten, Jiāng Yǒng thirteen, Duàn Yùcái seventeen, Jiāng Yǒugào twenty-one, and Wáng Niànsūn (eventually) twenty-two.

Although more and more *Guǎngyùn* rhymes were recognized as having more than one origin, the tendency to think in terms of *Guǎngyùn* rhymes remained very strong, as shown by the practice of using *Guǎngyùn* rhyme names as labels for Old Chinese rhyme groups. Most of the categories recognized by the Qīng phonologists are related rather directly to some *Guǎngyùn* rhyme; usually, the label of the group is a *Guǎngyùn* rhyme which comes exclusively from that group. Thus the *Guǎngyùn* rhyme 之 Zhī (Tsyi) is used as a label for the 之 Zhī group (Li's **-əg*) because all the words in the 之 Zhī (Tsyi) rhyme come from this group; similarly, 元 Yuán is used as a label for the 元 Yuán group (Li's **-an*) because all the words in the 元 Yuán (Ngjwon) rhyme come from that group.

Or consider the three *Guǎngyùn* rhymes 支 Zhī (Tsye), 脂 Zhī (Tsyij), and 之 Zhī (Tsyi). They have merged completely in most modern dialects; they are adjacent to each other in the *Guǎngyùn*, and are "tóngyòng" or interchangeable in regulated verse. Any Chinese living after the Táng dynasty might reasonably assume that this three-way distinction is arbitrary and artificial. Duàn Yùcái discovered that this distinction reflects a three-way distinction in Old Chinese rhyming, and his discovery was apparently duplicated independently by Wáng Niànsūn and Jiāng Yǒugào. But making this discovery did not require them to abandon the assumption that Old Chinese rhyme groups were reflected more or less directly in the *Guǎngyùn*. This unconscious assumption continued to constrain their analysis, even as they discovered more and more complexities in the relationship between Old and Middle Chinese.

A closely related limitation of traditional phonology was, of course, the lack of a convenient phonetic notation. I have been referring to traditional Old Chinese rhyme groups by giving both their traditional labels and their reconstructions in Li Fang-kuei's system. By now the reader will probably appreciate that the latter is a much more convenient notation than the

former. Part of the relationship among **-əg*, **-ək*, and **-əng*, for example, is conveniently expressed by the use of a common vowel symbol **ə*. (If we know elementary phonetics we also recognize that the coda is a velar in each case, though on this point our Western-style notation is still less than ideal.) If we bring in the three additional groups **-ag*, **-ak*, and **-ang*, it is easy to see them as part of a two-dimensional structure which connects them, based on contrasts of height in the vowel and manner of articulation in the coda:

**-əg*	**-ək*	**-əng*
**-ag*	**-ak*	**-ang*

In this notation, each row and column has a common symbol. By contrast, the traditional character labels provide no such structural clues:

之	職	蒸
魚	鐸	陽

The Qīng phonologists were aware of such structural relations, and had terms for some of them. The terms *yīn*, *yáng*, and *rù*, for example, correspond to the horizontal dimension of the structure above, which represents the manner of articulation of the coda. But in the absence of a convenient analytical notation, recognizing such structural relationships was a rather subtle matter, and we have seen that the Qīng scholars did not always identify them consistently.

A further limitation on traditional phonology will be discussed in Chapter 9, namely the reliance on the analysis of the Chinese script given in the *Shuōwén jiězì*, which is affected by post-*Shījīng* sound changes.

Traditional research in Old Chinese rhyming did not stop with Wáng Niànsūn and Jiāng Yǒugào, but the analysis had gone almost as far as it could within the limitations of traditional methods. (Moreover, in the latter part of the nineteenth century, China's best minds may have been preoccupied with other problems.) Huáng Kǎn 黃侃 (1886–1935), a student of Zhāng Bǐnglín 章炳麟 (1868–1936), explored the distributional patterns of finals with initial consonants, and came up with ideas which anticipate some of the hypotheses to be presented here; but he failed to synthesize these ideas with the discoveries of previous investigators about rhyming.

Viewing traditional phonology in historical perspective, and noting the constraints within which it worked, we can admire the work of the Qīng phonologists and still not be surprised that it requires revision. The next

several chapters formulate the hypotheses which are the basis of the revisions I propose.

Chapter 5

The Old Chinese syllable: an overview

In Chapters 5 through 8, I present the major hypotheses embodied in the reconstruction system I propose for Old Chinese. The discussion in subsequent chapters will be clearer if we begin with an overview of the basic syllable structure which will be assumed for Old Chinese, and the elements which can occur in each structural position. Chapters 6, 7, and 8 discuss the basic hypotheses of the reconstruction system in more detail, using this syllable structure as a framework.

The terms pre-initial, initial, medial, main vowel, coda, and post-coda will be used to identify structural positions within an Old Chinese syllable. For example, consider the following item:

(118) 産 [*chǎn*] < *sr*ɛ*nX* < **sngrjan?* 'breed, bear'[135]

In this example, I call **s-* the pre-initial and **ng* the initial; the pre-initial and initial together may be called the "initial portion" of the syllable, of which the initial may be regarded as the head. The remainder of the syllable is its final, consisting of medials **-rj-*, the main vowel **-a-*, the coda **-n-*, and the post-coda **-ʔ* (assumed to be the source of Middle Chinese *shǎng-shēng*). Each of these positions in syllable structure is briefly discussed in the remainder of this chapter.

5.1. Pre-initials

In the pre-initial position, I reconstruct the elements **s-*, **S-* **ɦ-*, and **N-*.

The pre-initial **s-* forms clusters of the type **st-*, **sm-*, etc. with the following initial. I reconstruct it to account for graphic and morphological relationships; for example, I reconstruct OC **sm-* in

(119) 喪 *sāng* < *sang* < **smang* 'mourning, burial' also *sàng* < *sangH* < **smangs* 'to lose'

because of the probable graphic and morphological relationships[136] to

(120) 亡 *wáng* < *mjang* < **mjang* 'not have, not exist; die'.

Clusters with **s-* are later lost through simplification (for example, **sm-* > *s-*, as here).

I write capital **S-* in those occasional cases where **s*-clusters appear to metathesize to form affricates, such as

(121) 泉 *quán* < *dzjwen* < **Sg^{w}jan* 'spring'.

A word like 泉 *quán* < *dzjwen* could also be reconstructed as **dzjon*, but as Jaxontov pointed out (1960b: 106), this word rhymes consistently as **-an* (see Appendix C), so I reconstruct it as **Sg^{w}jan*, where the labiovelar **g^{w}-* accounts for the Middle Chinese *hékǒu* final *-jwen*. This capital **S-* is a purely diacritic notation for those cases of **s-* which appear to induce metathesis; the conditions for these metatheses are not yet clear.

The pre-initial **ɦ-* may precede voiceless initials, producing a voiced reflex in Middle Chinese: e.g. **ɦp-* > MC *b-*. I reconstruct **ɦ-* in order to account for morphological relationships between forms with voiced and voiceless initials, e.g. in cases like

(122) 敗 *bài* < *bæjH* < **ɦprats* 'to be defeated',

which is clearly related to

(123) 敗 *bài* < *pæjH* < **prats* 'to defeat'.

(A capital **H-* may be used as a typable equivalent for **ɦ-*.) Not all Middle Chinese voiced initials necessarily come from clusters with **ɦ-*, however; MC *b-* can also reflect OC **b-*.

The pre-initial **N-* is a nasalizing element which produces a nasal reflex in Middle Chinese, e.g. **Nk-* > MC *ng-* ([ŋ]). Like pre-initial **s-*, **N-* is reconstructed to account for graphic or morphological relationships. In most cases, words with Middle Chinese nasal initials occur in *xiéshēng* series with other nasal-initial words (or words where we would reconstruct the corresponding voiceless nasal **hm-*, **hn-*, or **hng-*; see below). In these cases it is best to reconstruct simple nasals **m-*, **n-*, **ng-*, and **ng^{w}-*. But when nasal initials are in *xiéshēng* series with oral stops, we may reconstruct clusters with **N-*. For example,

(124) 元 *yuán* < *ngjwon* < **Nkjon* 'head; supreme; great'

is phonetic in, and possibly cognate to,

(125) 冠 *guān* < *kwan* < **kon* 'cap'.

(The *Shuōwén* says that 元 *yuán* 'head' is both a phonetic and a semantic element in the graph 冠 *guān* 'cap'; see Dīng Fúbǎo 1928–1932 [1976]:

3357.) Not all Middle Chinese nasals have this origin, however; e.g. MC *ng-* can also reflect simple **ng-* (a digraph for [ŋ]).

5.2. Initials

The initials reconstructed for Old Chinese are summarized in Table 5.1.[137]

Table 5.1. Old Chinese initial consonants

**p-*	**ph-*	**b-*	**m-*	**hm-*	**w-*	**hw-*
**t-*	**th-*	**d-*	**n-*	**hn-*	**l-*	**hl-*
					**r-*	**hr-*
					**j-*	**hj-*
**ts-*	**tsh-*	**dz-*			**z-*	**s-*
**k-*	**kh-*	**g-*	**ng-*	**hng-*		
**k^{w}-*	**k^{w}h-*	**g^{w}-*	**ng^{w}-*	**hng^{w}-*		
**ʔ-*	**x-*	**ɦ-*				
**ʔ^{w}-*						

To make the notation fully typable, one may substitute **kw-* for **k^{w}-* etc., and an apostrophe **'-* for the glottal stop initial **ʔ-*.

These initials will be discussed in more detail in Chapter 6; for now it will be sufficient to note a number of important differences between this set of initials and the initials of Middle Chinese:

- There is a separate set of labiovelar and labiolaryngeal initials **k^{w}-*, **k^{w}h-*, etc., distinct from **k-*, **kh-*, etc.
- Both **r-* and **l-* are reconstructed.
- The resonants **m-*, **n-*, **ng-*, **ng^{w}-*, **r-*, **l-*, **w-*, and **j-* have a corresponding voiceless series **hm-*, **hn-*, **hng-*, **hng^{w}-*, **hr-*, **hl-*, **hw-*, and **hj-*. (These may be interpreted as IPA [m̥], [n̥], [ŋ̊], etc.)
- There are no distinct palatal or retroflex obstruents as there are in Middle Chinese.

The remaining syllable positions—the medial, main vowel, coda, and postcoda—comprise the final of the syllable.

5.3. Medials

The medial elements reconstructed are **-r-*, **-j-*, and (marginally) **-l-*; the combinations **-rj-* and **-lj-* are also assumed. Medial **-r-* is reconstructed in Middle Chinese division-II syllables, and in syllables with Middle Chinese retroflex initials; this reconstruction, which we may call the "**r*-hypothesis", is due to Jaxontov (though he reconstructed **l* instead of **r*; see Jaxontov 1960a, 1963). An example of **-r-* in division II is the following:

(126) 監 *jiān* < *kæm* < **kram* 'see; inspect'.

In some cases, I assume that an original voiced consonant was lost before **-r-*; in such cases, the Middle Chinese reflex is initial *l-*:

(127) 藍 *lán* < *lam* < **g-ram* 'indigo'.

The initial velar is confirmed by Proto-Tai **gram* (tone A2; see Li Fang-kuei 1977: 231). The **r*-hypothesis accounts for the frequent occurrence of such *l*-initial words in the same *xiéshēng* series with division-II words, as here, where 監 **kram* is phonetic in 藍 **g-ram*.

Medial **-j-* is reconstructed in Middle Chinese division-III syllables (those written in my notation with *-j-* or *-i-* or both); in this respect the present system is similar to Karlgren's (though Karlgren wrote **-i̯-* where I write **-j-*). Unlike Karlgren, however, I recognize this **-j-* as the factor conditioning the development of palatal initials from original dentals—and in some cases from original velars as well. The following examples illustrate the development of Middle Chinese palatals from Old Chinese dentals and velars:

(128) 織 *zhī* < *tsyik* < **tjik* 'to weave'

(129) 兒 *ér* < *nye* < **ngje* 'child, son'

This basic theory of division-III finals and palatalization was first outlined by Pulleyblank (1962), though he has proposed a prosodic feature of some kind rather than the segment **-j-* as the conditioning factor. By contrast, Karlgren reconstructed the Middle Chinese palatal affricates *tsy-* etc. as palatal stops **t́-*, and did not recognize the development of palatals from velars at all.

The combination **-rj-* is reconstructed in division-III syllables with retroflex initials, and also in most division-III *chóngniǔ* finals. This latter idea was also originally proposed (in slightly different form) by Pulleyblank

(1962); we may call it the "**rj*-hypothesis". Thus I reconstruct **-rj-* in the following items:

(130) 生 *shēng* < *sræng* < *srjæng* < **srjeng* 'be born, live'

(131) 變 *biàn* < *pjenH* < **prjons* 'change'

Note that the phonetic element in the latter character is

(132) 䜌 *luán* < *lwan* < **b-ron* 'harness bells'.

(The initial labial in 䜌 *luán* is confirmed by the Thai *phruan* < **br-* 'neck bells (for domestic animals)'; see Bodman 1980: 74.) The reconstruction of **-r-* in division-III finals accounts nicely for cases such as 變 *biàn* where division-III finals occur in the same *xiéshēng* series with Middle Chinese initial *l-*, and with division-II words, as in

(133) 蠻 *mán* < *mæn* < **mron* 'Southern barbarians'.

It appears to be necessary to reconstruct **-l-* as well as **-r-* in medial position in order to account for some phonetic series, though the theory of medial **-l-* is not as well-developed as that of medial **-r-*, and it is often difficult to reconstruct medial **-l-* with confidence. Unlike the other medials, **-l-* seems to have had little effect on the development of the following final, and from a diachronic point of view it might be more convenient to regard it as part of the initial. This question is discussed further in Chapter 6.

Conspicuously absent from this set of medial elements are Karlgren's "strong vocalic **-i-*", which he reconstructed in division-IV finals, and the rounded medial **-w-*, which he reconstructed to account for Middle Chinese *-w-*. Abandoning these two medials involves two hypotheses which are crucial to my reconstruction system: the "front-vowel hypothesis" and the "rounded-vowel hypothesis" respectively.

Briefly, the front-vowel hypothesis assumes that Old Chinese had no "strong vocalic" medial **-i-*; in the division-IV syllables where Karlgren reconstructed **-i-*, I generally reconstruct a front main vowel **-i-* or **-e-* instead, with no medial (see the section 5.4 below),[138] as in these examples:

(134) 堅 *jiān* < *ken* < **kin* 'hard, solid, strong' (Karlgren **kien*)

(135) 肩 *jiān* < *ken* < **ken* 'shoulder'. (Karlgren **kian*)

The syllables **kin* and **ken* merged as MC *ken* through the process I call **hi > mid**, discussed in Chapter 7.

The rounded-vowel hypothesis, due to Jaxontov (1960b), assumes that Old Chinese had no freely-occurring medial *-*w*-, and that Middle Chinese medial -*w*- reflects either a labialized initial such as *k^w- or a rounded main vowel **o* or **u*. Thus a syllable like MC *kwan* might reflect either *k^w*an* or **kon*; but since I do not reconstruct labialized acute (coronal) initials like *t^w- for Old Chinese, syllables like MC *twan*, with -*w*- after an acute initial, must be reconstructed as **ton*; reconstructions like **twan* or *t^w*an* are ruled out. In such cases, MC -*w*- results from a process I call **rounding diphthongization** which applied to rounded vowels before acute codas (**o* > **wa* and **u* > **wi*). The front-vowel hypothesis and the rounded-vowel hypothesis are discussed in more detail in Chapter 7.

5.4. Main vowels

The core element and only obligatory portion of the final is the main vowel, chosen from the six vowels listed in Table 5.2.

Table 5.2. Old Chinese main vowels

*i	*ɨ	*u
*e		*o
	*a	

(A plus sign *+ may be used as a typable equivalent for *ɨ.) In terms of distinctive features, these vowels may be specified by the three features [± high], [± back], and [± round]; in addition, I will consider *a to be redundantly [+ low]. This feature analysis is summarized in Table 5.3.

Table 5.3. Feature analysis of Old Chinese main vowels

vowel	[± high]	[± back]	[± round]	[± low]
**i*	+	–	–	(–)
**ɨ*	+	+	–	(–)
**u*	+	+	+	(–)
**e*	–	–	–	(–)
**o*	–	+	+	(–)
**a*	–	+	–	(+)

By the Middle Chinese stage, this vowel system had undergone radical changes, conditioned especially by elements in the initial and medial positions.

5.5. Codas and post-codas

The main vowel of an Old Chinese syllable may be followed by one of the codas listed in Table 5.4.

Table 5.4. Old Chinese codas

*[zero]	*-*k*	*-*ng*
*-*j*	*-*t*	*-*n*
*-*w*	*-*wk*	
	*-*p*	*-*m*

The coda *-*wk* could also be written as *-k^w. This element is structurally isolated, there being no corresponding *-*wng*.[139] It is also quite possible that Old Chinese also had the codas *-*l* or *-*r* or both, but these are difficult to reconstruct from Chinese evidence alone.

Absent from this list of codas are the final voiced stops *-*g*, *-*d*, *-*b* which Karlgren reconstructed in certain *yīnshēng* words in order to explain rhymes and *xiéshēng* contacts with *rùshēng* words. (Li Fang-kuei reconstructed a coda *-*gw* as well.) My reasons for rejecting these final voiced stops are discussed in Chapter 8, but I will briefly summarize them here. For one thing, final voiced stops seem typologically odd for a language like Old

Chinese; final voicing contrasts are somewhat unusual even in European languages, and virtually unknown in Chinese and typologically similar languages. Moreover, if final voiced stops are reconstructed as freely as in some systems, there is little or no room left for open syllables or syllables ending in glides, which also looks typologically odd. More importantly, however, other hypotheses (such as the hypothesis that *qùshēng* reflects earlier syllable-final **-s*) appear to account better for the phenomena which final voiced stops were originally intended to explain.

The codas in Table 5.4 may be followed by one of the following post-codas, whose Middle Chinese reflexes are tonal:

1. **-s*, the source of Middle Chinese *qùshēng*
2. **-ʔ*, the source of Middle Chinese *shǎngshēng*.

I assume that any type of coda could be followed by one of these post-codas. Like the pre-initials, they often served as derivational elements, though we need not assume that they had such a function in every case.

A final **-s* caused a preceding voiceless stop to be lost, as in the following example:

(136) 惡 *è* < *ʔak* < **ʔak* 'bad', also read *wù* < *ʔuH* < **ʔaks* 'to dislike'

If we assume that stops were also lost before **ʔ*, it is possible for Middle Chinese *shǎngshēng* words to reflect Old Chinese syllables with voiceless stop codas. This allows us to recognize a single root **p(j)ɨk* in the following items:

(137) 負 *fù* < *bjuwX* < **fipjɨ(k)ʔ* 'carry on the back'

(138) 北 *běi* < *pok* < **pɨk* '(back side:) north'

(139) 背 *bèi* < *pwojH* < **pɨks* 'the back, posterior part'

(140) 背 *bèi* < *bwojH* < **fipɨks* 'turn the back on, cheat'

Note that although the post-codas **-ʔ* and **-s* are the sources of Middle Chinese *shǎngshēng* and *qùshēng* respectively, their distribution in Old Chinese is different from the distribution of the Middle Chinese tones. In Middle Chinese, there are no tonal distinctions within the category of *rù-shēng* (stop-final) syllables; this is what makes it possible to regard *rùshēng* as a fourth tonal category. But in Old Chinese as reconstructed here, the post-codas **-ʔ* and **-s* occur after all codas, including voiceless stops. Another way to put it is that, in Old Chinese, the distinction of *píng, shǎng,*

and *qù* crosscuts the distinction between *rùshēng* and non-*rùshēng*, as shown in Table 5.5.

Table 5.5. From Old Chinese post-codas to Middle Chinese tones

post-coda	non-*rùshēng*	*rùshēng*
*-[zero] > *píng/rù:*	*-*i* > -*oj*	*-*ik* > -*ok*
*-*ʔ* > *shǎng:*	*-*iʔ* > -*ojX*	*-*ikʔ* > -*ojX*
*-*s* > *qù:*	*-*is* > -*ojH*	*-*iks* > -*ojH*

5.6. The syllable from Old Chinese to Middle Chinese

We can summarize the phonological developments from Old Chinese to Middle Chinese by examining the fate of the elements in each position of the Old Chinese syllable:

1. The pre-initial position was lost entirely as the pre-initial elements merged with the following initials to form single initial consonants, e.g.

(141) 敗 *bài* < *bæjH* < **fiprats* 'to be defeated'

(142) 喪 *sāng* < *sang* < **smang* 'mourning, burial'.

2. The initial consonants of Old Chinese were influenced by both the preceding pre-initials (as described above) and the following medials; for example, dentals developed into palatals when followed by **-j-* and into retroflex stops when followed by **-r-*; they remained as dentals only in syllables without medials. This development is illustrated by the following examples from a single *xiéshēng* series:

(143) 團 *tuán* < *dwan* < **don* (< **fiton* ?) 'round'

(144) 專 *zhuān* < *tsywen* < **tjon* 'alone; exclusively'

(145) 轉 *zhuǎn* < *trjwenX* < **trjonʔ* 'turn round'

Another change in initials was that the labial features of the labiovelar and labiolaryngeal initials like **k*^{w}- were reanalyzed as a medial *-w-*, merging with the *-w-* which arose from the diphthongization of rounded vowels before acute codas: thus

(146) 官 *guān* < *kwan* < **k*^{w}*an* 'official'

merged with

(147) 冠 *guān* < *kwan* < **kon* 'cap'.

3. In medial position, the medial **-j-* apparently underwent little phonological change (although it is possible that its phonetic nature changed). Original medial **-r-* was lost after grave initials; I call this change ***r*-loss**. After acute initials, **-r-* seems to have remained as a feature of retroflexion in the initial.[140] Finally, *-w-* was added to the medial system through the reanalysis of the labialized initials (mentioned above) and through the diphthongization of rounded vowels in certain finals.

4. The vowel system of Old Chinese underwent rather substantial changes conditioned by other elements of the syllable, especially the medial and the coda. The change **rounding diphthongization** has already been mentioned. Another far-reaching change was **hi > mid**, which lowered high vowels to mid height when not preceded by **-j-*. For example, **i* lowered to **e* in

(148) 堅 *jiān* < *ken* < **kin* 'hard, solid, strong',

which thus merged with

(149) 肩 *jiān* < *ken* < **ken* 'shoulder'.

But after **-j-*, the high/mid distinction remained, as in

(150) 必 *bì* < *pjit* (IV) < **pjit* 'necessarily, certainly, must',

which remained distinct from

(151) 鼈 *biē* < *pjiet* (IV) < **pjet* 'turtle'.

Another set of vowel changes was conditioned by medial **-r-*. I assume that before medial **-r-* was lost, it affected the quality of the following vowel through a change I call ***r*-color**. For example, I assume that 監 **kram* 'see; inspect' became [kræm] as a result of ***r*-color**. At first, the [æ] in this form was probably just an allophone of /a/; but after medial **-r-* was lost, [a] and [æ] became phonologically distinct. In this way, medial **-r-* in division-II syllables ultimately gave rise to the distinctive Middle Chinese vowels of division II, which I write as *-æ-* and *-ɛ-*.

The same change ***r*-color** was also responsible in part for the development of the *chóngniǔ* distinction. In most cases (following Pulleyblank 1962: 111–14), I reconstruct division-III *chóngniǔ* syllables with the medial **-rj-* followed by either a front or a back vowel; the contrasting division-IV *chóngniǔ* finals are reconstructed with medial **-j-* followed by a front vowel. The following examples illustrate these developments:

(152) 旻 *mín* < *min* (III) < **mrjɨn* 'austere, stern'

(153) 珉 *mín* < *min* (III) < **mrjin* 'kind of precious stone'

(154) 民 *mín* < *mjin* (IV) < **mjin* 'people'

5. The codas appear to have remained relatively stable, except for the loss of stops before the post-codas *-*s* and *-*ʔ*, as in 惡 *wù* < *ʔuH* < **ʔaks* 'hate' and 負 *fù* < *bjuwX* < **fipjɨ(k)ʔ* 'carry on the back' (see above). In a few cases, dissimilations also operated to change codas, as in this example, which shows MC *-ng* < OC **-m*:

(155) 風 *fēng* < *pjuwng* < **p(r)jɨlum* 'wind'.

6. The post-codas *-*ʔ* and *-*s*, which are responsible for the tonal contrasts of Middle Chinese, may perhaps be regarded as shifting from segmental to suprasegmental status by the Middle Chinese period (though it is by no means clear that these contrasts involved pitch alone even for Middle Chinese).

Chapters 6, 7, and 8 discuss these proposals about the structure and development of the Old Chinese syllable in more detail.

Chapter 6

The Old Chinese syllable: initial consonants

Old Chinese initial consonants are more difficult to reconstruct than Old Chinese finals, because we have less evidence about them. The *Shījīng* rhymes, which tell us much about main vowels and codas, tell us nothing about initial consonants. We must therefore rely primarily on the initials of Middle Chinese and on the evidence from the writing system. Our basic strategy is to project the Middle Chinese initials backwards in time in a way which is consistent with the graphic evidence.

Some additional evidence can be gleaned from apparent morphological patterns. For example, as mentioned in the previous chapter, it is reasonable to reconstruct initial **sm-* rather than simple **s-* in

(156) 喪 *sāng* < *sang* < **smang* 'mourning, funeral', also read *sàng* < *sangH* < **smangs* 'to lose',

because it is likely to be related to

(157) 亡 *wáng* < *mjang* < **mjang* 'be gone'.

Even though our understanding of Old Chinese morphology is still shallow, such connections often reveal much about the Old Chinese system of initial consonants.

There is also comparative evidence concerning Old Chinese initials which has still not been fully utilized. The initial consonants reconstructed for Proto-Mǐn, the ancestor of the modern Mǐn dialects (Bodman 1969: 344; Norman 1974) are rather different from those of Middle Chinese, and should eventually be accounted for in an Old Chinese reconstruction, though the present study makes no attempt to do so. Early Chinese loan words in other languages, such as those of the Miao-Yao group (also called "Hmong-Mien"), may also provide additional evidence about Old Chinese initials. Comparison with Tibeto-Burman can also be expected to clarify some problems. For all these reasons, the reconstruction of Old Chinese initials offered here must be regarded as provisional.[141]

Section 6.1 below deals with simple initials and their reflexes (including reflexes conditioned by a following **-r-* or **-j-*); complex initial clusters are discussed in section 6.2.

6.1. Simple initials

In this section, simple initials are discussed in groups according to their position of articulation. The manner of articulation of Old Chinese initials is reconstructed entirely on the basis of Middle Chinese, since the other kinds of evidence used in this study provide no information about this problem.

6.1.1. Labial initials

I reconstruct five labial initials for Old Chinese; except for the voiceless nasal **hm-*, which becomes EMC *x-*, they remain essentially unchanged in Early Middle Chinese:

**p- > p-*
**ph- > ph-*
**b- > b-*
**m- > m-*
**hm- > x(w)-*

Examples of these developments are given below.

**p- > p-:*

(158) 卜 *bǔ* < *puwk* < **pok* 'to divine'

(159) 壁 *bì* < *pek* < **pek* 'wall'

**ph- > ph-:*

(160) 破 *pò* < *phaH* < **phajs* 'to break'

(161) 怕 *pà* < *phæH* < **phraks* 'to fear'

**b- > b-:*

(162) 朋 *péng* < *bong* < **bing* 'friend'

(163) 白 *bái* < *bæk* < **brak* 'white'

**m- > m-:*

(164) 墨 *mò* < *mok* < **mɨk* 'India ink'

(165) 麥 *mài* < *mɛk* < **mrɨk* 'wheat'

**hm- > x(w)-:*

I reconstruct **hm-* for MC *x-* when it occurs in *xiéshēng* series with MC *m-*:

(166) 黑 *hēi* < *xok* < **hmɨk* 'black'

(167) 忽 *hū* < *xwot* < **hmut* 'careless; sudden'

(168) 威 *xuè* < *xjwiet* (IV) < **hmjet* 'destroy'

Compare the following graphically (and in some cases etymologically) related examples with MC *m-* < **m-*:

(169) 墨 *mò* < *mok* < **mɨk* 'ink'

(170) 勿 *wù* < *mjut* < **mjut* 'don't'

(171) 滅 *miè* < *mjiet* (IV) < **mjet* 'annihilate'

The change of **hm-* to *x(w)-* probably occurred during Hàn times (Coblin 1983: 66–67); it is not clear why **hm-* sometimes shows up as *x-* (as in 黑 **hmɨk* > *xok*), sometimes as *xw-* (as in the other examples).

From a phonological point of view, the labial initials are generally preserved unchanged in Early Middle Chinese, but they probably developed palatalized allophones when followed by **-j-* or **-rj-*. Where necessary, I will indicate these allophones by writing *p(j)-*, *ph(j)-*, etc. The evidence for these allophones is the tendency for labial-initial syllables with and without medial **-j-* to be spelled with different sets of *fǎnqiè* initial spellers. For example, words with the palatalized initial *p(j)-* tend to have initial *fǎnqiè* spellers which also have the initial *p(j)-* rather than plain *p-*. I assume that in Late Middle Chinese, the palatalized labials developed into labiodentals if the main vowel was [+ back].[142] Using Pulleyblank's reconstruction of Late Middle Chinese, we have the following developments before Early Middle Chinese back vowels:

**pj-* > EMC *p(j)-* > LMC *f-*
**phj-* > EMC *ph(j)-* > LMC *f-*
**b-* > EMC *b(j)-* > LMC *ffi-*[143]
**m-* > EMC *m(j)-* > LMC *v-*

Note that the distinction of aspiration between EMC *p-* and *ph-* was lost when these became labiodentals in Late Middle Chinese. The following examples illustrate these developments; Late Middle Chinese forms follow the system of Pulleyblank (1984).

OC **pj-* > EMC *p(j)-* > LMC *p-* before EMC front vowels:

(172) 悲 *bēi* < LMC *pi* < EMC *pij* (III) < **prɨj* 'sad'

(173) 丙 *bǐng* < LMC *piajŋˊ* < EMC *pjængX* < **prjangʔ* 'cyclical sign (3rd heavenly stem)'

(174) 賓 *bīn* < LMC *pjin* < EMC *pjin* (IV) < **pjin* 'guest'

OC **pj-* > EMC *p(j)-* > LMC *f-* before EMC back vowels:

(175) 非 *fēi* < LMC *fji* < EMC *pɨj* < **pɨj* 'is not'

(176) 方 *fāng* < LMC *faăng* < EMC *pjang* < **pjang* 'square; quarter, region'

OC **phj-* > EMC *ph(j)-* > LMC *p'-* before EMC front vowels:

(177) 匹 *pǐ* < LMC *p'jit* < EMC *phjit* (IV) < **phjit* 'correspond to, peer'

(178) 胚 *pēi* < LMC *p'i* < EMC *phij* (III) < **phrjɨ* 'foetus'

OC **phj-* > EMC *ph(j)-* > LMC *f-* before EMC back vowels:

(179) 翻 *fān* < LMC *faan* < EMC *phjon* < **phjan* 'overturn'

(180) 赴 *fù* < LMC *fuă`* < EMC *phjuH* < **phjoks* 'hasten to'

OC **bj-* > EMC *b(j)-* > LMC *pɦ-* before EMC front vowels:

(181) 瓢 *piáo* < LMC *pɦijiaw* < EMC *bjiew* (IV) < **bjew* 'gourd'

(182) 弁 *biàn* < LMC *pɦian`* < EMC *bjenH* (III) < **brjons* 'cap'

OC **bj-* > EMC *b(j)-* > LMC *ffi-* before EMC back vowels:

(183) 服 *bú* < LMC *ffiuwk* < EMC *bjuwk* < **bɨk* 'dominate, subdue'

(184) 吠 *fèi* < LMC *ffijiaj`* < EMC *bjojH* < **bjots* 'to bark'

OC **mj-* > EMC *m(j)-* > LMC *m-* before EMC front vowels:

(185) 蜜 *mì* < LMC *mjit* < EMC *mjit* (IV) < **mjit* 'honey'

(186) 明 *míng* < LMC *miajŋ* < EMC *mjæng* < **mrjang* 'bright'

OC **mj-* > EMC *m(j)-* > LMC *v-* before EMC back vowels:

(187) 物 *wù* < LMC *vut* < EMC *mjut* < **mjut* 'thing'

(188) 亡 *wáng* < LMC *vaăŋ* < EMC *mjang* < **mjang* 'be gone'

It should be noted that there is a systematic set of exceptions to the sound change **labiodentalization**, where EMC *m-* failed to become LMC labiodental *v-* as expected. In my notation for Early Middle Chinese, the exceptional syllables all include the sequence *mjuw-*. One way to account for the failure of **labiodentalization** to occur in this environment is to assume a minor sound change of EMC *mjuw-* to *muw-* before **labiodentalization** occurred; and there is independent evidence of such a sound change.[144]

(189) 謀 *móu* < LMC *məw* < *muw* < EMC *mjuw* < **mjɨ* 'to plan'

(190) 夢 *méng ~ mèng* < LMC *məwŋ(`)* < *muwng(H)* < EMC *mjuwng(H)* < **mjɨng(s)* 'to dream'

(191) 目 *mù* < LMC *məwk* < *muwk* < EMC *mjuwk* < **mjuk* 'eye'

6.1.2. Dental initials

The Old Chinese dental initials are **t-*, **th-*, **d-*, **n-*, and **hn-*. Their development between Old and Middle Chinese was influenced by the following medial: when no medial followed, they remained essentially unchanged (except that **hn-* became *th-*); when **-j-* followed, they became palatals; and when **-r-* followed, they became retroflex.

6.1.2.1. Dentals with dental reflexes

When no medial followed, dental initials developed as below:

**t- > t-*
**th- > th-*
**d- > d-*
**n- > n-*
**hn- > th-*

The following final became division-I or division-IV in Early Middle Chinese. Examples are listed below.

OC **t- > t-:*

(192) 多 *duō* < *ta* < **taj* 'many'

(193) 點 *diǎn* < *temX* < **tem?* 'dot, point'

OC **th- > th-:*

(194) 推 *tuī* < *thwoj* < **thuj* 'push'

(195) 炭 *tàn* < *thanH* < **thans* 'charcoal'

OC **d- > d-:*

(196) 調 *tiáo* < *dew* < **diw* 'to tune, adjust'

(197) 悼 *dào* < *dawH* < **dawks* 'sorry, sad'

OC **n- > n-:*

(198) 難 *nán* < *nan* < **nan* 'difficult'

(199) 能 *néng* < [*nong*] < **nɨ* 'a kind of bear; able' (in the sense of 'bear', also read MC *noj*, the regular reflex of OC **nɨ*).[145]

(200) 年 *nián* < *nen* < **nin* 'year'

OC **hn- > th-:*

I reconstruct **hn-* for MC *th-* in *xiéshēng* series with MC *n-*:

(201) 灘 *tān* < *than* < **hnan* 'foreshore'

(202) 態 *tài* < *thojH* < **hnɨs* 'bearing, manner'

Compare the graphically related 難 **nan* and 能 **nɨ*, cited above.

6.1.2.2. Dentals with palatal reflexes

When followed by medial **-j-* (without **-r-*), the dentals developed into Middle Chinese palatals followed by division-III finals:

**tj- > tsy-*
**thj- > tsyh-*
**dj- > dzy-*
**nj- > ny-*
**hnj- > sy-*

OC **tj- > tsy-:*

(203) 柘 *zhè* < *tsyæH* < **tjAks* 'a kind of mulberry tree'

(204) 周 *zhōu* < *tsyuw* < **tjiw* 'circle; everywhere; place and dynasty name'

OC **thj- > tsyh-:*

(205) 綽 *chuò* < *tsyhak* < **thjawk* 'indulgent, gentle'

(206) 侈 *chǐ* < *tsyheX* < **thjaj?* 'great'

OC **dj- > dzy-:*

(207) 成 *chéng* < *dzyeng* < **djeng* 'to achieve, complete'

(208) 禪 *shàn* < *dzyenH* < **djans* 'hand over to another'

Recall (from section 2.3.6) that Karlgren reconstructed an Ancient Chinese voiced palatal fricative *ź-* for the Early Middle Chinese initial which I write

as *dzy-*. One argument for writing *dzy-* instead of Karlgren's *ź-* is that words in EMC *dzy-* often have *xiéshēng* connections with Old Chinese dental stops such as **t-*. This suggests the reconstruction **dj-*, and a development of **dj-* to an affricate *dzy-* seems rather natural. For example, the phonetic elements of the last two characters above are reconstructed with initial **t-*:

(209) 丁 *dīng* < *teng* < **teng* 'cyclical character (4th heavenly stem)'

(210) 單 *dān* < *tan* < **tan* 'single'

OC **nj- > ny-:*

(211) 如 *rú* < *nyo* < **nja* 'like, as'

(212) 人 *rén* < *nyin* < **njin* 'person'

(213) 耳 *ěr* < *nyix* < **njɨʔ* 'ear'

OC **hnj- > sy-:*

I reconstruct **hnj-* for MC *sy-* in *xiéshēng* series with MC *n-*, *nr-*, or *ny-*, as in the following examples.

(214) 攝 *shè* < *syep* < **hnjep* 'grasp, gather up'

(The phonetic is 聶 *niè* < *nrjep* < **nrjep* 'promise'.)

(215) 恕 *shù* < *syoH* < **hnjas* 'generous, indulgent'

(The phonetic is 如 **nja* 'like, as'.)

6.1.2.3. Dentals with retroflex reflexes

Dentals followed by **-r-* or **-rj-* developed into retroflex stops; the following final is division-II (in the case of **-r-*) or division-III (in the case of **-rj-*) in Middle Chinese:

**tr- > tr-*
**thr- > trh-*
**dr- > dr-*
**nr- > nr-*
**hnr- > trh-*

The Middle Chinese forms are probably best regarded as unit phonemes rather than clusters; the *-r-* is simply a typable notation for a feature of retroflexion in the initial. For reasons which are unclear, there are many examples of dentals followed by the combination **-rj-*, but relatively few clear examples of dentals with **-r-* but no **-j-*.

OC **tr- > tr-:*

(216) 謫 *zhé < trɛk < *trek* 'blame, punish'

(217) 致 *zhì < trijH < *trjits* 'cause to arrive, send'

(218) 豬 *zhū < trjo < *trja* 'pig'

OC **thr- > trh-:*

(219) 超 *chāo < trhjew < *thrjaw* 'excel'

(220) 疹 *chèn < trhinH < *thrjins* 'fever'

OC **dr- > dr-:*

(221) 濁 *zhuó < dræwk < *drok* 'muddy'

(222) 箸 *zhù < drjoH < *drjaks* 'chopsticks'

(223) 住 *zhù < drjuH < *drjos* 'stop'

OC **nr- > nr-:*

(224) 女 *nǚ < nrjoX < *nrja?* 'female'

(225) 紐 *niǔ < nrjuwX < *nrju?* 'to tie, knot'

OC **hnr- > trh-:*

I reconstruct **hnr-* for cases of MC *trh-* in phonetic series with MC *n-*, *nr-*, or *ny-*, as in these examples:

(226) 恥 *chǐ < trhiX < *hnrji?* 'shame'

(The phonetic is 耳 **nji?* 'ear'.)

(227) 丑 *chǒu* < *trhjuwX* < **hnrju?* 'cyclical sign (2nd earthly branch)'

(This is phonetic in 紐 **nrju?* 'to tie, knot'.)

6.1.3. Nonnasal resonants

6.1.3.1. Old Chinese *l- *and* *hl-

The reconstruction of Old Chinese **l-* and **hl-* is due to Pulleyblank, who observed that the phonetic series where Karlgren had reconstructed Old Chinese dentals can be divided into two distinct types. One type has Middle Chinese initials from the following set:

t-	*th-*	*d-*
tsy-	*tsyh-*	*dzy-*
tr-	*trh-*	*dr-*

Such series can be reconstructed with dental stop initials, as in section 6.1.2 above:

**t-*	**th-*	**d-*
**tj-*	**thj-*	**dj-*
**tr-*	**thr-*	**dr-*

The following words are an example of such a *xiéshēng* series:

(228) 當 *dāng* < *tang* < **tang* 'rank with, match, face'

(229) 鐺 *tāng* < *thang* < **thang* 'sound of a drum'

(230) 堂 *táng* < *dang* < **dang* 'hall, apartment'

(231) 掌 *zhǎng* < *tsyangX* < **tjang?* 'palm of the hand'

(232) 裳 *cháng* < *dzyang* < **djang* 'lower garment'

(233) 惝 *chǎng* < *tsyhangX* < **thjang?* 'despondent'

(234) 棠 *chéng* < *dræng* < **drang* 'serve as support for'

(235) 瞠 *chēng* < *trhæng* < **thrang* 'look straight at, stare'

But there is another type of *xiéshēng* series which typically has Middle Chinese initials from the following set:

th-	*d-*	
sy-	*zy-*	*y-*
s-	*z-*	
trh-	*dr-*	

It is characteristic of this second type of series that they generally lack words in MC *t-* or *tr-*, while they commonly include words in MC *sy-* or *y-*. I follow Pulleyblank's proposal to reconstruct such series with initial **l-* and **hl-*.[146] Note that, in this formulation, MC *l-* reflects not OC **l-* but rather OC **r-* or clusters with **r-*. The following examples illustrate a *xiéshēng* series of this type (see Bodman 1980: 103–4 for Tibeto-Burman cognates):

(236) 脱 *tuō* < *thwat* < **hlot* 'take off (clothes)' (also read MC *dwat* < **lot*)

(237) 兑 *duì* < *dwajH* < **lots* 'glad'

(238) 説 *shuō* < *sywet* < **hljot* 'speak, explain'

(239) 悦 *yuè* < *ywet* < **ljot* 'pleased, glad'

As these examples illustrate, in such *xiéshēng* series we can reconstruct

**l-* > *d-*
**hl-* > *th-*
**lj-* > *y-*
**hlj-* > *sy-*.

It is less clear how to reconstruct the other Middle Chinese initials *s-*, *z-*, *dr-*, *trh-*, and *zy-* which commonly occur in such series. As we shall see below (section 6.2.3.1), resonants generally seem to be lost after **s-*, so we can reconstruct **sl-* > *s-*, as in

(240) 修 *xiū* < *sjuw* < **sljiw* 'arrange, repair'.

Compare, in the same *xiéshēng* series,

(241) 條 *tiáo* < *dew* < **liw* 'branch, shoot'

(242) 滌 *dí* < *dek* < **liwk* 'cleanse'

(243) 悠 [*yōu*] < *yuw* < **ljiw* 'long-brooding; distressing; far away'.

MC *z-* and *zy-* in such phonetic series are somewhat harder to account for. They could represent the effect of the voicing pre-initial **fi-* on **sl-* and **hlj-* respectively (see section 6.2.1 below):

**fisl- > *fis- > z-*
**fihlj- > *fisy- > zy-*.

The notation **fihl-* is somewhat clumsy, but its meaning should be clear: it is the voiceless lateral **hl-* preceded by the voicing pre-initial **fi-*. But the reconstruction of **fi* here is rather speculative; it is also possible that *zy-* is simply a dialect variant of MC *y-* < **lj-*. Provisionally, I will simply use the notations *z-* < **zl-* and *zy-* < **Lj-*, as in the following examples:

(244) 序 *xù* < *zjoX* < **zlja?* 'walls running north and south at sides of the hall (of a palace)'

(245) 抒 [*shū*] < *zyoX* < **Lja?* 'to remove'

As for *dr-* and *trh-*, which not infrequently occur in **l*-type *xiéshēng* series, the analogy to the dental initials suggests that they should be reconstructed as **lr-* and **hlr-* respectively:

(246) 冑 *zhòu* < *drjuwH* < **lrjus* 'helmet'

(247) 抽 *chōu* < *trhjuw* < **hlrju* 'take out, pull out'

Compare the following words from the same *xiéshēng* series:

(248) 由 *yóu* < *yuw* < **lju* 'from'

(249) 袖 *xiù* < *zjuwH* < **zljus* 'sleeve'

In a word reconstructed with **lr-*, the **l-* accounts for the occurrence of the word in an **l*-type *xiéshēng* series, and the **-r-* accounts for the Middle Chinese retroflex initial. Reconstructing **l* and **r* together may seem rather odd; but note that Written Tibetan has the initial combination *rl-* (as in *rlung* 'breeze, wind', *rlabs* 'wave, billow, flood'). Note also that in general, Old Chinese clusters of the form **Cr-* (where *C* represents an arbitrary consonant) very likely reflect a merger of Sino-Tibetan **rC-* and **Cr-*. For example, Coblin (1986) reconstructs Sino-Tibetan ***rtjəkw* 'pound/beat' to connect Tibetan *rdug-pa* 'to strike against' with

(250) 築 *zhù* < *trjuwk* < **trjuk* 'to pound, beat (sc. earth into hard walls), build' (Li's **trjəkw*).

He also reconstructs Sino-Tibetan ***trjɨt* 'slip' in order to connect Tibetan *'dred-pa* 'to slip, slide, glide' with

(251) 蹜 *zhì* < *trijH* < **trjits* 'to slip'.

It is even possible that Old Chinese still had both **rC-* (with **r* in the pre-initial position) and **Cr-*, but that we can no longer recover the distinction because of their later merger. (We might be tempted to reconstruct **rC-* in cases where the **r* seems to serve a morphological function, to keep it outside the root. Similarly, "medial" **j* may in some cases represent a prefixed element; see Chapter 7 below.) Given these considerations, it does not seem unreasonable to retain the reconstructions **lr-* (possibly reflecting earlier **lr-* and **rl-*) and **hlr-* (possibly reflecting earlier **hl-r-* and **r-hl-*).

6.1.3.2. Old Chinese *r-, *C-r-, *and* *hr-

I reconstruct OC **r-* and related initials as follows:

**r- > y-*
**g-r- > l-*
**b-r- > l-*
**hr- > th-*
**hrj- > trhj-*

In earlier publications, I wrote OC **r-* in initial position as one source of Middle Chinese initial *l-*. However, in a good many cases, MC *l-* seems to correspond in other languages to initial clusters with **r,* not to simple initial **r-*. An example is

(252) 巒 *luán* < *lwan* < **b-ron* 'horse bells'.

Compare Thai *phruan* (tone A2) 'neck bells (for domestic animals)', reconstructed for Proto-Tai with the initial cluster **br-* (Bodman 1980: 74). In the same *xiéshēng* series we have

(253) 變 *biàn* < *pjenH* (III) < **prjons* 'to change',

where, according to the **rj*-hypothesis, medial **-rj-* must be reconstructed in any case to account for the division-III *chóngniǔ* final *-jenH*. Thus both the Tai evidence and the Chinese *xiéshēng* evidence point to a cluster consisting of a labial plus **-r-*.

Following Bodman (1980: 74), I reconstruct such clusters as **g-r-* and **b-r-*, and assume provisionally that MC *l-* always reflects a cluster of this type. Where the preceding consonant cannot be identified, I write **C-r-*. I assume that plain initial **r-* became MC *y-*, a development which accounts for the presence of words with the initial *y-* in *xiéshēng* series which involve

OC **r*.[147] The hyphen in **g-r-* and **b-r-* is simply a notational device to distinguish these combinations from ordinary **gr-* and **br-*, which have other reflexes, as in

(254) 下 *xià* < *hæX* < **gra?* 'descend'

(255) 鯨 *qíng* < *gjæng* < **grjang* 'whale'

(256) 龐 *páng* < *bæwng* < **brong* 'huge'

(257) 弁 *biàn* < *bjenH* (III) < **brjons* 'cap'

The exact nature of the distinction between these hyphenated and non-hyphenated clusters remains to be determined. One possibility is that the clusters I write as **gr-* and **br-* are actually **fikr-* and **fipr-*. This problem may also be related to the additional manners of articulation found in the Mǐn dialects (Norman 1974). Another possibility is that what I write as **gr-* and **br-* were actually **rg-* and **rb-*. For the present, though, I retain the somewhat artificial hyphen notation.

OC **r-* > *y-*:

(258) 聿 *yù* < *ywit* < **rjut* 'following; writing pencil'

In the same series we have 律 *lǜ* < *lwit* < **b-rjut* 'law, rule' and 筆 *bǐ* < *pit* (III) < **prjut* 'writing pencil' (where **-rj-* is required because of the division-III *chóngniǔ* final). Another case of initial **r-* is

(259) 鹽 *yán* < *yem* < **r(j)am* 'salt'.

This item has the same phonetic as 藍 **g-ram* 'indigo' (see below); compare Tibetan *rgyam-tshwa* 'a kind of rock salt', possibly reflecting earlier **ryam*, with *rgy-* < **ry-* as proposed by Li Fang-kuei (1959).[148] Finally, consider

(260) 藥 *yào* < *yak* < **rawk* 'medicine; to cure'

with phonetic 樂 *yuè* < *ngæwk* < **ngrawk* 'music', also read *lè* < *lak* < **g-rawk* 'joy'.

OC **C-r-* > *l-*:

Here *C* stands for an arbitrary (but probably voiced) consonant. We have already cited the following examples:

(261) 鑾 *luán* < *lwan* < **b-ron* 'harness bells'

(262) 律 *lǜ* < *lwit* < **b-rjut* 'law, rule'

(263) 藍 *lán* < *lam* < **g-ram* 'indigo'

With this last item compare Thai *khraam* 'indigo', Proto-Tai **gr-* (Li 1977: 231). In the same *xiéshēng* series we have 監 *jiān* < *kæm* < **kram* 'inspect', where, by the **r*-hypothesis, medial **-r-* must be reconstructed in any case to account for the division-II final *-æm*.

(264) 立 *lì* < *lip* < **g-rjɨ/up* 'to stand'

(It is uncertain whether to reconstruct the vowel as **ɨ* or **u*; see section 10.3.4 below.) Compare Jiarong *ka-rjap* 'to stand' (Bodman 1980: 85). In the same *xiéshēng* series we have

(265) 泣 *qì* < *khip* (III) < **khrjɨp* 'to weep'.

Compare Tibetan *khrab-khrab* 'weeper', Thulung *khrap* 'weep', Jinghpaw *khràp* 'weep', cited by Bodman (1980: 85).

Another example of **g-r-* is

(266) 涼 *liáng* < *ljang* < **g-rjang* 'chilly, cold'.

In the same *xiéshēng* series we have 京 *jīng* < *kjæng* < **krjang* 'capital', where the cluster **-rj-* must be reconstructed to account for the final *-jæng*. With 涼 *liáng* compare Tibetan *grang-ba* 'cold, cool'.

In the following case, there is evidence of a consonant before the OC **r*, but conflicting evidence about what it might be. In such cases I simply write **C-r-*:

(267) 六 *liù* < *ljuwk* < **C-rjuk* 'six'

With this example Bodman (1980: 73) compares Tibetan *drug*, Lepcha *tă-rók*, Jinghpaw *krú?*, Proto-Lolo-Burmese **Ckrok* or **d-krok*, Thai *xok* < Proto-Tai **xr-* (Li 1977: 233), all with the meaning 'six'.

OC **hr-* > *th-*:

In a few items, MC *th-* and *trh-* occur in *xiéshēng* series with MC initial *l-*; I reconstruct these items with the initial **hr-*:

(268) 體 *tǐ* < *thejX* < **hrij?* 'body'

Compare 禮 *lǐ* < *lejX* < **C-rij?* 'propriety, rite' with the same phonetic.

(269) 獺 *tǎ* < *that* < **hrat* 'otter'

The phonetic is 賴 *làì* < *lajH* < **C-rats* 'depend on, rely on'.

OC **hrj-* > *trh-*:

(270) 敕 *chì* < *trhik* < **hrjik* 'to correct' (Also written with 力 *lì* < *lik* < **C-rjik* 'force' on the right, which may be a phonetic element.)

(271) 螭 *chī* < *trhje* < **hrjaj* 'demon' (Cf. 離 *lí* < *lje* < **C-rjaj* 'depart', with the same phonetic.)

6.1.3.3. Old Chinese *j- *and* *hj-

Since OC **j* is reconstructed in medial and final position, it is reasonable to expect to find it in initial position as well, and reasonable to assume that its Middle Chinese reflex is *y-*. I reconstruct OC **j-* for cases of MC *y-* where there seems to be no reason to reconstruct **lj-* or **r-*. Consider the following item:

(272) 游 *yóu* < *yuw* < **ju* 'float; swim; wander, ramble'

The other words in this *xiéshēng* series (number 1080 in Karlgren 1957) are also read *yuw* in Middle Chinese; there are no cases of initial *d-* or *th-* as would be expected in a typical **l*-series.

MC *y-* also occurs in *xiéshēng* series with Middle Chinese dental sibilants. I reconstruct this as **j-* also, assuming (provisionally) that **j-* and the dental sibilants were phonetically similar enough to occur in the same *xiéshēng* series.[149] Thus I reconstruct

(273) 酉 *yǒu* < *yuwX* < **ju?* 'cyclical character (10th earthly stem)'

as the phonetic in 酒 *jiǔ* < *tsjuwX* < **tsju?* 'spirits, wine'. However, there are many unsolved problems in the reconstruction of MC *y-*. For example, comparative evidence suggests that 酉 *yǒu* may have had initial **r-* (compare Tibetan *ru-ma* 'curdled milk used as a ferment', Jinghpaw *rú* 'native beer or whiskey', Bodman 1980: 93), so perhaps we should reconstruct it as **rju?*.

Similarly, I use **hj-* as a default reconstruction for MC *sy-* where there is no evidence for **hlj-*, **hnj-*, or some other reconstruction, e.g. in

(274) 手 *shǒu* < *syuwX* < **hju?* 'hand'.

Occasional cases of MC *zy-* in phonetic series with MC *y-* and *sy-* might represent **fihj-* (> **fisy-* > *zy-*), where **fi-* is the pre-initial which voices a following initial; e.g.

(275) 蠅 *yíng* < *ying* < **jing* 'a fly'

(276) 繩 *shéng* < *zying* < **fihjing* 'string, cord'

With 蠅 **jing* 'fly' compare Burmese *yang* 'fly, insect', Kanauri *yăng*; Coblin (1986: 82) reconstructs Sino-Tibetan ***yəng*.

The reconstructions of **j-*, **hj-*, and **fihj-* are especially tentative, being based largely on scanty graphic evidence; the crucial examples which would support a different reconstruction may be missing by chance alone. Some additional source of evidence or method of argument will probably be necessary before further progress is made on these initials.

6.1.4. Dental sibilants

The same dental sibilants are reconstructed for Old Chinese as for Middle Chinese. When followed by no medial, or by medial **-j-*, they remained unchanged. When followed by medial **-r-*, they generally became retroflex affricates and fricatives:

**ts- > ts-*	**tsr- > tsr-*
**tsh- > tsh-*	**tshr- > tsrh-*
**dz- > dz-*	**dzr- > dzr-*
**s- > s-*	**sr- > tsh- ~ sr-*
**z- > z-*	**zr- > zr-*

(The assumed development **sr- > tsh-* is an exception to the general pattern of retroflex reflexes; it is discussed further below.) Examples of these developments are given below.

OC **ts- > ts-*:

(277) 祖 *zŭ* < *tsuX* < **tsa?* 'grandfather, ancestor'

(278) 箭 *jiàn* < *tsjenH* < **tsjens* 'arrow'

(279) 足 *zú* < **tsjowk* < **tsjok* 'foot'

OC **tsr- > tsr-:*

(280) 莊 *zhuāng* < *tsrjang* < **tsrjang* 'dignified, grave'

(281) 捉 *zhuō* < *tsræwk* < **tsr(j)ok* 'grasp; hold in the hand'

Since *-j-* was widely lost after retroflex initials even as early as Early Middle Chinese, it is often difficult to determine whether **-j-* should be reconstructed after retroflex initials in examples such as this, and I will put the **j* in parentheses, as here. The *Qièyùn* has no syllables of the form **TSrjowng* or **TSrjowk* (Lǐ Róng 1956: 7); and we can probably assume that **TSrjong* and **TSrjok* lost their **-j-*, merging with original **TSrong* and **TSrok* as *TSræwng* and *TSræwk* respectively.

OC **tsh- > tsh-:*

(282) 撮 *cuō* < *tshwat* < **tshot* 'pinch with the fingers'

(283) 清 *qīng* < *tshjeng* < **tshjeng* 'clear, pure, bright'

OC **tshr- > tsrh-:*

(284) 初 *chū* < *tsrhjo* < **tshrja* 'begin, beginning'

(285) 噬 *chuài* < *tsrhwæjH* < **tshr(j)ots* 'bite, eat'

(286) 瘡 *chuāng* < *tsrhjang* < **tshrjang* 'boil, tumor'

(287) 窗 *chuāng* < *tsrhæwng* < **tshr(j)ong* 'window'

OC **dz- > dz-:*

(288) 殘 *cán* < *dzan* < **dzan* 'kill, cruel'

(289) 在 *zài* < *dzojX* < **dzi*ʔ 'be at'

(290) 前 *qián* < *dzen* < **dzen* 'before'

OC **dzr- > dzr-:*

(291) 柴 *chái* < *dzrɛi* < **dzr(j)e* 'firewood'

(292) 狀 *zhuàng* < *dzrjangH* < **dzrjangs* 'form, shape; appearance'

OC **s-* > *s-*:

(293) 三 *sān* < [*sam*] < **sum* 'three'

For the reconstruction of **-um* here, see section 10.3.3 below.

(294) 先 *xiān* < *sēn* < **sin* 'first'

(295) 死 *sǐ* < *sijX* < **sjij?* 'die'

Compare Tibeto-Burman **siy* = **səy* 'to die' (Benedict 1972: 55); see also Baxter (1985) on the Sino-Tibetan vowel correspondences involved.

OC **sr-* > *tsh-*:

This development seems to occur when no medial **-j-* follows. Perhaps the **r* of **sr-* loses its voicing under assimilation with the **s*, becoming **hr-*, then follows the regular development of **hr-* to become **th-*; finally, the initial cluster **sth-* metathesizes to *tsh-*. The development can be summarized as follows (with hyphens added for clarity):

**sr-* > **s-hr-* > **s-th-* > *tsh-*

(This development was proposed in Baxter 1983b.) The combination **srj-*, however, becomes MC *sr-*. I reconstruct OC **sr-* (rather than **tsh-*) in the following four items because of the parallelism with the four items with MC *sr-* < **srj-* cited below.

(296) 采 ~ 採 *cǎi* < *tshojX* < **sri(k)?* 'gather, pluck'

(297) 采 ~ 綵 *cǎi* < *tshojX* < **sri(k)?* 'colorful'

(298) 麤 ~ 粗 *cū* < *tshu* < **sra* 'gross, coarse'[150]

The graph 粗 probably postdates the change **sr-* > *tsh-*.

(299) 青 *qīng* < *tsheng* < **sreng* 'green or blue'

Compare Tibeto-Burman **s-riŋ* ~ *s-raŋ* = *śriŋ* (Benedict 1972: 85).

OC **srj-* > *sr-*:

The last four examples above should be compared with the following four:

(300) 穡 *sè* < *srik* < **srjik* 'to reap, harvest'

(301) 色 *sè* ~ *shǎi* < *srik* < **srjik* 'color, countenance'

(302) 疏 *shū* < *srjo* < **srja* 'wide apart; loose; coarse'

(303) 生 *shēng* < *sr(j)æng* < **srjeng* 'to live, be born, fresh'

OC **z-* > *z-*:

(304) 詞 *cí* < *zi* < **zjɨ* 'utterance, word, expression'

(305) 詳 *xiáng* < *zjang* < **z(l)jang* 'scrutinize fully, explain details'

(306) 象 *xiàng* < *zjangX* < **zjang?* 'elephant'

Middle Chinese has initial *z-* only before division-III finals. Perhaps original **z-* merged with **dz-* except before **-j-*.

OC **zr-* > *zr-*:

(307) 俟 *sì* < *zriX* < **zrjɨ?* 'wait'

(308) 螲 [*lí*] < *zri* < **zrjɨ* 'spittle (of a dragon)'

Middle Chinese *zr-* is rare, apparently limited to the two syllables above, and the reconstruction **zr-* is thus somewhat problematic. By the time of the *Guǎngyùn*, *dzr-* and *zr-* were confused in *fǎnqiè* spellings, but the distinction is maintained in Wáng Rénxū's *Qièyùn* and in the rhyme tables (Dǒng Tónghé 1952 [1974]: 107).

6.1.5. Velars and laryngeals

The velars and laryngeals reconstructed for Old Chinese are **k-*, **kh-*, **g-*, **ng-*, **hng-*, **ʔ-*, **x-*, and **ɦ-*. When no medial followed, they remained essentially unchanged in Middle Chinese, except that the voiceless nasal **hng-* became *x-*, and **g-* became a voiced fricative (perhaps phonetically [ɦ] or [ɣ]) which I write as MC *h-*:

**k-* > *k-*
**kh-* > *kh-*
**g-* > *h-*
**ng-* > *ng-*
**hng-* > *x-*

**ʔ- > ʔ-*
**x- > x-*
**ɦ- > h-*

When followed by medial **-j-*, the velars, like the labials, probably developed palatalized allophones, which are indicated in the *fǎnqiè* spellings of the *Qièyùn*. In this environment, **g-* did not change to MC *h-* but remained a stop. In some cases, Old Chinese velars developed further into Middle Chinese palatals *tsy-*, *tsyh-*, etc., but the conditions for this development are not altogether clear. I will cite examples with Middle Chinese velar reflexes first, and then discuss the problem of the palatal reflexes and their origins.

6.1.5.1. Old Chinese velars with velar reflexes, and laryngeals

OC **k- > k-:*

(309) 高 *gāo* < *kaw* < **kaw* 'tall, high'

(310) 薑 *jiāng* < *kjang* < **k(l)jang* 'ginger'

(311) 角 *jiǎo ~ jué* < *kæwk* < **krok* 'horn, corner'

(312) 江 *jiāng* < *kæwng* < **krong* 'Yangtze river'

OC **kh- > kh-:*

(313) 苦 *kǔ* < *khuX* < **khaʔ* 'bitter'

Compare Tibetan *kha-ba*, Burmese *khá* 'bitter', Tibeto-Burman **ka* (Benedict 1972: 18).

(314) 可 *kě* < *khaX* < **khajʔ* 'can, able, may'

(315) 起 *qǐ* < *khiX* < **kh(r)jɨʔ* 'rise'

(316) 契 *qì* < *khejH* < **khets* 'script notches'

(317) 泣 *qì* < *khip* < **khrjɨp* 'to weep'

OC **g- > h-:*

(318) 河 *hé* < *ha* < **gaj* '(Yellow) river'

(319) 紅 *hóng* < *huwng* < **gong* 'pink' (later, 'red'; see Baxter 1983a)

(320) 瑕 *xiá* < *hæ* < **gra* 'flaw, blemish'

OC **gj-* > *gj-*:

(321) 鯨 *qíng* < *gjæng* < **grjang* 'whale'

(322) 渠 *qú* < *gjo* < **g(r)ja* 'canal'

(323) 掘 *jué* < *gjwot* ~ *gjut* < **gjo/ut* 'dig out (earth)'

OC **ng-* > *ng-*:

(324) 吾 *wú* < *ngu* < **nga* 'I'

Compare Tibetan *nga*, Burmese *nga*, Tibeto-Burman **ŋa* 'I' (Benedict 1972: 93).

(325) 五 *wǔ* < *nguX* < **nga?* 'five'

Compare Tibetan *lnga*, Burmese *ngà*, Tibeto-Burman **l-ŋa* ~ **b-ŋa* 'five' (Benedict 1972: 31).

(326) 魚 *yú* < *ngjo* < **ng(r)ja* 'fish'

Compare Tibetan *nya*, Burmese *ngà*, Tibeto-Burman **ŋya* 'fish' (Benedict 1972: 47).

(327) 堯 *yáo* < *ngew* < **ngew* 'high; name of emperor Yáo'

(328) 虐 *nüè* < *ngjak* < **ng(r)jawk* 'cruel, oppress, maltreat'

(329) 玉 *yù* < *ngjowk* < **ng(r)jok* 'jade'

OC **hng-* > *x-*:

I reconstruct MC *x-* as **hng-* when it occurs in phonetic series with MC *ng-*, unless there is evidence for reconstructing **hng*^{w}- instead.

(330) 滸 *hǔ* < *xuX* < **hnga?* 'river bank'

(331) 許 *xǔ* < *xjoX* < **hng(r)ja?* 'approve; allow'

The phonetic in these two items is 午 *wǔ* < *nguX* < **nga?* 'cyclical sign (7th earthly stem)'.

(332) 謔 *xuè* < *xjak* < **hng(r)jawk* 'to ridicule, to jest'

The phonetic is 虐 **ng(r)jawk* 'cruel, oppress' (possibly from the same root).

(333) 犧 *xī* < *xje* (III) < **hng(r)jaj* 'sacrificial victim'

In the same *xiéshēng* series we find 儀 *yí* < *ngje* (III) < **ng(r)jaj* 'decorum'.

OC **ʔ-* > *ʔ-*:

(334) 安 *ān* < *ʔan* < **ʔan* 'peace'

(335) 英 *yīng* < *ʔjæng* < **ʔrjang* 'flower, blossom'

(336) 奧 *ào* < *ʔawH* < **ʔuks* 'southwest corner of a house; inside area' (also read *yù* < *ʔjuwk* < **ʔ(r)juk* 'cove in the bank of a stream')

(337) 愛 *ài* < *ʔojH* < **ʔits* 'to love; to grudge'

OC **x-* > *x-*:

(338) 歇 *xiē* < *xjot* < **xjat* 'to cease, to rest'

(339) 欣 *xīn* < *xjɨn* < **xjɨn* 'rejoice'

There is some question whether it is necessary to reconstruct a voiced counterpart to OC **x-*, such as **ɣ-* or **ɦ-*, as an additional source of MC *h-*. Although Li Fang-kuei attempted to reconstruct all cases of Middle Chinese *h-* (and *h(j)-*) as OC **g-* or **gw-*, Ting Pang-hsin (1977–1978) showed that this was inadequate, and proposed reconstructing **ɣ-* and **ɣw-* in addition. His **ɣw-* corresponds to my **w-*; it accounts for the vast majority of cases of Middle Chinese *hj-*, since *hj-* occurs mostly in *hékǒu* syllables (those with a rounded medial or main vowel). But there remain a few cases of MC *hj-* in *kāikǒu* syllables, and in such cases I reconstruct **ɦj-*. For example:

(340) 焉 [*yān*] < *hjen* (III) < **ɦrjan* 'final particle'.

This character is also read *ʔjen* (or *ʔjon*[151]) according to the Middle Chinese sources, but the tradition is that it should be read as *hjen* when it is a final particle. We cannot reconstruct this syllable with initial **g-*, because **grjan* would give MC *gjen*, not *hjen*. On the other hand, if we reconstruct it with zero initial, as **jan* or **rjan*, we would expect MC *yen*. It is probably not an accident that this irregularity occurs in a form which was very likely stressless; perhaps *hjen* arose as a stressless alternate to the other reading of

the character, *ʔjen* (III) < **ʔrjan*. Because **ɦ-* is rather marginal, its status is questionable, but I will include it for completeness.

If OC **g-* and **ɦ-* contrasted in syllables with medial **-j-* (i.e., in division-III words), we would expect to find a parallel contrast in syllables without medial **-j-*. Lǐ Róng (1965 [1982]) proposed that such a contrast be recognized to account for certain initial contrasts in Mǐn dialects which are not reflected in Middle Chinese; for example, he cites the following minimal pair (the Old Chinese reconstructions are mine):

	厚	後
gloss:	'thick'	'after'
OC:	**g(r)oʔ*	**ɦ(r)oʔ*
MC:	*huwX*	*huwX*
Mandarin:	*hòu*	*hòu*
Fúzhōu:	*kau 6*	*au 6*
Xiàmén:	*kau 6*	*au 6*
Cháozhōu:	*kau 4*	*au 4*

In Norman's reconstruction of Proto-Mǐn initials, 厚 has initial **-g* and 後 has initial **zero*. This is further evidence for reconstructing a corresponding contrast between **ɦ-* and **g-* in Old Chinese.[152]

6.1.5.2. Old Chinese velars with palatal reflexes

In a number of cases, Middle Chinese palatal initials occur in *xiéshēng* series with Middle Chinese velars. An example is

(341) 制 *zhì* < *tsyejH* 'cut out (clothes, etc); institution; regulate'

which is phonetic in

(342) 猘 [*zhì*][153] < *kjejH* (III) 'mad (dog)' (also written 瘈).

Karlgren reconstructed these words as **t̡iad* and **k̡iad* respectively, apparently assuming that **t̡-* and **k-* were phonetically similar enough to be in the same *xiéshēng* series. Dǒng Tónghé solved the problem by reconstructing a set of palatal initials **k̂-* etc., which became *tsy-* etc. in Middle Chinese, but were phonetically similar enough to the regular velars **k-* etc. to occur in the same *xiéshēng* series with them (1944 [1948]: 15–17). Rather than complicating the Old Chinese initial system in this way, it would clearly be preferable, if possible, to treat the Middle Chinese palatals as regular reflexes of the ordinary velars in certain environments. This problem still

has no fully adequate solution, however. The clearest pattern seems to be that first identified by Pulleyblank (1962: 98–107): stated in terms of the present reconstruction, velars develop into palatals when followed by **-j-* plus a front vowel. I will call this change **velar palatalization.** This results in the following developments before front vowels **i* and **e*:

**kj- > tsy-*
**khj- > tsyh-*
**gj- > dzy-*
**ngj- > ny-*
**hngj- > sy-*

Middle Chinese palatals are reconstructed as Old Chinese velars when *xié-shēng* and other evidence points to a velar initial, and when there is evidence of a front vowel. Examples of these developments are cited below.

OC **kj- > tsy-* before front vowels:

(343) 支, 枝 *zhī* < *tsye* < **kje* 'branch'

This is phonetic in 技 *jì* < *gjeX* (III) < **grje?* 'skill, ability'.

(344) 制 *zhì* < *tsyejH* < **kjets* 'cut out (clothes, etc); institution; regulate'

This is phonetic in 猘 [*zhì*] < *kjejH* (III) < **krjets* 'mad (dog)', where the **-rj-* both blocks palatalization and produces the division-III *chóngniǔ* final *-jejH* (see below).

(345) 旨 *zhǐ* < *tsyijX* < **kjij?* 'fine-tasting (food, wine)'

This is phonetic in 稽 *qǐ* < *khejX* < **khij?* 'bow the head to the ground' (Karlgren 1957, item 552i).

OC **khj- > tsyh-* before front vowels:

(346) 掣 *chè* < *tsyhet* < **khjet* 'to trail, drag' (also read *tsyhejH* < **khjets*, which would give modern *chì*).

OC **gj- > dzy-* before front vowels:

(347) 十 *shí* < *dzyip* < **gjip* 'ten'

This may be phonetic in 叶 *xié* < *hep* < **gip* ~ **gep* 'in harmony, together', also written 協, and in 計 *jì* < *kejH* < **kips* or **keps* 'calculate'; see section 10.3.4.

(348) 嗜 *shì* < *dzyijH* < **gjijs* 'enjoy'

(349) 腎 *shèn* < *dzyinX* < **gjin?* 'kidney'

(350) 臣 *chén* < *dzyin* < **gjin* 'slave, servant' (This is ultimately the phonetic in 堅 *jiān* < *ken* < **kin* 'hard, solid, strong').

OC **ngj-* > *ny-* before front vowels:

(351) 熱 *rè* < *nyet* < **ngjet* 'hot'

The velar initial is supported by 藝 *yì* < *ngjiejH* (IV) < **ngJets* 'to sow, plant, cultivate; art' in the same *xiéshēng* series. (The capital **J* here is merely a notation indicating that the expected palatalization of the velar fails to occur, for reasons that are unclear; see below.[154])

(352) 兒 *ér* < *nye* < **ngje* 'child, son'

This is the phonetic element in, and probably related to, 倪 *ní* < *ngej* < **nge* 'young and weak'.

(353) 繞 *ráo* < *nyew* < **ngjew* 'to wind round'

The phonetic is 堯 *yáo* < *ngew* < **ngew* 'high; name of emperor Yáo'.

OC **hngj-* > *sy-* before front vowels:

(354) 勢 *shì* < *syejH* < **hngjets* 'force'

Compare 熱 **ngjet* 'hot' above.

(355) 燒 *shāo* < *syew* < **hngjew* 'burn'

Compare 繞 **ngjew* 'to wind round' above.

OC **xj-* > *sy-* before front vowels:

I reconstruct **xj-* for MC *sy-* in *xiéshēng* series with velar initials when there is evidence of a front vowel:

(356) 收 *shōu* < *syuw* < **xjiw* 'catch, take, collect, receive'

Compare the front-vowel word 叫 *jiào* < *kewH* < **kiw(k)s* 'call out, shout' in the same *xiéshēng* series.

6.1.5.3. Velar palatalization blocked by *-rj-

The medial combination **-rj-*, which is reconstructed in most division-III *chóngniǔ* syllables, appears to block **velar palatalization**. (This, too, was first proposed by Pulleyblank [1962: 104].) Here are some examples, some of them cited earlier:

(357) 技 *jì* < *gjeX* (III) < **grje?* 'skill, ability'

(358) 猘 ~ 瘈 [*zhì*] < *kjejH* (III) < **krjets* 'mad (dog)'

(359) 耆 *qí* < *gij* (III) < **grjij* 'old'

(360) 鰭 *qí* < *gij* (III) < **grjij* 'dorsal fin of a fish'

In these examples, the medial **-rj-* accounts simultaneously for the failure of the velar initial to palatalize and for the division-III *chóngniǔ* final.

However, medial **-rj-* does not explain all cases where velars fail to become palatals, for velars sometimes occur in division-IV *chóngniǔ* syllables where I reconstruct **-j-* without **-r-*, e.g.

(361) 藝 *yì* < *ngjiejH* (IV) < **ngJets* 'plant, cultivate; skill'

(362) 吉 *jí* < *kjit* (IV) < **kJit* 'auspicious'

Pulleyblank reconstructed medial **-l-* (**-δ-* in his original system) in some such items, as an additional element which blocked palatalization (1962: 118–19). However, there is little independent evidence for **-l-* in these items. As in the examples just cited, I will use the arbitrary notation of writing the medial **-j-* as a capital **-J-* in those cases where **velar palatalization** fails to apply as expected. This is not to be taken seriously as part of the reconstruction system; it is only a notation for a problem which remains to be solved.

6.1.5.4. Velar palatalization before back vowels

There are also cases of apparent palatalization of velars where a front vowel does not appear to be involved. I have no explanation for such cases at present, but I call attention to those velars which palatalize unexpectedly by capitalizing them. Thus I write

(363) 赤 *chì* < *tsyhek* < **KHjAk* 'red'

Compare 赫 *hè* < *xæk* < **xrak* 'red, fire-red'.

(364) 車 *chē* < *tsyhæ* < **KHjA* 'chariot'

The literary reading of this character is *jū* < *kjo* < **k(r)ja*.[155]

(365) 杵 *chǔ* < *tsyhoX* < **HNGja?* 'pestle'

The phonetic is 午 *wǔ* < *nguX* < **nga?* 'cyclical sign (7th earthly stem)'.

Li Fang-kuei proposed reconstructing clusters of the form **Krj-* as the source of velars which became palatals in examples such as those just cited (1976 [1980]: 92). This makes 赤 'red', Li's **khrjiak*, an attractive cognate to Tibetan *khrag* 'blood'.[156] Although Li's proposal seems to work well for this example, I see several problems with it. First, it fails to account for the fact that the preponderance of cases of **velar palatalization** seem to involve front vowels, the pattern discovered by Pulleyblank. Second, for medial **-r-* to condition palatalization seems somewhat unnatural, and at odds with its effects elsewhere in the system, where it usually produces retroflexion. Finally, there is little direct evidence for **-r-* in syllables affected by **velar palatalization**; by contrast, there is abundant evidence for **-r-* in division-III *chóngniǔ* syllables (see section 7.3.2), so it seems better to use **-rj-* clusters to account for the *chóngniǔ* distinctions, which are otherwise not adequately accounted for in Li's system.[157] Note further that one of Li's arguments for his **Krj-* hypothesis was that this filled a gap in the distribution of **-rj-*, since in his system **-rj-* is otherwise reconstructed only after acute initials, to account for Middle Chinese retroflex initials; but his proposal still leaves no cases of **-rj-* after labial initials (except the marginal **brj-*, marked with a question mark; see Li 1976 [1980]: 86). In the system proposed here, **-rj-* is fully distributed after all types of initials.

6.1.6. Labiovelars and labiolaryngeals

Labiovelars and labiolaryngeals are reconstructed according to the rounded-vowel hypothesis as one source of Middle Chinese medial *-w-*. They are also reconstructed in some cases for other reasons—to explain *xiéshēng* relationships or other phenomena. The initials in question, with their usual Middle Chinese reflexes, are as follows:

k^w- > k(w)-
k^wh- > kh(w)-
*g^w- > g(w)- before *j, h(w)- elsewhere*
ng^w- > ng(w)-
hng^w- > x(w)-
$ʔ^w$- > ʔ(w)-
hw- > x(w)-
w- > h(w)-

The following examples illustrate these developments.

OC *k^w- > k(w)-:

(366) 瓜 *guā* < *kwæ* < *k^wra* 'melon'

(367) 孤 *gū* < *ku* < *k^wa* 'fatherless, orphan'

MC *ku* could reflect either OC *ka* or *k^wa*, which merged; in 孤 *gū*, I reconstruct *k^wa* to account for the *xiéshēng* relationship with 瓜 *k^wra* 'melon'.

(368) 龜 *guī* < *kwij* (III) < *k^wrjɨ* 'tortoise'

(369) 決 *jué* < *kwet* < *k^wet* 'to open; decide'

(370) 光 *guāng* < *kwang* < *k^wang* 'light, bright'

OC *k^wh- > kh(w)-:

(371) 廓 *kuò* < *khwak* < *k^whak* 'wide, large, ample'

(372) 夸 ~ 誇 *kuā* < *khwæ* < *k^whra* 'boast'

(373) 窺 *kuī* < *khjwie* (IV) < *k^whje* 'to peep'

(374) 犬 *quǎn* < *khwenX* < *k^whi/enʔ* 'dog'

Compare Tibeto-Burman **kwiy* ~ **kwəy* 'dog' (Benedict 1972: 44). My reconstruction system requires either **i* or **e* as the main vowel, but there is little evidence within Chinese which would help us choose between them.

OC *g^w- > g(w)- before *j, h(w)- elsewhere:

(375) 狐 *hú* < *hu* < *g^wa* 'fox'

The phonetic is 瓜 *k^wra 'melon'. Compare Tibeto-Burman *gwa 'fox' (Benedict 1972: 34).

(376) 頍 *kuí* < *gwij* (III) < *g^wrju 'cheek bone, bones of the face'

Compare Lepcha *tă-gryu* 'cheek' (cited by Bodman 1980: 167). The Middle Chinese final results from dissimilation processes described in section 10.2.13 below.

We could reconstruct 黄 *huáng* < *hwang* 'yellow' as *g^wang, but if it is cognate to 光 *guāng* < *kwang* < *k^wang 'light', then perhaps it should be reconstructed as *fik^wang. Its Middle Chinese homonym 皇 *huáng* < *hwang* 'august, sovereign' probably reflects *$wang$ rather than *g^wang, since its phonetic is 王 *wáng* < *hjwang* < *$wjang$; see below. Since *g^w- and *w- merged as MC *h(w)*- except before *j (that is, except before division-III finals), the two initials are sometimes difficult to distinguish. *Xiéshēng* series offer little help, because both *w- and *g^w- can appear in *xiéshēng* series with stops like *k^w- and *k^wh-. In some cases I will write *$(g)^w$-, a notation meaning "*g^w- or *w-".

OC *ng^w- > *ng(w)-:*

(377) 訛 *é* < *ngwa* < *ng^waj 'move, change, false'

(378) 外 *wài* < *ngwajH* < *ng^wats 'outside'

(379) 吳 *wú* < *ngu* < *ng^wa 'shout; name of a state'

Though MC *ngu* could reflect either *ng^wa or *nga, we can reconstruct *ng^w- here because of the *xiéshēng* connection with the following word, which can only reflect *ng^w-:

(380) 虞 *yú* < *ngju* < *$ng^w(r)ja$ 'gamester'

Note that non-labialized *ng(r)ja* would give MC *ngjo* (as in 魚 'fish'), not *ngju* (see section 10.2.4).

OC *hng^w- > *x(w)-:*

Good examples of this initial are few, but we may reconstruct it in the following:

(381) 貨 *huò* < *xwaH* < *hng^wajs 'property, goods, ware'

(382) 化 *huà* < *xwæH* < *$hng^wraj(s)$ 'transform; reform; change'

Compare, in the same *xiéshēng* series, 訊 **ng^{w}aj* 'move', cited above.

OC **ʔ^{w}- > ʔ(w)-:*

(383) 淵 *yuān* < *ʔwen* < **ʔ^{w}in* 'abyss; deep'

(384) 枉 *wǎng* < *ʔjwangX* < **ʔ^{w}jangʔ* 'bent, crooked; depraved, unjust'

OC **hw- > x(w)-:*

(385) 華 *huā* < *xwæ* < **hwra* 'flower'

This word is later written 花, and the character 華 is now used mostly for the related form *huá* < *hwæ* < **wra* (or perhaps **ɦwra*) 'flowery'.[158]

(386) 血 *xuè ~ xiě* < *xwet* < **hwit* 'blood'

Compare Tibeto-Burman **s-hwiy ~ *s-hwəy* (Benedict 1972: 51).

(387) 儇 *xuān* < *xjwien* (IV) < **hwjen* 'nimble, smart'

(388) 兄 *xiōng* < *xjwæng* < **hwrjang* 'older brother'

OC **w- > h(w)- ~ yw-*:

OC **w-* usually becomes MC *h(w)-*, as in

(389) 穴 *xué* < *hwet* < **wit* 'cave, pit'

(390) 王 *wáng* < *hjwang* < **wjang* 'king'

(391) 于 *yú* < *hju* < **w(r)ja* 'to go'

Compare Tibeto-Burman **s-wa* 'to go' (Benedict 1972: 167n).

(392) 雨 *yǔ* < *hjuX* < **w(r)jaʔ* 'rain'

Compare Burmese *rwa*, Tibeto-Burman **r-wa* 'rain' (Benedict 1972: 109).

(393) 雲 *yún* < *hjun* < **wjin* 'cloud'

Before front vowels, however, **wj-* becomes MC *yw-*:

(394) 營 *yíng* < *yweng* < **wjeng* 'to demarcate; to regulate'

(395) 役 *yì* < *ywek* < **wjek* 'war expedition; service; to work'

(396) 遹 *yù* < *ywit* < **wjit* 'go awry, perverse'

(With the last compare 橘 *jú* < *kjwit* < **k^{w}jit* 'orange', with the same phonetic element.) The development of **wj-* to *yw-* before front vowels is analogous to the palatalization of velars in the same environment; but ordinary labiovelars like **k^{w}-* do not seem to be affected.

6.2. Initial clusters

6.2.1. Voicing alternations and pre-initial **ɦ-*

As mentioned earlier, I reconstruct a pre-initial element **ɦ-* (following Pulleyblank 1973b) which has the effect of voicing an initial stop. This pre-initial **ɦ-* is provisionally reconstructed in those Middle Chinese voiced-initial forms which seem to be morphologically related to forms with Middle Chinese voiceless initials. A great many such examples were collected by Karlgren (1933). In some of the clearest examples, the pre-initial **ɦ-* added to a transitive verb appears to make it intransitive or passive:

(397) 見 *jiàn* < *kenH* < **kens* 'to see'

見 ~ 現 *xiàn* < *henH* < **ɦikens* 'to appear'

(398) 敗 *bài* < *pæjH* < **prats* 'to defeat'

敗 *bài* < *bæjH* < **ɦiprats* 'to be defeated'

(399) 壞 [*huài*] < *kwɛjH* < **krujs* 'to destroy, ruin'

壞 *huài* < *hwɛjH* < **ɦikrujs* 'to be ruined'

The tradition of reading 敗 and 壞 with voiceless initials in transitive use, but voiced initials in intransitive or passive use, is mentioned in the preface to Lù Démíng's *Jīngdiǎn shìwén* (583 [1975]: 3). This issue is also mentioned by Yán Zhītuī in *Yán shì jiā xùn: Yīn cí piān* (Zhōu Zǔmó 1943 [1966]: 425–26).

In other cases, the semantic effect of **ɦ-* is less clear, but the existence of some such morphological process seems beyond doubt:

(400) 朝 *zhāo* < *trjew* < **trjaw* 'morning'

朝 *cháo* < *drjew* < **ɦitrjaw* '(morning ceremony:) audience; court; go to the court of'

潮 *cháo* < *drjew* < **ɦitrjaw* 'morning tide'

(401) 背 *bèi* < *pwojH* < **piks* 'the back'

背 *bèi* < *bwojH* < **fipiks* 'to turn the back'

(402) 間 *jiān* < *kɛn* < **kren* 'interval, interstice, space between'

閑 *xián* < *hɛn* < **fikren* '(interstice in time:) leisure'

(403) 斷 [*duàn*] < *twanX* < **ton?* 'cut off; decide; resolute' (also *duàn* < *twanH* < **ton(?)s*)

斷 *duàn* < *dwanX* < **fiton?* 'cut off; decide; resolute'

(404) 折 *zhé* < *tsyet* < **tjat* 'to break, to bend'

折 *shé* < *dzyet* < **fitjat* 'to bend'

(405) 夾 *jiā* < *kɛp* < **krep* 'be on both sides of; press between; tweezers'

狹 *xiá* < *hɛp* < **fikrep* 'narrow'

Note that **fi-* can also be reconstructed before aspirated initials to account for alternations between Middle Chinese aspirated and voiced initials:

(406) 曲 *qū* < *khjowk* < **kh(r)jok* 'bend, bent'

局 ~ 跼 *jú* < *gjowk* < **fikh(r)jok* 'compressed, bent, curved (body)'

(407) 倉 *cāng* < *tshang* < **tshang* (or **srang*?) 'store-room, granary'

藏 *cáng* < *dzang* < **fitshang* (or **fisrang*?) 'to hide, to store, store-room'

(408) 清 *qīng* < *tshjeng* < **tshjeng* 'clear'

晴 *qíng* < *dzjeng* < **fitshjeng* 'clear sky'

(409) 撤 *chè* < *trhjet* < **thrjet* 'remove, take away', also read [*chè*] < *drjet* < **fithrjet*

(410) 妻 *qī* < *tshej* < **tshɨj* 'consort, wife'

齊 *qí* < *dzej* < **fitshɨj* 'uniform, equal, be equal with'

As noted above, it is also possible that we should use **fi-* to account for certain initials which may have arisen through secondary voicing, e.g. *zy-* < **Lj-*, which perhaps represents **fihlj-*, and *z-* < **zl-*, which perhaps represents **fisl-*, in *xiéshēng* series of the **l-* type (section 6.1.3 above). It is intriguing to note that at least some cases of MC *zy-* < **Lj-* correspond to the Proto-Mǐn "softened" voiced initial **-dž* reconstructed by Norman, e.g.

(411) 船 *chuán* < *zywen* < **Ljon* (or **fihljon*?) 'boat', Proto-Mǐn initial *-*dž* (Norman 1986: 381)

(412) 舌 *shé* < *zyet* < **Ljat* (or **fihljat*?) 'tongue', Proto-Mǐn initial *-*dž* (Norman 1986: 383).

Norman (1986) proposes that these "softened" stops of Proto-Mǐn may reflect earlier prenasalization or other pre-initial elements; the hypothesis is based in part on shared vocabulary with prenasalization in Yao (Mien) languages. Another possible case of **fi-* corresponding to Proto-Mǐn softened initials is

(413) 長 *cháng* < *drjang* < **fitrjang* 'long', Proto-Mǐn *-*d*,

where I reconstruct OC **fit-* because of the probable cognate

(414) 長 *zhǎng* < *trjangX* < **trjang?* 'grow tall; increase; elder'.

Against these examples, however, we find that 晴 'clear sky', which I reconstruct as **fitshjeng* because of its likely relation to 清 **tshjeng* 'clear', is reconstructed with Proto-Mǐn unsoftened, unaspirated **dz-* (Norman 1986: 380). This example also seems to conflict with Pulleyblank's proposal (1973b) that the Proto-Mǐn voiced aspirates **bh*, **dh*, etc. can be reconstructed as **fiph*, **fith*, etc.; by this hypothesis we would expect Proto-Mǐn **dzh* instead of **dz* in 晴 **fitshjeng*. Note also that 長 **fitrjang* gives a softened *-*d*, not the **d* which Pulleyblank's proposals predicts; but Pulleyblank did not attempt to account for the softened stops.

I have reconstructed **fi-* before voiceless initials only, but Bodman has proposed that the same pre-initial might be reconstructed before voiced initials also, to account for Proto-Mǐn voiced aspiration: OC **b-* and **fib-* would give Proto-Mǐn **b-* and **bh-* respectively, but would merge in Middle Chinese as *b-* (1980: 56). I know of no counterexamples to this, but the example 晴 suggests that Proto-Mǐn voiced unaspirates probably had other origins as well. Others have suggested that some of the complexity of Proto-Mǐn initials arose through dialect mixture (e.g. Sagart 1984). Clearly, the question of how to accommodate Mǐn dialect data into a reconstruction of Old Chinese is a complex one which must await further research, and for this reason this aspect of my reconstruction must be regarded as provisional.

6.2.2. The pre-initial **N-*

I reconstruct a pre-initial **N-* before a stop in forms which have Middle Chinese nasal initials *m-*, *n-*, or *ng-*, but which show either *xiéshēng* connections or morphological relationships (or both) with stop-initial forms. This was proposed for the Proto-Sino-Tibetan level by Chang & Chang (1977–1978; see also Chang & Chang 1976, 1977). Benedict (1976b: 185–87, 1987: 40–44) proposes pre-glottalized stops at the Archaic Chinese (i.e. Old Chinese) level to account for the same phenomena, e.g. **ʔp-*, **ʔb-* > MC *m-*.[159] An example of such an item is the following:

(415) 盩 *mì* < *mjit* (IV) < **Npjit* 'to wipe a vessel clean'—so glossed in *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 2126), though not found in pre-Qín texts

Here I reconstruct **Np-* because of the *xiéshēng* connection with 必 *bì* < *pjit* < **pjit* 'necessarily, certainly, must'. Chang and Chang compare 盩 **Npjit* with Tibetan *'phyid-pa* (also *'phyi-ba*) 'to wipe, to blot out', where they interpret the Tibetan *'a-chung* prefix as representing prenasalization also (1977–1978: 167; this example cited also in Benedict 1976b: 186). Some other possible cases of pre-initial **N-* are listed below:

(416) 武 *wǔ* < *mjuX* < **Np(r)jaʔ* 'martial, military'.

This is phonetic in 賦 *fù* < *pjuH* < **p(r)jas* 'tax, to tax'.

(417) 碾 *niǎn* < *nrjenX* < **Ntrjenʔ* 'trample'

The phonetic is 展 *zhǎn* < *trjenX* < **trjenʔ* 'roll over; unfold, open'.

(418) 元 *yuán* < *ngjwon* < **Nkjon* 'head; principal, supreme; great'

According to the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 3357), this is both phonetic and signific in

(419) 冠 *guān* < *kwan* < **kon* 'cap' (also read *guàn* < *kwanH* < **kons* 'to put on a cap')

I reconstruct **-on* here because words in this series rhyme consistently as **-on*; for 冠 *guān* itself, see Ode 147.1A. The following item, which rhymes as **-on* in Ode 261.6A, could be from the same root:

(420) 完 *wán* < *hwan* < **gon* or **ɦkon* 'to build ready, to complete' (possibly 'to cap off'?)

These may be compared with Tibetan *mgo* 'head', and also the possibly related *mgon-po* 'protector, patron; principal, master, lord; tutelar god'. For a Chinese form without final **n*, compare

(421) 寇 *kòu* < *khuwH* < **khos* 'to rob; robber; invader; bandit',

where 完 **fikon* may be the phonetic (though the *Shuōwén* does not say so; see Dīng Fúbǎo 1928–1932 [1976]: 1358).

Another possible case of **Nk*- is

(422) 研 *yán* < *ngen* < **Nken* '(grind:) thoroughly examine'.

The rest of this *xiéshēng* series has initial stops, e.g.

(423) 豜 *jiān* < *ken* < **ken* 'pig or boar 3 years old'.

Note that in the above examples I have reconstructed **N*- before voiceless unaspirated stops only; it is possible, of course, that this element occurred before other types of initials as well, but so far we lack the evidence to distinguish them. Since the choice between reconstructing **Np*-, **Nt*-, or **Nk*- and reconstructing **m*-, **n*-, or **ng*- is based on scant evidence, it is possible that the choice has been made wrongly in some cases; further comparative work is needed to clarify this matter.

6.2.3. Clusters with *s-

Old Chinese clusters with pre-initial **s*- have been reconstructed for various purposes by different investigators. As with other problems involving initials, my proposed solutions are somewhat tentative. We may divide **s*-clusters into those involving resonants and those involving stops.

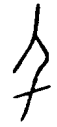
6.2.3.1. Old Chinese *s- *clusters with resonants*

Already in Karlgren's reconstruction there are a few **s*-clusters, reconstructed in order to account for MC *s*- or *sr*- in *xiéshēng* series with resonant initials. This type of MC **s*-cluster is well supported by the *xiéshēng* evidence, and may be reconstructed with confidence. An example is

(424) 絮 *xù* < *sjoH* < **snjas* 'raw silk, floss', Karlgren's **snio* (Karlgren 1957, item 94u).

The phonetic is 如 *rú* < *nyo* < **nja* 'resemble, like, as if', Karlgren's **nio* (Karlgren 1957, item 94g).

In general, it appears that resonants simply dropped after pre-initial **s-*. However, Pulleyblank cites examples which suggest a development **sn- > tsh-*;[160] for example, old forms of the character 千 *qiān* 'thousand' appear to have 人 **njin > nyin > rén* 'person' as phonetic. In oracle-bone script, the character 千 *qiān* is simply the character 人 *rén* with a line through the bottom (Gāo Míng 1980: 373):



There are similar graphs for two thousand, three thousand, etc., with two or three added lines instead of just one (see the comments of Shāng Chéngzuò 商成祚 in his *Yīnxū wénzì lèibiān* 殷虛文字類編, quoted in Dīng Fúbǎo 1928–1932 [1976]: 952–53):



This leads us to reconstruct

(425) 千 *qiān < tshen < *snin* 'thousand',

parallel to

(426) 人 *rén < nyin < *njin* 'person'.

We may assume that the **n* of **sn-* became voiceless **hn* under the influence of the preceding **s*, then developed normally to *th*, becoming MC *tsh-* by metathesis with the **s-*:

**sn- > s-hn- > s-th- > tsh-*

However, several examples seem to show that the combination **snj-* results in a simple MC *s-*, as in the example 絮 *xù* 'raw silk, floss', above, so I reconstruct

**sn- > tsh-*
**snj- > s-*.

I have argued (Baxter 1983b) for a similar development of **sr-*:

**sr- > tsh-*
**srj- > sr-*

The development of MC *tsh-* from **sr-* is parallel to that from **sn-*:

**sr- > s-hr- > s-th- > tsh-*

(Examples of this development have already been given in section 6.1.4 above, under the discussion of initial **s-*.) Resonants other than **n* and **r*, however, seem to be lost consistently after **s-*; we can summarize the developments as follows:

**sm- > s-*
**sn- > s-* before **j*, *tsh-* elsewhere
**sng- > s-*
**sng^{w}- > s(w)-*
**sr- > sr-* before **j*, *tsh-* elsewhere
**sw- > s(w)-*

Presumably, the voicing pre-initial **fi-* could also precede these, giving the corresponding voiced reflexes.

Note that Jaxontov (1960a, 1963) reconstructs clusters of **s-* plus resonants where I reconstruct voiceless nasals (reconstructing **sm- > x-* where I reconstruct **hm- > x-*, for example). This proposal is not easily reconciled with the present reconstruction unless we add wild cards to the game by creating two kinds of **s-*, or two kinds of juncture, or the like. It is possible that the voiceless nasals did indeed originate as **s-* clusters at some stage, but for the Old Chinese stage, my reconstructions **sm- > s-* etc. seem to be a more natural interpretation of the *xiéshēng* evidence.

Examples of **s*-clusters with resonants are given below.

OC **sm- > s-:*

(427) 戌 *xū* < *swit* < **smjit* 'cyclical sign (11th earthly stem)'

As pointed out by Li Fang-kuei (1945), this is probably the phonetic element in the following examples.[161]

(428) 威 *xuè* < *xjwiet* (IV) < **hmjet* 'extinguish'

(429) 滅 *miè* < *mjiet* (IV) < **mjet* 'drown, destroy'

These words probably reflect the same root. Note that here, the front vowels **i* and **e* appear together in the same *xiéshēng* series. This happens occasionally, and there are similarly occasional contacts between **u* and **o*.

The example 喪 **smang* 'mouming, funeral', **smangs* 'to lose' was cited above as probably related to 亡 **mjang* 'be gone'.

OC **sng- > s-:*

We should probably reconstruct **sng-* in

(430) 穌 *sū < su < *snga* 'to gather into sheaves' (Karlgren 1957, item 67a).

The *Shuōwén* says that the phonetic in this character is 魚 *yú < ngjo < *ng(r)ja* 'fish' (Dīng Fúbǎo 1928–1932 [1976]: 3125).

Another possible case of **sng-* is

(431) 楔 *xiè < set < *snget* 'wedge, piece of wood between the teeth of a corpse'.

This is Bodman's reconstruction (1980: 69), based on the following likely cognate in the same *xiéshēng* series:

(432) 齧 *niè < nget < *nget* 'gnaw, crunch in the teeth'

But this series has mostly initial *k-* and *kh-*, so perhaps 齧 should be **Nket*; 楔 might then be **sket*, which corresponds to Li's reconstruction, **skiat* (Li 1976 [1980]: 90).

OC **sn- > tsh- ~ s-:*

In addition to 絮 **snjas* 'raw silk, floss' and 千 **snin* 'thousand', cited above, we may cite

(433) 綏 *suí < swij < *snjuj* 'to comfort'.

In the same series we have 餒 *něi < nwojX < *nuj?* 'hungry, starve' (Karlgren 1957, item 354d).

OC **sl- > s-:*

Middle Chinese *s-* is commonly found in *xiéshēng* series of the **l-* type, and in this case I reconstruct **sl- > s-*:

(434) 錫 *xī* < *sek* < **slek* 'tin'

(435) 賜 [*cì*] < *sjeH* < **sljeks* 'give, gift'

The phonetic in these examples is 易 *yì* < *yek* < **ljek* 'to change, exchange', also read *yì* < *yeH* < **ljeks* 'easy'.[162]

Another example already cited is

(436) 修 *xiū* < *sjuw* < **sljiw* 'adorn; arrange, repair; cultivate'.

In the same *xiéshēng* series we have 條 *tiáo* < *dew* < **liw* 'a kind of tree; branch, shoot'.

OC **sw-* > *s(w)-*:

(437) 恤 *xù* < *swit* < **swjit* 'solicitude, pity, sorrow, anxiety'

The phonetic is 血 *xuè* ~ *xiě* < *xwet* < **hwit* 'blood'.

(438) 歲 *suì* < *sjwejH* < **swjat(s)* 'year; harvest'

This rhymes as **-ats* (Odes 72.3A, 300.5C) or **-at* (Odes 154.1B, 245.7C) in the *Shījīng*, showing that the MC *-w-* must originate in the initial portion of the syllable, rather than in a rounded main vowel. The *Shuōwén* says the phonetic of 歲 *suì* is 戌 **smjit*, but this is based on a corruption of the earlier character; in bronze inscriptions, the phonetic is 戉 *yuè* < *hjwot* < **wjat* 'a kind of axe'. It is also found with the phonetic 月 *yuè* < *ngjwot* < **ng*^{w}*jat* (or possibly **Nwjat*?) 'moon, month' (Zhōu Fǎgāo et al. 1974a, item 0166.) The character 歲 **swjat* is phonetic in

(439) 翽 *huì* < *xwajH* < **hwats* 'rustling of wings'

which also rhymes as **-ats* (Odes 252.7A, 252.8A). Similarly, we have

(440) 宣 *xuān* < *sjwen* < **swjan* 'spread, diffuse, everywhere-reaching, all-embracing'

which consistently rhymes as **-an* (Odes 250.2A, 259.1B, 262.4A), not **-on*; the MC *-w-* must therefore be attributed to the initial. This *xiéshēng* series (number 164 in Karlgren 1957) includes Middle Chinese fricative initials, but no stops, supporting the reconstruction of **w-* or **hw-*, e.g.

(441) 桓 *huán* < *hwan* < **wan* 'pillar; martial-looking'

(442) 垣 *yuán* < *hjwon* < **wjan* 'wall'

(443) 烜 [*xuān*] < *xjwonX* < **hwjan?* 'brilliant, illustrious'

This whole series rhymes consistently as **-an*.[163]

In the following item we seem to have **fisw- > z(w)-*:

(444) 旬 *xún* < *zwin* < **fiswjin* 'ten days'

This rhymes as **-in* in the *Shījīng* (Ode 257.1B), so the MC *-w-* must be attributed to the initial portion of the syllable rather than to a main vowel. This character is phonetic in 洵 [*xún*] < *xwen* < **hwin* 'far away'.

Note: the combination **sj-*, though superficially analogous to **sw-*, is actually different in structure, because **j* can function as a medial while **w* cannot. I regard the **s-* of **sj-* as occupying the initial slot rather than the pre-initial, so this combination is included under the discussion of **s-* as a simple initial, in section 6.1.4 above.

6.2.3.2. Old Chinese *s- *clusters with stops*

The main issue in reconstructing clusters of **s-* plus stop is whether the reflexes of such clusters were affricates *ts-*, *tsr-*, etc. or fricatives *s-*, *sr-*, and *sy-*. There is some *xiéshēng* evidence in favor of the latter, especially for the development **sCr- > sr-*:

(445) 瑟 *sè* < *srit* < **sprjit* 'lute'

The phonetic is 必 *bì* < *pjit* (IV) < **pjit* 'necessarily, certainly, must'.

Another probable case of **sp-* is

(446) 孿 [*luán*] < *srwænH ~ srjwenH* < **sprjons* 'twins'.

I reconstruct **sp-* here because of the labial initials elsewhere in this *xiéshēng* series, e.g.

(447) 縺 *luán* < *lwan* < **b-ron* 'harness bells',

(448) 變 *biàn* < *pjenH* < **prjons* 'change'.

This 孿 **sprjons* may be related to

(449) 雙 *shuāng* < *sræwng* < **sCr(j)ong* 'a pair'.

(Possibly this doublet reflects a dialect where final **-n* and **-ng* merged.)

Since I reconstruct Middle Chinese initial *l-* as **C-r-*, MC *sr-* in *xiéshēng* series with *l-* is probably best reconstructed as a cluster **sCr-* in which the consonant **C* is lost, rather than as simple **sr-*:

(450) 數 *shǔ* < *srjuX* < **skrjok?* 'to count, calculate' (also read *shù* < *srjuH* < **skrjo(k)s* 'number').

The coda **k* is suggested by the reading

(451) 數 *shuò* < *sræwk* < **skr(j)ok* 'a number of times, frequently'.

The following word is probably also from the same root:

(452) 屢 [*lǚ*] < *ljuH* < **g-rjoks* 'frequently, constantly, to repeat'

The velar element of the initial cluster in this *xiéshēng* series is supported by the character

(453) 履 *jù* < *kjuH* < **krjo(k)s* 'sandal, shoe'.

Another case of **sCr-* is

(454) 灑 *sǎ* < *sreiX* ~ *srjeX* < **sCrje?* 'sprinkle', also read MC *sreiH* ~ *srjeH* < **sCrjes*.[164]

The phonetic is 麗 *lì* < *lejH* < **C-res* 'a pair; number; well-proportioned; elegant, beautiful'.

By analogy to the developments **sp-* > *s-* and **sk-* > *s-*, we would expect to find **st-* > *s-* also, but clear examples are difficult to find. Li Fang-kuei reconstructed **st-* > *s-* (1976 [1980]: 88–89), but most of the examples he gave are in **l-* type phonetic series, and I reconstruct them with **sl-*. An example, cited above, is

(455) 賜 [*cì*] < *sjeH* < **sljeks* 'give, gift' (Li's **stjigh*).

On the basis of a Tibetan comparison, Bodman (1980: 57) suggests that we have **st-* > *s-* in

(456) 相 *xiàng* < *sjangH* < **sjangs* (< **stjangs*?) 'appearance, quality'.

Compare Tibetan *stangs* 'manner, style'. But it is hard to find support for the development **st-* > *s-* within Chinese itself.

There are, however, a number of examples where MC *sy-* occurs in phonetic series with OC **t-*; I provisionally reconstruct **stj-* > *sy-* in such cases. (The development of a palatal in this case, as opposed to **skj-* and **spj-*, could be explained if the simplification of initial **s-* clusters occurred after the palatalization of dentals before **-j-*.) Here are some examples:

(457) 詩 *shī* < *syi* < **stji* 'song, poem'

The original phonetic appears to be 之 *zhī* < *tsyi* < **tji* 'to go' (Dīng Fúbǎo 1928–1932 [1976]: 968).

(458) 書 *shū* < *syo* < **stja* 'write'

The phonetic in earlier forms of the character is 者 *zhě* < *tsyæʔ* < **tjAʔ* 'auxiliary particle'.

(459) 室 *shì* < *syit* < **stjit* 'house, hall'

The phonetic is 至 *zhì* < *tsyijH* < **tjits* 'arrive'.

(460) 賞 *shǎng* < *syangX* < **stjangʔ* 'to award'

Compare 當 *dāng* < *tang* < **tang* 'match, equal', with the same phonetic element.

In addition to these cases where **s-* clusters appear to yield fricatives *s-*, *sy-*, or *sr-*, Bodman, Pulleyblank, and others have proposed that Middle Chinese affricate initials of types *TS-* and *TSr-* sometimes developed by metathesis from Old Chinese clusters of the form **sT-*. In some cases it appears that we should also reconstruct clusters of the form **sP-* and **sK-*, which first assimilated to **sT-* and then metathesized, like original **sT-*, to MC *TS-* or (when medial **-r-* is present) *TSr-*. I will accept these proposals provisionally, but to distinguish these cases from those where **sC-* simplifies to MC *s-*, *sr-*, or *sy-*, I will write capital **S-* for the variety of **s-* which appears to metathesize with a following stop, giving an affricate initial in Middle Chinese. Whether ordinary **s-* and this "metathesizing **S-*" are originally different elements, or reflect different treatments of the same element in different dialects, is not yet clear.

Some examples where MC *TS-* and *TSr-* seem to reflect earlier **s*-clusters are cited by Bodman (1969, 1980), including the following:

(461) 卒 *zú* < *tswot* < **tsut* < **Stut* 'soldier; group of men or families or states'

Karlgren points out that in the seal script [*xiǎo zhuàn* 小篆] represented in the *Shuōwén,* the character 卒 is "衣 garment with a stroke on the skirt" (Karlgren 1957, item 490a). Bodman connects this word with Tibetan *sdud* 'folds of a garment', related to the verb *sdud-pa* 'to collect, gather, draw together'; the Chinese glosses for 卒 *zú* seem derivable from this basic meaning of "to gather". (The meaning "soldier" may derive from the meaning "group or gathering of men".) As it happens, there is also a homophonous Tibetan verb *sdud-pa* meaning 'to close, conclude, terminate' which may be compared with the other reading of 卒, namely

(462) 卒 *zú* < *tswit* < **tsjut* < **Stjut* 'finish; die; utterly'.

Such examples do not of course prove that the **ST-* cluster was still present at the Old Chinese stage; the assumed metathesis could have occurred earlier. It is true that some evidence from *xiéshēng* series and word families appears to support the reconstruction of **ST-* clusters at the Old Chinese stage; for example, Pulleyblank (1962: 134) cites

(463) 戴 *dài* < *tojH* < **t̊i(k)s?* 'carry on the head',

in which the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 1142) says the phonetic is

(464) 𢦏 *zāi* < *tsoj* < **ts̊i* (< **St̊i*?) 'to hurt, damage'.

Another example is

(465) 崔 [*cuī*] < *dzwoj* < **dzuj* (< **Sduj*?) 'high, rocky',

which appears to have as phonetic

(466) 隹 *zhuī* < *tsywij* < **tjuj* 'a kind of dove'.

The significance of these examples is somewhat questionable, however, and deserves to be reexamined. For example, in the case of 戴 'carry on the head', the *Shuōwén* cites an "ancient script [*gǔwén* 古文]" form in which the phonetic is not 𢦏 but appears to be

(467) 弋 *yì* < *yik* < **ljɨk* 'to shoot with arrow and string attached',

which may have become confused graphically with 𢦏. Moreover, bronze forms seem to indicate that the original form of 戴 was its component

(468) 異 *yì* < *yiH* < **ljɨks* 'different; rare; aberrant, strange',

which in bronze inscriptions takes forms like the following:



Paleographers are divided on the interpretation of these graphs; some see this as the original graph for

(469) 翼 *yì* < *yik* < **ljɨk* 'wing; protect, shelter',

but the more convincing view seems to be that it is a depiction of a person holding up his arms to balance an object being carried on the head—the original graph for 戴 *dài* 'to carry on the head' (see Dīng Fúbǎo 1928–1932

[1976]: 1141–43 and Zhōu Fǎgāo et al. 1974a, item 0330, especially the quotations from Yáng Shùdá 楊樹達). This evidence suggests that the connection with 戈 may be due to a late graphic confusion, not an **St-* cluster in 戈. (The connection of 戴 *dài* < *tojH* with words in initial **l-* suggests that we should reconstruct it as **k-liks*; for clusters of this type see section 6.2.4 below.)

Similarly, it is by no means clear that 隹 *zhuī* < *tsywij* 'a kind of dove' is phonetic in 崔 [*cuī*] < *dzwoj* 'high, rocky'. In the *Shuōwén,* the character 崔 appears at the end of the section for the radical 山 *shān* 'mountain', and seems to have been added by the Táng-time editor Xú Xuàn 徐鉉.[165] The text used by his brother Xú Kǎi 徐鍇 seems to have originally lacked a separate entry for 崔, and Xú Kǎi treats it as a vulgar variant of 嶵, for which, however, the pronunciation given is not *dzwoj* but *twoj*. Moreover, neither version says that 隹 *zhuī* is phonetic in 崔; the character 聲 *shēng* 'phonetic' is an emendation by Duàn Yùcái (see Dīng Fúbǎo 1928–1932 [1976]: 4111, 4121.) These examples illustrate that the graphic evidence for metathesizing **S-* clusters at the Old Chinese stage as a source of Middle Chinese affricates is rather weak, and further paleographic research on this question is needed.

There remains, however, a certain amount of evidence from initial alternations in pairs of words which may be morphologically related; Bodman cites the following examples.

(470) 催 *cuī* < *tshwoj* < **tshuj* (< **Sthuj*?) 'to urge, repress'

This could be related to 推 *tuī* < *thwoj* < **thuj* 'to push'.

(471) 崔 [*cuī*] < *dzwoj* < **dzuj* (< **Sduj*?) 'high, rocky'

This could be related to 陮 *duì* < *dwojX* < **duj?* 'high, precipitous' (Karlgren 1957, item 575b′).

(472) 責 *zé* < *tsrɛk* < **tsr(j)ek* (< **Strek*?) 'to demand payment; require; to exact; to blame, reprove'

This could be related to 謫 *zhé* < *trɛk* < **trek* 'blame, punish' (also read *drɛk* < **fitrek*).

To account for such phenomena, then, I tentatively reconstruct the following cluster developments:

**St-* > *ts-*
**Sth-* > *tsh-*
**Sd-* > *dz-*

**Str- > tsr-*
**Sthr- > tsrh-*
**Sdr- > dzr-*

An example which could reflect **Sg^{w}- > dz(w)-* was cited earlier:

(473) 泉 *quán < dzjwen < *Sg^{w}jan*? 'source, spring'

This could explain why this word is *hékǒu* in Middle Chinese even though it rhymes consistently as **-an* in Old Chinese (see Appendix C).

Both Benedict (1976b: 182ff.) and Bodman (1980: 58--68) also assume that the Middle Chinese gutturals *ʔ-* and *x-* sometimes reflect earlier **sk-* and **skh-* respectively. (Benedict writes these as "prefixial" **s-k-* and **s-kh-* to distinguish them from clusters **sk-* and **skh-*, which have other reflexes in his system.) Though the comparative evidence for this is substantial, I will assume (following Bodman) that such reconstructions, if correct, belong to some pre-Old Chinese stage, since there is little direct evidence for them in Old Chinese itself.

6.2.4. Clusters with **l*

Bodman (1980: 108–13, 143–45, 168–71) reconstructs **l*-clusters of two types for Proto-Chinese (a stage intermediate between Proto-Sino-Tibetan and Old Chinese). In one type, written ***Kl-*, medial ***l* behaves like medial **r*, producing division-II (and division-III *chóngniǔ*) vocalism; in the other type, written with a hyphen as ***K-l-*, the vocalism appears to be unaffected by the medial **l*, but there are distinctive initial reflexes. Since it is the initial part of the syllable which is affected, I discuss such clusters here rather than in the next chapter on medials. I provisionally reconstruct

**k-l- > t-*
**kh-l- > th-*
**g-l- > d-*.

Possibly we also have the following clusters:

**p-l- > t-*
**ph-l- > th-*
**b-l- > d-*

I will assume that Bodman's **l*-clusters of the first type had already merged with **r*-clusters by the Old Chinese period. But there is some evidence that **l*-clusters of the second type were still present in Old Chinese. For these

clusters I will retain Bodman's notation **k-l-*, **kh-l-*, etc., with a hyphen, so as to avoid confusion with his Proto-Chinese ***kl-*, ***khl-*, etc. A number of these **K-l-* words are found in Proto-Yao or Proto-Miao-Yao (Purnell 1970), in possible borrowings from (or loans to) Old Chinese. A good example is

(474) 桃 *táo* < *daw* < **g-law* 'peach'; compare Proto-Yao **klaau 3*, Proto-Miao-Yao **glaau 3 A* 'peach'.

Bodman also cites the following item, with Austroasiatic cognates—possibly a borrowing in one direction or the other:

(475) 擔 *dān* < *tam* < **k-lam* 'carry on the shoulder'; compare Khmu? *klam*, Proto-Wa **klɒm* 'carry on the shoulder'

Compare 檐 *yán* < *yem* < **ljam* 'eaves', in the same *xiéshēng* series. This series also includes Middle Chinese palatal initials (e.g. the phonetic itself, 詹 *zhān* < *tsyem* < **Kjam?* 'garrulous'). This suggests that clusters of the type **k-l-* and "unexpected" velar palatalization (indicated here by the capital **K*; see section 6.1.5.4 above) may be related phenomena.

It seems likely that **K-l-* clusters plus **-j-* gave retroflex stops:

(476) 腸 *cháng* < *drjang* < **g-ljang* 'intestines' (Karlgren 1957, item 720y); compare Proto-Yao **klaang* 2 'intestines'

Compare, in the same *xiéshēng* series, 陽 *yáng* < *yang* < **ljang* 'light, brightness; the sun'.

The following example seems to have a Tibetan cognate:

(477) 中 *zhōng* < *trjuwng* < **k-ljung* 'middle'; compare Tibetan *gzhung* < **g-lyung* 'middle, spinal marrow, kernel, pith'.

The *Bái hǔ tōng yì* 白虎通義, an Eastern Hàn work including a number of sound glosses (quoted in Coblin 1983: 156, no. 55) records an example of 中 used as a sound gloss for

(478) 宮 *gōng* < *kjuwng* < **k(r)jung* 'palace, dwelling'.

This could indicate a late survival of the velar initial in 中 *zhōng*.o

Bodman cites the following as a possible example of the type **P-l-* > *T-*:

(479) 匋 *táo* < *daw* < **b-lu* 'kiln, pottery'

The phonetic, according to the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 2242), is 包 *bāo* < *pæw* < **pru* 'wrap, bundle; contain'. The *Shuōwén* also

says that in the "Shǐ piān 史篇" (i.e., the *Shǐ Zhòu piān* 史籀篇[166]), 匋 *táo* is pronounced like

(480) 缶 *fǒu* < *pjuwX* < **p(r)juʔ* 'earthenware; earthenware vessel'

For more examples and discussion, see Bodman (1980: 108–13), from which these examples are taken.

Chapter 7

The Old Chinese syllable: medials and main vowels

An adequate reconstruction of the Old Chinese vowel system must account for both the finals of Middle Chinese and the rhyming distinctions of Old Chinese. We wish to see whether it is possible to account for this evidence in a way which is consistent with the assumptions made so far. It will be useful at this point to summarize these assumptions:

1. Old Chinese rhyming distinctions are to be explained phonologically; that is, although later Chinese poetry sometimes shows artificial, nonphonological rhyming distinctions, Old Chinese poetry does not. This point was argued in Chapter 3.

2. There was no medial **-w-* in Old Chinese: Middle Chinese *-w-* reflects either (1) an Old Chinese labiovelar or labiolaryngeal initial of the type **K^{w}-* or (2) an Old Chinese rounded main vowel which became a diphthong. This is the "rounded-vowel hypothesis", due to Jaxontov, introduced briefly in Chapter 5.

3. There was no "strong vocalic" medial **-i-* contrasting with **-j-*: the Middle Chinese division-IV finals (where Karlgren and others have reconstructed medial **-i-*) had no front medial in either Middle Chinese or Old Chinese; rather, they are generally to be reconstructed with front main vowels. This is the "front-vowel hypothesis", also introduced in Chapter 5.

4. Division-II finals are to be reconstructed with medial **-r-*. This is the "**r*-hypothesis", due to Jaxontov.

5. Division-III finals are to be reconstructed with **-j-* or **-rj-*, the combination **-rj-* being used to account for contrasts among Middle Chinese division-III finals within a single Old Chinese rhyme group, such as the contrast between division-III *chóngniǔ* finals and others. This is the "**rj*-hypothesis", due to Pulleyblank.

The present chapter develops a reconstruction of Old Chinese medials and main vowels which is consistent with these assumptions and which can account for the finals of Middle Chinese. Later, in Chapter 10, I will test the predictions of this reconstruction against the rhymes of the *Shījīng*. As outlined in Chapter 5, my reconstruction uses six main vowels, which may

be preceded by medials *-*r*- or *-*j*- or both. In section 7.1, we will examine the development of Old Chinese finals which have no medial *-*r*- or *-*j*-. These finals became the division-I and division-IV finals of Middle Chinese; from them it is possible to see the structure of the Old Chinese vowel system without the sometimes confusing influence of medial *-*r*- and *-*j*-. In this section I will develop the rounded-vowel hypothesis and the front-vowel hypothesis in more detail. Section 7.2 examines the reconstruction of finals with medial *-*r*-, which became the Middle Chinese division-II finals. Section 7.3 examines the reconstruction of finals with medials *-*j*- and *-*rj*-, which became the Middle Chinese division-III finals.

Each section will also examine the major sound changes which affected the development of the set of finals under discussion. Some of these changes may be formulated and even dated with some confidence; others are more speculative and await further research. The changes mentioned are summarized in Appendix A.

Although problems relating specifically to the reconstruction of Old Chinese codas are treated in Chapter 8, some of that discussion is necessarily anticipated in this chapter, since the codas affected the development of the main vowels and vice versa.

7.1. Syllables without medials: divisions I and IV

7.1.1. The rounded-vowel hypothesis

7.1.1.1. Distributional evidence

The rounded-vowel hypothesis—that Old Chinese had no freely occurring medial *-*w*—was first articulated by Jaxontov (1960b).[167] It is suggested by the distribution of MC -*w*-, which occurs freely after velar and laryngeal initials, but has a much more limited distribution after acute initials. (For convenience, I will continue to use the traditional terminology and refer to finals or syllables with medial -*w*- as *hékǒu* 'closed mouth', and those without as *kāikoǔ* 'open mouth'.) For example, Middle Chinese has the following *hékǒu* finals with the coda -*ng*, all of which, without exception, are restricted to velar and laryngeal initials:[168]

division I: -*wang*, -*wong*
division II: -*wɛng*, -*wæng*

division III: *-jwang, -jwæng, -jwɛng, -wing*
division IV: *-weng*

That is, there are Middle Chinese syllables like *kwang* and *kwong*, but none like *twang* or *twong*. An attractive way to account for this pattern is to assume that Old Chinese had labiovelar and labiolaryngeal initials *k^w-, *k^wh-, etc., but no medial *-*w*- otherwise; then there would be no Old Chinese source for the non-occurring syllables like MC *twang* and *twong*.

However, while Middle Chinese has no *twang* or *twong*, it does have syllables like *twan* and *twon*. Acute initials occur with the following *hékǒu* finals in -*n*:

division I: *-won, -wan*
division II: *-wæn, -wɛn*
division III: *-win, -jwen*

Some examples are

(481) 敦 *dūn* < *twon* 'solid, thick'

(482) 端 *duān* < *twan* 'end, tip, point'

(483) 春 *chūn* < *tsyhwin* 'spring'

(484) 專 *zhuān* < *tsywen* 'alone; entirely, exclusively'

There are some interesting restrictions, however. The division-IV final *-wen* is still restricted to velar and laryngeal initials; in fact, none of the division-IV *hékǒu* finals (those with vocalism *-we-*) occur with acute initials. Another interesting restriction is that Middle Chinese *-w-* after acute initials seems to occur only in syllables which are reconstructed with acute codas in Old Chinese (in my system, *-*n*, *-*t*, or *-*j*).

These distributional facts suggest that MC *-w-* after acute initials developed through the diphthongization of rounded main vowels before acute codas: *-wan* < *-*on*, *-won* < *-*un*, *-woj* < *-*uj*, etc. This not only accounts for the restricted distribution of MC *-w-*; it also fills a gap in the distribution of Old Chinese rounded vowels, which are otherwise not reconstructed before acute codas. Following Jaxontov, I reconstruct two rounded vowels **u* and **o* in Old Chinese, which underwent a process of **rounding diphthongization** (**u* > *wi*, **o* > *wa*) before acute codas. Thus I reconstruct the four examples just cited as below:

敦 *dūn* < *twon* < **tun* 'solid, thick'

端 *duān* < *twan* < **ton* 'end, tip, point'

春 *chūn* < *tsyhwin* < **thjun* 'spring'

專 *zhuān* < *tsywen* < **tjon* 'alone; entirely, exclusively'

7.1.1.2. Xiéshēng *evidence*

The rounded-vowel hypothesis is supported by occasional *xiéshēng* connections between words with acute codas and words with codas of other types. Jaxontov cited the following examples:

(485) 寇 *kòu* < *khuwH* < **kh(r)os* 'to rob; robber; invader; bandit'

The *Shuōwén* treats this as a semantic compound of 攴 *pō* 'to strike' and 完 *wán* 'completely' (Dīng Fúbǎo 1928–1932 [1976]: 1358), but this seems strained; it is likely that 完 *wán* is phonetic:[169]

(486) 完 *wán* < *hwan* < **gon* or **fikon* 'to build ready, to complete; solid'

If so, then the **o* of 寇 **kh(r)os* supports the reconstruction of **o* in 完 **gon* ~ **fikon*. On the basis of its Middle Chinese reading alone, 完 *wán* < *hwan* could reflect either a syllable like **g*^{w}*an* or one like **gon*, but in fact 完 *wán* and other words in this series do rhyme as **-on*, e.g., in Ode 261.6A. (See also the discussion of the initials in this and related words in section 6.2.2 above.)

Another of Jaxontov's examples is

(487) 媼 *ǎo* < *ʔawX* < **ʔu?* 'old woman'.

The *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 5543) says the phonetic is

(488) 昷 *wēn* < *ʔwon* < **ʔun* 'kind'.

This supports the reconstruction of **-u* in words with the phonetic 昷; and in fact, such words do rhyme as **-un*; an example is

(489) 愠 *yùn* < *ʔjunH* < **ʔjuns* 'hate, anger',

which rhymes as **-un* in Ode 237.8B.

Jaxontov also cites the interesting binome

(490) 町疃 [*tǐng*]*tuǎn* < *thenX-thwanX* < **then?-thon?* 'footprints of deer' (first character also read *thengX* in this meaning).

This expression occurs in Ode 156.2. Both characters of the expression have Middle Chinese readings with the coda *-n*, but phonetic elements with the coda *-ng*. I reconstruct the phonetic elements as follows:

(491) 丁 *dīng* < *teng* < **teng* 'cyclical character (4th heavenly stem)'

(492) 童 *tóng* < *duwng* < **dong* 'boy, young man'

Such contacts between *-n* and *-ng* are not uncommon.

Now according to the rounded-vowel hypothesis, the second syllable 疃 *tuǎn* < *thwanX* must be reconstructed as **thonʔ*, with rounded **o*, to account for the medial *-w-* in Middle Chinese. This reconstruction is supported by the **o* in the phonetic element 童 **dong*. Moreover, according to the front-vowel hypothesis, the first syllable 町 MC *thenX* must be reconstructed with **e*, so the full expression is 町疃 **then(g)ʔ-thonʔ*. When reconstructed this way, this expression falls naturally into a large class of binomes in which both syllables are identical except that the first syllable has **e* while the second has **o*.[170] Another such **e*/**o* binome is

(493) 輾轉 *zhǎnzhuǎn* < *trjenX-trjwenX* < **trjenʔ-trjonʔ* 'toss and turn'.

In addition to Jaxontov's examples, we may also cite the following:

(494) 短 *duǎn* < *twanX* < **tonʔ* 'short'

According to the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 2260), the phonetic in this character is

(495) 豆 *dòu* < *duwH* < **dos* 'kind of food vessel'.

This supports the reconstruction of **o* in 短 *tonʔ* 'short'.

More complex is the case of

(496) 最 *zuì* < *tswajH* < *tswats* < **tsots* 'collect, accumulate; to the highest degree'.

The Xiǎo Xú version of the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 3368) says that this is a phonetic compound, with phonetic element

(497) 取 *qǔ* < *tshjuX* < **tshjoʔ* 'take'.

There are also a number of cases where 最 *zuì* is glossed by the following word, which could be a sound gloss or an etymologically related form:

(498) 聚 *jù* < *dzjuX* ~ *dzjuH* < **dzjoʔ* ~ **dzjos* 'collect, bring together, store'

This evidence supports the reconstruction of **o* in 最 *zuì*, as the rounded-vowel hypothesis requires. Although 最 *zuì* itself does not rhyme in the *Shījīng*, it is phonetic in

(499) 撮 *cuō* < *tshwat* < **tshot* 'small cap',

which rhymes as *-*ot* in Ode 225.2A.

In all these cases, though the coda alternations are irregular, the matching vowels lend support to the rounded-vowel hypothesis.

The major support for the rounded-vowel hypothesis, however, comes from the rhyme evidence. The basic rhyme evidence was already presented by Jaxontov (1960b), and it will be examined further in Chapter 10.

7.1.2. The front-vowel hypothesis

The front-vowel hypothesis concerns mainly the division-IV finals of Middle Chinese, and requires that they be reconstructed with a zero medial in Old Chinese. This means that I reject the "strong vocalic" medial *-i-* reconstructed by Karlgren in these finals for both Ancient (i.e., Middle) and Archaic (i.e., Old) Chinese. I will discuss Karlgren's Ancient reconstruction first.

7.1.2.1. Medial -i- *in Karlgren's Ancient Chinese*

The "strong vocalic" medial *-i-* began as Karlgren's solution to the problem of distinguishing division-III and division-IV finals of Middle Chinese, in words such as these:

(500) 仙 *xiān* < *sjen* 'immortal' (division III)

(501) 先 *xiān* < *sen* 'first' (division IV)

The vast majority of available evidence from dialects and Chinese loan words in other languages shows no distinction whatever between MC *-jen* and *-en*. Furthermore, most Chinese dialects show a prevocalic glide for both finals (as in the Mandarin final *-ian* [-iɛn]). Karlgren reasoned that both finals must originally have had some kind of high front glide; he reconstructed

-i̯än for MC *-jen* (division III)
-ien for MC *-en* (division IV).

The choice of a "stronger" medial in division-IV finals was suggested by certain contrasts which appear in Sino-Korean after guttural initials, such as the following:

(502) 愆 *qiān* < *khjen* 'exceed; to err, error' (Karlgren's *k'i̯än*), Sino-Korean *kən*

(503) 牽 *qiān* < *khen* 'pull, drag, lead' (Karlgren's *k'ien*), Sino-Korean *kyən*

Sino-Korean *kən* and *kyən* are the transcriptions of Kōno Rokurō (1964–1967 [1979]); Karlgren wrote them as *ken* and *kien* respectively. Karlgren reasoned that in Sino-Korean,

> the consistent distinction after gutturals: III *ken*: IV *kien* must necessarily indicate that the Anc[ient] Chin[ese] "medial *i*" was stronger in the latter, and we have to reconstruct a short, subordinated consonantic *i̯* in the former, a longer, vocalic *i* in the latter ... (1954: 248)

Karlgren also reconstructed different main vowels in the two finals: *ä* in 仙 *xiān* < *sjen* 'immortal' (Karlgren's *si̯än*) and *e* in 先 *xiān* < *sen* 'first' (Karlgren's *sien*). That the vowels had to be different follows from his assumption (which few would accept today) that different *Qièyùn* rhymes must be reconstructed with different main vowels. Since 仙 Xiān (Sjen) and 先 Xiān (Sen) are distinct rhymes in the *Qièyùn*, Karlgren reconstructed them with different main vowels, just as he reconstructed a "darker" *â* in the rhyme 唐 Táng (Dang), but a "lighter" *a* in 陽 Yáng (Yang), because they are separate rhymes. There is no evidence for these distinctions, other than Karlgren's assumptions about the methods of the *Qièyùn* authors; and studies of Early Middle Chinese rhyming (e.g. Zhōu Zǔmó 1963 [1966]; Lǐ Róng 1961–1962 [1982]) show that even authors who otherwise rhymed very strictly did not observe these distinctions.

Though Karlgren believed he had recovered many of the phonetic minutiae of Middle Chinese pronunciation, he paid little attention to the distribution or overall pattern of the elements he reconstructed, and from a modern point of view his reconstructions look rather suspicious. His *ä* occurs only after the medial *-i̯-*, and his *e* occurs only with the medial *-i-*: the combinations *i̯ä* and *i̯e* do not occur, and neither *ä* nor *e* occurs by itself, without a preceding medial. As a result of this multiple redundancy in his reconstruction, not only are *ä* and *e* in complementary distribution, but either the "weak consonantal" *-i̯-* or the "strong vocalic" *-i-* could be omitted without loss of contrast, even if we replaced Karlgren's *ä* and *e* with a single symbol.

7.1.2.2. An alternative: zero medial in Division IV

A more satisfactory solution to the problem of reconstructing division-IV finals emerges when we examine the distribution of initials and finals in Middle Chinese—that is, when we see which initials can occur with which

finals. The *fǎnqiè* spellings of the *Qièyùn* show that division-III finals like *-jen* can occur after a wide variety of initials, including retroflex and palatal initials, and with the "yodised" or palatalized allophones of grave initials (see Chapter 2). Division-IV finals like *-en*, on the other hand, are distributionally indistinguishable from the division-I finals, since both occur only after the nineteen "simple" initials which show no signs of palatalization or retroflexion.[171] It is later sound changes, reflected both in the rhyme tables and in modern reflexes, which make division-IV finals such as *-en* seem closer to division-III finals such as *-jen* and less like division-I finals such as *-an*.

We can account for the similar distribution of division-I and division-IV finals by reconstructing simple vowels, without front medials, in both. This was apparently first proposed by Arisaka (1937–1939 [1957]), who rejected Karlgren's *-ie-* in division IV and reconstructed plain *-e-* instead.

At first glance, the proposal to write division-IV finals like *-en* without medials seems difficult to reconcile with the Sino-Korean evidence which led Karlgren to his reconstruction of strong medial *-i-*: why would Sino-Korean represent division-III *-jen* as *-ən*, but division-IV *-en* as *-yən*? In examining this evidence Karlgren was handicapped by his failure to distinguish the so-called *chóngniǔ* finals *-jen* (III) and *-jien* (IV) (see discussion in section 2.4.1.4). The Sino-Korean correspondences are actually

Sino-Korean *-ən* = MC *-jen* (III)
Sino-Korean *-yən* = MC *-en* and *-jien* (IV).

As Arisaka pointed out, these Sino-Korean forms probably indicate that the Middle Chinese finals which I write as *-en* and *-jien* had merged by the time of these Sino-Korean borrowings. This merger is also reflected in the *fǎnqiè* spellings of Huìlín's *Yíqiè jīng yīnyì*, which date from the eighth century (see section 2.2.1 above). The merger evidently took the form of the insertion of a high front glide before the vowel *e*. According to Kōno, in fact, the main stratum of Sino-Korean pronunciation agrees quite closely with the phonological system of Huìlín (1964–1967 [1979]: 506; see also Kōno's comments in Arisaka 1962: 74). Thus the glide represented in Sino-Korean is due to a post-*Qièyùn* sound change, and cannot be taken as evidence for a similar glide in the language of the *Qièyùn*.

The merger of division-IV finals like *-en* with division-IV *chóngniǔ* finals like *-jien* also explains why both were placed in the same row of the rhyme tables in the first place. The rhyme tables, on which Karlgren relied heavily in reconstructing the language of the *Qièyùn*, are more representative of Late Middle Chinese than of Early Middle Chinese. Thus in this case

Karlgren was misled not only by his failure to distinguish the *chóngniŭ* finals, but also by his failure to take into account the differences between Early Middle Chinese and Late Middle Chinese.

7.1.2.3. Medial *-i- *in Old Chinese, and alternative reconstructions*

Karlgren projected the medial *-i-* of his Ancient Chinese reconstruction back to Archaic Chinese. Let us continue to use MC *-en* (Karlgren's *-ien*) as an example. As we saw in Chapter 4, the Qīng-dynasty phonologists discovered that the final *-en* had at least three different origins, coming from the Old Chinese 真 Zhēn, 元 Yuán, and 文 Wén groups of the traditional analysis. Karlgren accordingly reconstructed these three sources of MC *-en*:

-ien (my *-en*) < **-ien* in the 真 Zhēn group
-ien (my *-en*) < **-ian* in the 元 Yuán group
-ien (my *-en*) < **-iən* in the 文 Wén group

From the point of view of Karlgren's reconstruction, then, Archaic Chinese **-ien* remained unchanged in Middle Chinese, while the vowels of **-ian* and **-iən* changed to *e* under the influence of the "strong" medial *-i-*. This contrasts with the effect of the "weak" medial **-i̯-*, which induced less drastic changes, or no change at all, in a following vowel:

-i̯ĕn (my *-(j)in*) < **-i̯ĕn* (the 真 Zhēn group)
-i̯än (my *-jen*) < **-i̯an* (the 元 Yuán group)
-i̯ən (my *-jin*) < **-i̯ən* (the 文 Wén group)

All this seems quite consistent with Karlgren's idea that *-i-* was strong and *-i̯-* was weak. Notice, however, that there is a fundamental phonological difference between the *-i-* of Karlgren's Ancient Chinese and the **-i-* of his Archaic Chinese. His Ancient Chinese *-i-* was phonologically redundant and unnecessary, as we have seen; but in Karlgren's Archaic Chinese, there are contrasts like **-ian* ≠ **-i̯an* ≠ **-an* and **-iən* ≠ **-i̯ən* ≠ **-ən*.

Of course, if we reject the reconstruction of *-i-* in Middle Chinese, the case for reconstructing such a medial in Old Chinese is considerably weakened; to have original **-ien*, **-ian*, and **-iən* merge as MC *-en* is somewhat more awkward than having them merge as *-ien*. Nevertheless, later researchers have been reluctant to abandon Karlgren's **-i-* (or some equivalent notation) in reconstructing division-IV finals. There is a good reason for this: some such medial is necessary in order to reconcile the traditional Old Chinese rhyme categories with the diversity of finals in Middle Chinese.

We can illustrate this by examining the finals traditionally assigned to the 元 Yuán rhyme group. Excluding *hékǒu* finals, this group includes words with the following seven Middle Chinese finals:

division I: *-an*
division II: *-æn, -ɛn*
division III: *-jon, -jen, -jien*
division IV: *-en*

Since in historical phonology we generally do not reconstruct unconditioned splits, each of these seven finals must be assigned a separate origin in our Old Chinese reconstruction. However, if we adopt the traditional assumption that all these finals rhymed with each other in Old Chinese, then all seven must be reconstructed so that their main vowels and codas are similar—even identical, if we accept the phonemic identity hypothesis (that syllables which regularly rhyme must have identical main vowels and codas). One possibility would be simply to reconstruct a single main vowel and seven different possibilities for the preceding medial position. Zhōu Fǎgāo's reconstruction (Zhōu Fǎgāo et al. 1974b: xi) is such a system:

	MC	Zhōu Fǎgāo
I	*-an*	**-an*
II	*-æn*	**-ran*
	-ɛn	**-rian*
III	*-jon*	**-jan*
	-jen	**-ian*
	-jien	**-jian*
IV	*-en*	**-ean*

Notice, however, that this system involves four distinct choices for front medials: **-j-*, **-i-*, **-ji-*, and **-e-*, which seems rather implausible.

The system of finals reconstructed by Pulleyblank (1977–1978) also accounts for all the distinctions above, without apparent violation of the phonemic identity hypothesis. This is accomplished by reconstructing a prosodic distinction between "type-A" syllables (indicated by an acute accent over the vowel) and "type-B" syllables (indicated by a grave accent). Pulleyblank originally believed that this distinction was one of vowel length (1962); later he described it as involving stress on different moras of the syllable (1977–1978). (Whatever the nature of this distinction, it was presumably irrelevant to rhyming.) Generally speaking, type-B syllables are those where Karlgren reconstructed **-i̯-*, and I reconstruct **-j-*. For

example, type-A *-*án* corresponds to my *-*an*, and type-B *-*àn* to my *-*jan*. Moving this distinction from the medial slot to the prosodic level avoids the crowding of elements in medial position that we find in Zhōu Fǎgāo's reconstruction. Pulleyblank handles the remaining distinctions by assuming elements written as raised **j*, **r*, and **rj*, representing "features of the initial and/or final consonants that gave rise to *j-*, *r-* or combined *rj-* umlauts" (1977–1978: 184). Thus Pulleyblank reconstructs

	MC	Pulleyblank
I	*-an*	*-*án*
II	*-æn*	*-^{r}án*
	-ɛn	*-^{rj}án*
III	*-jon*	*-*àn* (grave initials)
	-jen	*-*àn* (acute initials)
	-jen (III)	*-^{r}àn*, *-^{rj}àn* (grave initials)
	-jien (IV)	*-^{j}àn* (grave initials)
IV	*-en*	*-^{j}án*

(A full account of how the surrounding consonants produce these "umlauts" has not yet been published.[172])

Most researchers, however, have accounted for the finals of the 元 Yuán group (and analogous problems in other groups) by either assuming that different main vowels could rhyme with each other, or by overlooking one or more Middle Chinese distinctions, or both. Karlgren did both, reconstructing three varieties of **a* ("broad" **â*, long **a*, and short **ă*), and overlooking the *chóngniǔ* distinction between *-jen* (III) and *-jien* (IV):

	MC	Karlgren
I	*-an*	*-*ân*
II	*-æn*	*-*an*
	-ɛn	*-*ăn*
III	*-jon*	*-*i̯ăn*
	-jen, -jien	*-*i̯an*
IV	*-en*	*-*ian*

Dǒng Tónghé accounted for all the necessary distinctions, but allowed four varieties of **a* (written **â*, **a*, **ă*, and **ä* in Dǒng Tónghé 1944 [1948]) to rhyme with each other:

	MC	Dǒng Tónghé
I	*-an*	**-ân*
II	*-æn*	**-an*
	-ɛn	**-än*
III	*-jon*	**-i̯ăn*
	-jen	**-i̯an*
	-jien	**-i̯än*
IV	*-en*	**-iän*

Li Fang-kuei, by using the medials **r* and **j*, and by allowing simple vowels like **a* to rhyme with diphthongs like **ia* and **ua*, accounted for almost all the distinctions, except that there are only two sources (**-jan* and **-jian*) for the three finals *-jon*, *-jen*, and *-jien* (Li 1971 [1980]: 54–56):[173]

	MC	Li Fang-kuei
I	*-an*	**-an*
II	*-æn*	**-ran*
	-ɛn	**-rian*
III	*-jon*	**-jan*
	-jen	**-jan, -jian*
	-jien	**-jian*
IV	*-en*	**-ian*

Wáng Lì's reconstruction (1980b) is consistent with the phonemic identity hypothesis, but fails to account for all the necessary distinctions. He reconstructed three different front medials: **e* (in division II), **i* (in division III), and **y* (in division IV), but failed to distinguish between *-æn* and *-ɛn* in division II, or among *-jon*, *-jen*, and *-jien* in division III:

	MC	Wáng Lì
I	*-an*	**-an*
II	*-æn, -ɛn*	**-ean*
III	*-jon, -jen, -jien*	**-ian*
IV	*-en*	**-yan*

These various systems show the difficulties of reconstructing a plausible-looking system of medials and vowels which is consistent with both the phonemic identity hypothesis and the traditional rhyme categories.

7.1.2.4. *Distinguishing* *-an *and* *-en

If it is difficult to devise a natural-looking system which is consistent with both the phonemic identity hypothesis and the traditional rhyme categories, the reason may be that the traditional rhyme categories are wrong. The arguments against medial *-i-* in Middle Chinese strongly suggest that there may have been no such medial in Old Chinese either, and that division-I *-an* and division-IV *-en* simply had different main vowels all along. If the traditional 元 Yuán category includes both **-an* and **-en*, this would explain the proliferation of finals in this category. This is the solution I propose (following similar proposals in Bodman 1971). My reconstruction is as below:

	MC	Baxter
I	*-an*	**-an*
II	*-æn*	**-ran*
	-ɛn	**-ren*
III	*-jon*	**-jan*
	-jen	**-rjan*, **-rjen*
	-jien	**-jen*
IV	*-en*	**-en*

(These are the developments after grave initials, where all the contrasts are present.) This accounts for all seven 元 Yuán group finals listed above. Note that *-jen* (III) has two sources: **-rjan* and **-rjen*.

This reconstruction exemplifies the front-vowel hypothesis, which we may state this way:

> Contrasts between front and back vowels in Middle Chinese, when not attributable to the influence of medials **-r-* and **-j-*, are to be reconstructed as front/back contrasts in Old Chinese also.

In particular, this hypothesis generally requires that division-IV finals be reconstructed with OC **i* or **e*. (The only exception is syllables affected by the change ****i*-fronting**; see below.) Front **i* or **e* is also to be reconstructed in those division-II or division-III finals which regularly rhyme or have *xiéshēng* contacts with division-IV finals.

If Old Chinese rhyming was based on phonemic identity, then the words I reconstruct with **-an* and the words I reconstruct with **-en* should not regularly rhyme with each other. We will see in Chapter 10 that this is indeed the case, and that this reconstruction is supported by *xiéshēng* evidence as well.[174]

7.1.3. The six-vowel system

To show how the assumptions listed at the beginning of this chapter lead us to reconstruct a six-vowel system for Old Chinese, let us begin by examining the Middle Chinese division-I and division-IV finals with the coda *-n*. These are the so-called "simple" finals which, by the rounded-vowel hypothesis and the front-vowel hypothesis, must be reconstructed without medials in Old Chinese.

Middle Chinese has six division-I and division-IV finals ending in *-n*, listed below with their *Qièyùn* rhymes:

-an, -wan	寒 Hán (Han)
-on, -won	痕 Hén (Hon), 魂 Hún (Hwon)
-en, -wen	先 Xiān (Sen)

Let us first review what traditional Chinese phonology has to say about the Old Chinese origins of these finals. We will begin by considering only the *kāikǒu* finals *-an, -on,* and *-en*—that is, those without MC *-w-*. According to the traditional analysis of Old Chinese rhyming (summarized in section 4.2 above),

1. Middle Chinese *-an* (the 寒 Hán rhyme) comes only from the 元 Yuán rhyme group (Li's **-an*); I reconstruct it as OC **-an*. An example is

(504) 干 *gān* < *kan* < **kan* 'shield'.

2. Middle Chinese *-on* (the 痕 Hén rhyme) comes only from the 文 Wén rhyme group (Li's **-ən*); I reconstruct it as **-in*. An example is

(505) 根 *gēn* < *kon* < **kin* 'root'.

3. Middle Chinese *-en* (the 先 Xiān rhyme) has three different origins:

- the 真 Zhēn group (Li's **-in*)
- the 元 Yuán group (Li's **-an*)
- the 文 Wén group (Li's **-ən*)

Examples of MC *-en* from each of these three groups are cited below.

MC *-en* from the 真 Zhēn group

Words such as the following rhyme repeatedly in the *Shījīng* with such 真 Zhēn-group words as 人 *rén* < *nyin* 'person':

(506) 天 *tiān* < *then* 'heaven, sky'

(507) 田 *tián* < *den* 'field'

(508) 堅 *jiān* < *ken* 'hard, solid, strong'

Karlgren (and Dǒng Tónghé) reconstructed such words with the final **-ien*; in Li's system they have **-in*; I also reconstruct them with **-in*.

MC *-en* from the 元 Yuán group

The word

(509) 肩 *jiān* < *ken* 'shoulder' (used in Ode 97.1 as a loan character for 豜 *jiān* < *ken* 'pig or boar three years old')

rhymes in Ode 97.1 with words traditionally assigned to the 元 Yuán-group words, such as 還 *xuán* < *zjwen* 'agile' (also read *huán* < *hwæn* 'return').

In such cases, both Karlgren and Li reconstruct MC *-en* as **-ian*; I reconstruct it as **-en*. Other words in *-en* traditionally assigned to the 元 Yuán group include these:

(510) 見 *jiàn* < *kenH* < **kens* 'see'

(511) 宴 ~ 燕 *yàn* < *ʔenH* < **ʔens* 'feast'

MC *-en* from the 文 Wén group

The word

(512) 先 *xiàn* < *senH* 'to precede' (derived from 先 *xiān* < *sen* 'first')

rhymes in Ode 197.6A with the 文 Wén-group word 墐 *jìn* < *ginH* 'to plaster'. Similarly,

(513) 殄 [*tiǎn*][175] < *denX* 'cease, cause to cease; extinguish, ruin, destroy'

rhymes in Ode 237.8A with the 文 Wén-group word 隕 *yǔn* < *hwinX* 'to fall'.

In these cases, Karlgren and Li reconstruct MC *-en* as **-iən*; I reconstruct MC *-en* < **-in*, as explained below. (It will turn out to be significant that the good examples of MC *-en* from the 文 Wén group all have acute initials; there are no clear examples of grave-initial syllables like *Ken, Kwen,* or *Pen* from the 文 Wén group.)

If we incorporate this threefold origin of MC *-en* in our system, then it appears that we must account for at least the following five possibilities:

1. *-an* from the 元 Yuán group (Karlgren's **-an*, Li's **-an*)
2. *-on* from the 文 Wén group (Karlgren's **-ən*, Li's **-ən*)
3. *-en* from the 真 Zhēn group (Karlgren's **-ien*, Li's **-in*)
4. *-en* from the 元 Yuán group (Karlgren's **-ian*, Li's **-ian*)
5. *-en* from the 文 Wén group (Karlgren's **-iən*, Li's **-iən*)

Now let us consider the *hékǒu* finals *-wan*, *-won*, and *-wen*, and see how the rounded-vowel hypothesis applies to them. The Middle Chinese final *-wen* occurs only with velar and laryngeal initials; that is, there are Middle Chinese syllables like *Kwen* but none like *Twen*, and no *Pwen* distinct from *Pen*. This means that we can account for the *-w-* of *-wen* in every case by reconstructing a labialized initial **K^{w}-*. Moreover, all clear cases of *-wen* come from the 真 Zhēn or 元 Yuán rhyme groups; there are no clear cases of *-wen* from the 文 Wén rhyme group.[176]

However, the *-w-* in MC *-wan* and *-won* cannot always be attributed to an Old Chinese labialized initials **K^{w}-*, since *-wan* and *-won* occur in syllables like 端 *duān* < *twan* 'end, tip, point' or 敦 *dūn* < *twon* 'solid, thick', where no labialized initial can be reconstructed. Therefore, as we saw earlier, we must reconstruct *-wan* < **-on* and *-won* < **-un* in words like these:

(514) 端 *duān* < *twan* < **ton* 'end, tip, point'

(515) 敦 *dūn* < *twon* < **tun* 'solid, thick'

Traditionally, 端 **ton* is assigned to the 元 Yuán group along with words that I reconstruct with **-an*, and 敦 **tun* is assigned to the 文 Wén group along with words that I reconstruct with **-in*. But if the phonemic identity hypothesis holds for Old Chinese, then **-on* should not rhyme with **-an*, and **-un* should not rhyme with **-in*. The rounded vowel hypothesis thus predicts the existence of rhyming distinctions not recognized in the traditional analysis. Jaxontov (1960b) argued convincingly that these predictions are correct, and we will confirm this in Chapter 10.

When these two additional finals required by the rounded-vowel hypothesis are added, it would appear that we now have seven finals for which different main vowels need to be reconstructed:

1. *-an* from the 元 Yuán group
2. *-wan* from the 元 Yuán group

3. *-on* from the 文 Wén group
4. *-won* from the 文 Wén group
5. *-(w)en* from the 真 Zhēn group
6. *-(w)en* from the 元 Yuán group
7. *-en* from the 文 Wén group

However, we can reduce the number of required main vowels to six if we take into account the fact that MC *-on* and *-en* in the 文 Wén group (items 3 and 7 in the list above) are in complementary distribution. As we observed above, the only clear examples of MC *-en* from the 文 Wén group (number 7 above) have acute initials; conversely, the only clear examples of MC *-on* from the 文 Wén group (number 3 above) have grave initials.[177] This fact allows us to reconstruct **-in* in both cases:

(516) 根 *gēn* < *kon* < **kin* 'root'

(517) 先 *xiān* < *sen* < **sin* 'first'.

The split of **i* into MC *-o-* and *-e-* can be attributed to a change ***i-fronting**, which caused **i* to become fronted in syllables where both initial and coda were acute. This would front **sin* to **sin*. Subsequently, **kin* and **sin* < **sin* were lowered to MC *kon* [kʌn] and *sen* [sen] respectively by a change I call **hi > mid**, which lowered original high vowels to mid height in syllables without medial **-j-*.[178]

Thus a system of six vowels is sufficient to account for the Middle Chinese division-I and division-IV finals ending in *-n*, and for all the Old Chinese rhyming distinctions recognized for these finals in the traditional analysis (plus others which the traditional analysis overlooked). The reflexes of the Old Chinese simple finals in **-n* after velar, laryngeal, and acute initials are summarized in Table 7.1. As usual, I use **K-* as a cover symbol for any (nonlabialized) velar or laryngeal initial, and **T-* for any acute initial.

Table 7.1. Old Chinese simple finals in **-n* after **K-* and **T-* initials

initial	**-in*	**-in*	**-un*	**-en*	**-an*	**-on*
**K-*	*Ken*	*Kon*	*Kwon*	*Ken*	*Kan*	*Kwan*
**T-*	*Ten*	*Ten*	*Twon*	*Ten*	*Tan*	*Twan*

The development of these syllable types can be summarized as follows.

1. Division-I finals reflect OC *[+ back] vowels; pure division-IV finals reflect OC *[– back] finals (except in syllables like **Tɨn*, whose original back vowel was fronted by ***ɨ*-fronting**).

2. The rounded vowels **u* and **o* diphthongized before acute consonants, so that original **-un* and **-on* became MC *-won* and *-wan* respectively. (I call this change **rounding diphthongization**.) It was this change which promoted **w* from a feature of the initial (as in Old Chinese) to a full-fledged medial element (as in Middle Chinese).

3. Old Chinese **-ɨn* and **-en* merged as MC *-en* in syllables without medial **-j-*. I account for this (and a whole series of parallel sound changes) by assuming the change **hi > mid**, which caused high vowels to become mid (i.e. [– high] but still [– low]) when not preceded by medial **-j-*. The same change lowered **-ɨn* to MC *-on* ([ʌn]).

Let us turn now to the developments after labial and labialized initials **P-* and **K^{w}-*. As Y. R. Chao showed (1941), MC *-w-* is not contrastive after labial initials. Nevertheless, *Shījīng* rhyming shows that we must reconstruct both rounded and unrounded main vowels after labial initials. By Middle Chinese times, this Old Chinese rounding contrast had been lost after labial and labialized initials through a change I call ***w*-neutralization**. For example, the word

(518) 奔 *bēn* < *pwon* < **pun* 'run'

rhymes as **-un* in the *Shījīng* (Odes 49.2B and 73.2A), while

(519) 門 *mén* < *mwon* < **mɨn* 'gate, door'

rhymes as **-ɨn* (Odes 40.1A, 93.1A, 199.1A, and 261.4C); but in Middle Chinese they have the same final *-won*.

I assume that ***w*-neutralization** applied as follows. We would expect an original **Pun* to become **Pwɨn* by **rounding diphthongization**. So the original contrast **Pun* ≠ **Pɨn* became a contrast **Pwɨn* ≠ **Pɨn*. Then ***w*-neutralization** caused **Pwɨn* and **Pɨn* to merge, becoming MC *Pwon*. Similarly, original **Pon* changed to **Pwan* by **rounding diphthongization**, and then **Pwan* and **Pan* merged as MC *Pan*. It is not clear in every case whether ***w*-neutralization** involved the insertion of phonetic [w] or its deletion, but in any case the contrast was lost.

Syllables with labialized initials are similar. I reconstruct both **K^{w}an* and **Kon* as sources of MC *Kwan*. The choice between **K^{w}an* or **Kon* must be determined in each case from rhyme and *xiéshēng* evidence: a MC *Kwan* rhyming with MC *Tan* < **Tan* will be reconstructed as **K^{w}an*, while a MC

Kwan rhyming with MC *Twan* < **Ton* will be reconstructed as **Kon*. Similarly, I reconstruct MC *Kwon* as **Kun* or **K^{w}in* depending on the rhyme evidence. It is unclear whether we should reconstruct **K-* or **K^{w}-* or both before rounded vowels; as a matter of notation, I write plain **K-* before rounded vowels unless there is some reason to choose **K^{w}-*. The development of plain finals in **-n* after labial and labialized initials is summarized in Table 7.2.

Table 7.2. Old Chinese simple finals in **-n* after **P-* and **K^{w}-* initials

initial	**-in*	**-in*	**-un*	**-en*	**-an*	**-on*
**P-*	*Pen*	*Pwon*	*Pwon*	*Pen*	*Pan*	*Pan*
**K^{w}-*	*Kwen*	*Kwon*	*(Kwon?)*	*Kwen*	*Kwan*	*(Kwan?)*

We have found, then, that a system of six Old Chinese vowels is sufficient to account for the Middle Chinese division-I and division-IV syllables in *-n*. We arrived at this six-vowel system by combining the rhyming distinctions discovered by the Qīng phonologists with a kind of internal reconstruction based on the distribution of phonological elements in Middle Chinese. This system suggests the existence of rhyme distinctions not included in the traditional analysis of Old Chinese rhyming, such as the distinctions among **-en*, **-an*, and **-on* (in the traditional 元 Yuán group) and between **-in* and **-un* (in the traditional 文 Wén group); but as Chapter 10 shows, the predicted distinctions do indeed exist. Unless we assume that these distinctions were made for other, nonphonological reasons (which, as I argued in Chapter 3, seems most unlikely in the Old Chinese period), the rhymes are strong evidence in favor of this vowel system. We will see that the same six-vowel system is adequate for other types of syllables as well.

7.1.4. Comparison with Li Fang-kuei's reconstruction

It may be useful to compare this vowel system with the widely-known system of Li Fang-kuei, which closely follows the traditional analysis of Old Chinese rhyming presented in section 4.2 above. Although Li's system is sometimes described as a four-vowel system, with vowels **i*, **u*, **ə*, and **a*, it also includes diphthongs **ia*, **iə*, and **ua* which correspond structurally to the vowels of my system—a total of seven elements in all. Of these seven elements, all but **u* are reconstructed before the coda **-n*. Li's

reconstruction, as it applies to division-I and division-IV syllables ending in *-n*, is summarized in Table 7.3.[179]

Table 7.3. Reflexes of simple finals in **-n* in Li Fang-kuei's reconstruction

initial	**-in*	**-ən*	**-iən*	**-an*	**-ian*	**-uan*
**K-*	*Ken*	*Kon*	*Ken*	*Kan*	*Ken*	——
**T-*	*Ten*	*Twon*	*Ten*	*Tan*	*Ten*	*Twan*
**P-*	*Pen*	*Pwon*	*(Pen?)*	*Pan*	*Pen*	——
**K^{w}-*	*Kwen*	*Kwon*	*(Kwen?)*	*Kwan*	*Kwen*	——

For these syllables, the major differences between Li's system and that proposed here are the following:

1. Li reconstructed **-ian* where I reconstruct **-en*; the reason for the diphthongal reconstruction is that the traditional analysis claims that this final rhymes with **-an*. However, as we shall see in Chapter 10, **-en* and **-an* were actually distinct rhymes.

2. Li reconstructed **-uan* after acute initials in syllables where I reconstruct **-on*; as with **-ian*, the reason for the diphthong is that the traditional analysis includes this final in the 元 Yuán group, along with **-an*. Note, however, that I also reconstruct **-on* after **K-* and **P-* initials, while Li's **-uan* occurs only exceptionally after such initials.

3. Li's system does not recognize the distinctions made in my system between

**Pin* and **Pun* (both = Li's **Pən*)
**Pan* and **Pon* (both = Li's **Pan*)
**K^{w}in* and **Kun* (both = Li's **Kwən*)
**K^{w}an* and **Kon* (both = Li's **Kwan*).

These distinctions are recognized in my system to account for *Shījīng* rhyming.

4. In the traditional 文 Wén group, Li reconstructed MC *-en* as **-iən*, and followed Karlgren in assuming (incorrectly, I believe) that this final could occur after grave as well as acute initials. He also reconstructed a single source **-ən* for both MC *-on* and MC *-won*. (This is possible in his system only because he does not recognize the rhyming distinction between **-in*

and *-*un*.) In my system, it is MC *-on* and *-en* which have a common origin *-*in*, and *-*un* is reconstructed, distinct from *-*in*, to account for *Shījīng* rhyming distinctions overlooked in the traditional analysis.

Thus the essential difference between the vowel system reconstructed here and the system reconstructed by Li is that my system departs from the traditional analysis of Old Chinese rhyming—for example, reconstructing three different rhymes, *-*en*, *-*an*, and *-*on*, within the traditional 元 Yuán group, and two rhymes *-*in* and *-*un* within the traditional 文 Wén group.

In earlier work (Baxter 1977, 1980b), before I had reexamined the traditional rhyme analysis, the discrepancies between my reconstruction and the traditional Old Chinese rhyme categories led me to believe that something like Li's system was appropriate for the language of the *Shījīng*. I supposed that the six-vowel system, suggested by the phonological pattern of Middle Chinese, represented an early stage ancestral to both the *Shījīng* language and the language of the *Qièyùn*. The *Shījīng* language, in this conception, was supposed to have undergone certain changes (e.g. *-*en* > *-*jan*, *-*on* > *-*wan*, and *-*un* > *-*win*) which brought its rhyming into conformity with the traditional rhyme categories. This would imply that the *Shījīng* was probably not the direct ancestor of Middle Chinese, for not all of these changes would have been inherited by Middle Chinese. For example, while the changes *-*on* > *-*wan* and *-*un* > *-*win* are reflected in Middle Chinese (this is **rounding diphthongization**), there is no Middle Chinese evidence for a diphthongization *-*en* > *-*ian* or *-*jan*. This is a line of argument similar to that proposed by Chang & Chang (1972), who distinguish Proto-Chinese (the ancestor of all varieties of Chinese) from the language of the *Shījīng*, and assume that the *Shījīng* language underwent certain changes not inherited by the *Qièyùn*.

However, examining the *Shījīng* rhymes themselves shows that most of the disagreements between the six-vowel system and the traditional rhyme categories reflect flaws in the traditional analysis, not dialect features in the *Shījīng*. It may well be true that the language of the *Shījīng* was affected by some changes not reflected in the *Qièyùn*. (For example, I will suggest below that original *-*ing* usually became *-*in* in the *Shījīng* but *-*eng* in Middle Chinese.) But on the whole, the *Shījīng* language seems quite close to the ancestor of Middle Chinese, even if it is not identical with it.

As Li pointed out (1983: 396), it is possible to get by with even fewer Old Chinese vowels if one reconstructs more complex medials (as proposed by Zhōu Fǎgāo 1969, 1970, with three main vowels) or a more complex system of codas (as in the system proposed by Pulleyblank 1963, 1977–1978, with

two main vowels). Since I assume that both the main vowel and the coda affect rhyming, there is no way to decide, a priori, whether to attribute rhyming distinctions to the main vowel or the coda. For example, I reconstruct the traditional 陽 Yáng and 東 Dōng rhyme groups as **-ang* and **-ong* respectively, attributing the distinction to the main vowel; but Pulleyblank (1977–1978: 204) reconstructs them as **-aŋ* and **-aŋ^{w}*, attributing the distinction to the coda. The decision between these competing reconstructions cannot be made on the basis of rhyme evidence, since both account for this evidence equally well; rather, it must be based on other evidence, or on methodological considerations. In this case, I would argue that a two-vowel system such as Pulleyblank's, while not impossible, is too unusual to be our first choice in reconstructing Old Chinese.

Systems which replace vowel distinctions with medial distinctions, on the other hand, will leave some Old Chinese rhyming distinctions unaccounted for (unless we assume that medials affected rhyming). For example, if **-an* and **-on* are reconstructed instead as **-an* and **-wan,* then the rhyming distinction between them is unexplained.[180]

7.1.5. Main vowels before other codas

The discussion so far has been limited to syllables with the coda **-n,* since these illustrate the full complexity of the Old Chinese vowel system. The same six-vowel system is also adequate to account for the division-I and division-IV syllables with codas of other types. Syllables with the codas **-t* and **-j* are largely parallel to those with **-n*. Syllables with codas of other types involve fewer contrasts than those with **-n*, and are easily accounted for by the six-vowel system. As an example, I will briefly sketch the reconstruction of the simple finals in **-ng*. More detailed discussion of these and other finals may be found in Chapter 10.

Middle Chinese has a total of eight division-I and division-IV finals ending in *-ng* (the finals in *-k* are parallel):

finals	rhyme
-uwng	東 Dōng (Tuwng)
-owng	冬 Dōng (Towng)
-ang -wang	唐 Táng (Dang)
-eng -weng	青 Qīng (Tsheng)
-ong -wong	登 Dēng (Tong)

The *hékǒu* finals *-wang, -weng,* and *-wong* are limited to velar and laryngeal initials, so in these cases medial *-w-* can be traced to Old Chinese initials of the type $*K^{w}$-, as in the following examples:

(520) 廣 *guǎng* < *kwangX* < $*k^{w}ang?$ 'wide, broad'

(521) 褧 [*jiǒng*] < *khwengX* < $*k^{w}heng?$ 'unlined hemp garment'

(522) 肱 *gōng* < *kwong* < $*k^{w}ing$ '(upper) arm'

The five *kāikǒu* finals which remain are easily accounted for with the six-vowel system. The unrounded vowels develop more or less as they do before **-n*: the change **hi > mid** lowers the high vowels **i* and **ɨ* to mid height (unless preceded by **-j-*), and **e* and **a* are unchanged. There was probably an additional final **-ing*, whose development probably varied according to dialect, with **-ing* > **-in* > *-en* in some dialects and **-ing* > *-eng* in others:

**-ing* > *-en* ~ *-eng*
**-eng* > *-eng*
**-ɨng* > *-ong* ([ʌŋ])
**-ang* > *-ang*

(Examples of these developments may be found in Chapter 10.)

The rounded vowels **u* and **o,* which became diphthongs **wi* and **wa* before acute codas, appear to have undergone a different diphthongization process before velars, though the phonetic details are unclear and may have varied with dialect:

**-ung* > *-owng*
**-ong* > *-uwng*

As noted in Chapter 2, the placement of the Middle Chinese finals *-uwng* and *-owng* at the beginning of the *Qièyùn* suggests that such syllables had a coda *-wng* distinct from *-ng* at that time. It is likely that in this environment, the original rounded vowel had become a diphthong with *-w-* as the second element (rather than the first element, as in syllables with acute codas):

(523) 冬 *dōng* < *towng* < **tung* 'winter'

(524) 東 *dōng* < *tuwng* < **tong* 'east'

Parallel changes **-u* > *-aw* and **-o* > *-uw* affected open syllables in **-u* and **-o*:

(525) 鼛 *gāo* < *kaw* < **ku* 'big drum'

(526) 投 *tóu* < *duw* < **do* 'throw'

Though the phonetic details are unclear, I will use the label ***-u(K) > -aw(K)*** for the change which caused **-u* and **-ung* to become MC *-aw* and *-owng* respectively. (This suggests that perhaps *-owng* should be interpreted as /awŋ/, as in Pulleyblank 1984). Similarly, I use the label ***-o(K) > *-uw(K)*** for the change which caused **-o* and **-ong* to become MC *-uw* and *-uwng*. (Note that both these changes are restricted to syllables without medial **-j-*. With medial **-j-*, the developments are different: OC **-jung* > MC *-juwng*, OC **-ju* > MC *-juw*, OC **-jong* > MC *-jowng*, and OC **-jo* > MC *-ju*.) Thus the simple finals in **-ng* may be reconstructed as follows:

**-ing* > *-(w)en* ~ *-(w)eng*
**-ing* > *-(w)ong*
**-ung* > *-owng*
**-eng* > *-(w)eng*
**-ang* > *-(w)ang*
**-ong* > *-uwng*

Having shown how the proposed six-vowel system accounts for the finals of divisions I and IV, reconstructed without medials, we may proceed to those reconstructed with medial **-r-* or **-j-* or both.

7.2. Syllables with medial *-*r*-: division II

In the transcription system used here for Middle Chinese, division-II finals are those whose main vowels are written as *-æ-* or *-ɛ-*, and which lack a preceding *-j-* or *-y-*. In the *Qièyùn,* words with these finals are mostly assigned to separate rhymes by themselves, which we may call division-II rhymes (see section 2.4.1.3 above). In addition, there are two rhymes which include both division-II and division-III finals: 麻 Má (Mæ), with the Middle Chinese finals *-æ, -wæ,* and *-jæ*, and 庚 Gēng (Kæng), with the Middle Chinese finals *-æng, -wæng, -jæng,* and *-jwæng*.

The *Qièyùn*'s placement of division-II finals in rhymes by themselves agrees with the rhyming of the time: although the data are few and there are some exceptions, there is a tendency in rhyming of the Suí dynasty (581–618) and the latter part of the Northern and Southern dynasties period (420–581) for most division-II finals to rhyme separately.[181] For example, the *zàn* 贊 'envoi' verses at the end of each chapter of the *Wén xīn diāo lóng* 文心雕龍 of Liú Xié 劉勰 (approximately 465–532) follow the categories of the *Qièyùn* rather closely (see Zhōu Zǔmó 1963 [1966]:

466–69); there are several rhyme sequences involving division-II finals only, such as the following in chapter 40:

包 *bāo* < *pæw* 'embrace'
爻 [*yáo*] < *hæw* 'hexagram'
交 *jiāo* < *kæw* 'meet'
匏 *páo* < *bæw* 'gourd'

The separate rhyming of division-II finals in Early Middle Chinese contrasts strongly with the rhyming pattern of Old Chinese, where the division-II finals do not constitute separate rhyme categories. The following rhyme sequence from Ode 53.1 (*Yōng fēng* 鄘風: *Gān máo* 干旄), where division-I *-aw* rhymes with division-II *-æw*, is typical:

旄 *máo* < *maw* 'pennon of ox-tails'
郊 *jiāo* < *kæw* 'suburbs'

In general, the words with division-II finals seem to have split off as separate rhyme categories around the beginning of the Liáng 梁 dynasty (A.D. 502–57) (Juhl 1974; Ting Pang-hsin 1975: 258). A satisfactory reconstruction of Chinese phonological history should account for these facts.

7.2.1. *r-color and *r-loss

In the present reconstruction system, division-II finals are reconstructed with medial *-*r*-. The development of these finals into distinct Middle Chinese rhymes may be attributed to two sound changes: a change which I call ***r-color**, which changed the quality of vowels after medial *-*r*-, and a change ***r-loss** by which medial *-*r*- was lost after grave initials. (After acute initials, medial *-*r*- remained as a feature of retroflexion.) As long as medial *-*r*- remained, the vowel features introduced by ***r-color** were largely predictable, and thus allophonic; but after the conditioning factor *-*r*- was lost, they became contrastive, giving rise to new vowel phonemes. These new phonemic distinctions led to distinctions in rhyming. If we date ***r-loss** at approximately A.D. 500, then, we can account for the tendency of division-II rhymes to rhyme separately from that point on.

Even though separate division-II rhymes did not appear until about the sixth century A.D., ***r-color** probably occurred considerably earlier, because in some cases it did cause words to shift from one rhyme category to another at an earlier period. For example, at least by the Wèi-Jìn period (A.D. 220–420), original *-*rin* no longer rhymed with original *-*in*, but

rather with original *-*en*; similarly, original *-*ṛing* no longer rhymed with original *-*iṅg*, but rather with original *-*eng* (Ting Pang-hsin 1975: 244–46). This suggests that we should date ***r*-color** no later than Eastern Hàn, even though in most cases it did not affect rhyming until later, when ***r*-loss** caused the features introduced by ***r*-color** to become distinctive.

The change ***r*-color** seems to have made a following vowel front and lax (i.e. [– back] and [– tense]). The fronting effect is seen in the rhyming shifts just mentioned, and also in the Middle Chinese division-II finals, which are probably best reconstructed with front vowels: my -*æ*- and -*ɛ*-.[182] Now if the only effect of medial *-*r*- had been to front the following vowel, then after *-*r*- was lost, syllables like **kren* would simply have merged with original **ken*; but this did not happen, for the following items remain distinct:

(527) 肩 *jiān* < *ken* < **ken* 'shoulder'

(528) 間 *jiān* < *kɛn* < **kren* 'between'

Though these have merged in Mandarin, they were distinct in Middle Chinese, and are still distinct in many modern dialects (e.g. Cantonese 肩 *gìn* and 間 *gàan*). For Middle Chinese, the best reconstruction is probably 肩 /ken/ with tense /e/ and 間 /kɛn/ with a lax /ɛ/.

It seems likely that ***r*-color** applied only to unrounded vowels; where original rounded vowels are affected, it is probably because they have become diphthongized, either through **rounding diphthongization** or ***-u(K) > -aw(K)***. For example, we can account for the development of

(529) 卯 *mǎo* < *mæwX* < **mru?* 'cyclical sign (4th earthly branch)',

if we assume that ***-u(K) > -aw(K)*** preceded ***r*-color**: **mru* > *mraw* > *mæw*. Similarly, ***r*-color** affected

(530) 關 *guān* < *kwæn* < **kron* 'barrier'

because **rounding diphthongization** applied first: **kron* > *krwan* > *kwæn*. (Evidently the medial -*w*- of *krwan* did not obstruct the process of ***r*-color**, or perhaps *krwan* was reanalyzed as *k*^{w}*ran*.) But the finals *-*o* and *-*ro* evidently merged as MC -*uw*, for there is no division-II final in the traditional 侯 Hóu rhyme group (my *-*o*). Similarly, as we shall see below, *-*rjo* seems to have merged with *-*jo*, and *-*rju* generally merged with *-*ju*.

To illustrate the processes of ***r*-color** and ***r*-loss** and their interaction with other changes, let us consider the development of the following six items:

(531) 根 *gēn* < *kon* < **kin* 'root'

(532) 艱 *jiān* < *kɛn* < **krin* 'distress'

(533) 肩 *jiān* < *ken* < **ken* 'shoulder'

(534) 間 *jiān* < *kɛn* < **kren* 'between'

(535) 干 *gān* < *kan* < **kan* 'shield'

(536) 姦 *jiān* < *kæn* < **kran* 'adultery'

The sound changes affecting these syllables are summarized in Table 7.4.

Table 7.4. Development of selected words in **-n*

	根	艱	肩	間	干	姦
Old Chinese	**kin*	**krin*	**ken*	**kren*	**kan*	**kran*
***r-color**	——	[krɪn]	——	[krɛn]	——	[kræn]
hi > mid	[kʌn]	[krɛn]	——	——	——	——
Wèi-Jìn (phonetic)	[kʌn]	[krɛn]	[ken]	[krɛn]	[kan]	[kræn]
Wèi-Jìn (phonemic)	/kʌn/	/kren/	/ken/	/kren/	/kan/	/kran/
***r-loss**	——	[kɛn]	——	[kɛn]	——	[kæn]
EMC	*kon*	*kɛn*	*ken*	*kɛn*	*kan*	*kæn*

In Old Chinese, as the reconstructions imply,

根 *gēn* < **kin* rhymed with 艱 *jiān* < **krin*,

肩 *jiān* < **ken* rhymed with 間 **kren*, and

干 *gān* < **kan* rhymed with 姦 *jiān* < **kran*.

But by the Wèi-Jìn period, this system had been affected by the changes ***r-color** and **hi > mid**. Although ***r-color** had already introduced new phonetic segments [ɛ] and [æ], in this environment they were probably allophones of /e/ and /a/ respectively, conditioned by the presence of medial *-r-*. Thus the effect of ***r-color** on original **kren* and **kran* was at this stage phonetic, not phonological. But ***r-color** (along with **hi > mid**) caused original **krin* to merge with original **kren* as [krɛn], involving a phonological change from /*krin/ to /kren/. This analysis agrees well with Wèi-Jìn rhyming. Ting Pang-hsin, in his study of Wèi-Jìn rhyming (1975), assigns 根 *gēn* < **kin* to his 魂 Hún group; 艱 *jiān* < **krin*, 肩 *jiān* < **ken*, and 間 *jiān* < **kren* to his 元 Yuán group; and 干 *gān* < **kan* and 姦 *jiān* < **kran* to his 寒 Hán group. As Table 7.4 shows, this pattern is explained by the changes ***r-color** and **hi > mid** if we assume that Wèi-Jìn rhyming was based on phonemic (not phonetic) identity.

The effect of ***r*-loss** on the Wèi-Jìn system was to make [ɛ] and [æ] phonologically distinct from [e] and [a]; if rhyming continued to be based on phonemic identity, this would explain why Wèi-Jìn *-*ren* and *-*ran* became the separate division-II rhymes -*ɛn* and -*æn* of Early Middle Chinese. By Late Middle Chinese, EMC *kɛn* and *kæn* had merged (as LMC *kjaan* in Pulleyblank's system), but were still distinct from EMC *ken* (LMC *kjian*), as they still are in many modern dialects (cf. Cantonese 艱, 間, 姦 *gàan,* 肩 *gìn*).[183] Indeed, there is evidence that EMC -*ɛn* and -*æn* had merged much earlier in some dialects; details are given in section 10.1.1.

7.2.2. Evidence for the *r-hypothesis

The essentials of the theory of division-II syllables outlined above, which we may call the *-*r*- hypothesis, originate with Jaxontov's proposal to reconstruct *-*l*- in division II (1960a). This proposal was adopted by Pulleyblank, who reports having independently arrived at the same idea (1962: 110). Later Pulleyblank substituted *-*r*- for his earlier *-*l*-, as I do. Li Fang-kuei also reconstructed *-*r*- in division-II syllables. Jaxontov's original proposal was based on the fact that (1) the contrast between division-II vowels and other vowels does not appear after Middle Chinese initial *l*- (apart from a few irregular forms), and (2) many division-II words appear in *xiéshēng* series with words in Middle Chinese initial *l*-. (Recall that in my system MC initial *l*- reflects OC **C-r*-.) Reconstructing *-*r*- in division-II finals provides a unified explanation of these phenomena. It is also significant, of course, that the Middle Chinese retroflex initials *TSr*- and *Tr*-, whose retroflexion I attribute to medial *-*r*-, are regularly placed in division II of the rhyme tables, while plain *TS*- and *T*- are not. (*Tr*- occurs in division III as well.)

By contrast, Karlgren had reconstructed distinctive division-II vowels in both Archaic (Old) and Ancient (Middle) Chinese. For example, Karlgren reconstructed the six items above as follows:

根 *gēn* < *kon* < **kin*, Karlgren's **kən*
艱 *jiān* < *kɛn* < **krin*, Karlgren's **kɛn*
肩 *jiān* < *ken* < **ken*, Karlgren's **kian*
間 *jiān* < *kɛn* < **kren*, Karlgren's **kăn*
干 *gān* < *kan* < **kan*, Karlgren's **kân*
姦 *jiān* < *kæn* < **kran*, Karlgren's **kan*

There are several disadvantages to Karlgren's approach:

- It requires us to reconstruct a rather complex, asymmetrical, and unnatural-looking vowel system for Old Chinese.
- It requires us to assume that distinct Old Chinese vowels could rhyme with each other (e.g. his **kən* rhymes with his **kɛn*, and his **kân* rhymes with his **kan*).
- It fails to explain why, having rhymed with each other in Old Chinese, these vowels no longer rhymed with each other in Middle Chinese.
- It fails to account for the frequent *xiéshēng* connections between division-II finals and *l*-initial syllables.

The examples listed below illustrate the *xiéshēng* connections between Middle Chinese division-II and *l*-initial words which originally suggested the **r*-hypothesis:

1. As we have seen, the character

(537) 監 *jiān* < *kæm* < **kram* 'see, look at; inspect'

is phonetic in

(538) 藍 *lán* < *lam* < **g-ram* 'indigo' (cf. Thai *khraam*, tone A2 < Proto-Tai **gram*, Li 1977: 231).

Karlgren reconstructed these as **glâm* and **klam* respectively, making no connection between the division-II vocalism and the cluster indicated by the *xiéshēng* evidence. In my system, the **r*-clusters account for both the *xiéshēng* connection and the Middle Chinese reflexes. (For the notation **g-r-* and its interpretation, see section 6.1.3.2 above.)

2. Similarly, the character

(539) 孌 *luán* < *lwan* < **b-ron* 'bells on horse's trapping'

is phonetic in

(540) 蠻 *mán* < *mæn* < **mron* 'Southern barbarian',

where the **r*-hypothesis requires medial **-r-* in order to account for the division-II final. (With 孌 *luán* compare Thai *phruan*, tone A2 'neck bells (for domestic animals)', cited in Bodman 1980: 74.) (In the same series we find also 變 *biàn* < *pjenH* (III) < **prjons* 'change', where the **rj*-hypothesis requires medial **-rj-* in order to account for the division-III *chóngniǔ* final; see section 7.3.2 below.)

3. The character

(541) 翏 *liù* < *ljuwH* ~ *ljiwH* ~ *lew* < **g-r(j)iw(s)* 'whistling of the wind'

is phonetic in the division-II word

(542) 膠 *jiāo* < *kæw* < **kriw* 'glue',

where medial **-r-* is required by the **r*-hypothesis.

4. The character

(543) 录 *lù* < *luwk* < **b-rok* 'to carve wood'

is phonetic in (and possibly etymologically related to) the division-II word

(544) 剝 *bāo* ~ *bō* < *pæwk* < **prok* 'cut, flay, peel'.

5. The character

(545) 里 *lǐ* < *liX* < **C-rjɨʔ* 'village'

is phonetic in the division-II word

(546) 埋 *mái* < *mɛj* < **mrɨ* 'to bury'.

6. The character

(547) 降 *jiàng* < *kæwngH* < **krungs* 'descend', also read *xiáng* < *hæwng* < **ɦikrung* 'submit',

where medial **-r-* is required by the **r*-hypothesis, is phonetic in the *l*-initial word

(548) 隆 *lóng* < *ljuwng* < **g-rjung* 'high; ample; eminent'.

7. The character

(549) 龍 *lóng* < *ljowng* < **C-rjong* 'dragon'

is phonetic in the division-II word

(550) 龐 *páng* < *bæwng* < **brong* 'huge'.

8. The character

(551) 卯 *mǎo* < *mæwX* < **mruʔ* 'cyclical sign (4th earthly branch)',

where medial **-r-* is required to account for the division-II final, is phonetic in the *l*-initial word

(552) 柳 *liǔ* < *ljuwX* < **C-rjuʔ* 'willow'.

9. The character

(553) 鬲 *lì* < *lek* < **g-rek* 'tripod with hollow legs'

is phonetic in (and used as a loan character for) the division-II word

(554) 隔 *gé* < *kɛk* < **krek* 'obstruct, separate'.

10. The character

(555) 樂 *lè* < *lak* < **g-rawk* 'joy, rejoice in'

also has the division-II reading

(556) 樂 *yuè* < *ngæwk* < **ngrawk* (< **Ngrawk*?) 'music'.

In all these cases, the **r*-hypothesis allows a unified explanation of the Middle Chinese and graphic evidence.[184] Such a solution is clearly to be preferred to one like Karlgren's, which does not relate the graphic evidence to the Middle Chinese vocalism.[185]

Evidence for medial **-r-* can also be found in sound glosses or variant textual readings which originate from a time when medial **-r-* was still present. For example, consider the following entry from the *Shuōwén*:

綰: 惡也; 絳也. 从糸, 官聲. 一曰綃也. 讀若雞卵.

wǎn: è yě; jiàng yě. cóng sī, guān shēng. yī yuē xiāo yě. dú ruò jī luǎn. (Dīng Fúbǎo 1928–1932 [1976]: 5842)

The entry may be roughly translated as follows:[186]

綰 *wǎn* [MC *ʔwænX*]: 'evil; dark red'. The radical is 糸 *sī* 'silk'; the phonetic is 官 *guān* [MC *kwan*] 'official'. Also [glossed as] 'raw silk'. Read like 'chicken's egg' [雞卵 *jī luǎn* < *kej lwanX*].

The word 綰 *wǎn* < *ʔwænX* has a division-II final; based on its Middle Chinese reading alone, we could reconstruct it as either **ʔʷran?* or **ʔron?*. Since the word does not rhyme in the *Shījīng* or other Old Chinese poetry, it is difficult to decide between these two reconstructions without other evidence. What is of interest is the *Shuōwén*'s indication of pronunciation: the statement that the word is 'read like "chicken's egg"'. It is difficult to know whether 雞 *jī* < *kej* 'chicken' is part of the indicated pronunciation or not, but in any case, it is clear that the *l*-initial word

(557) 卵 *luǎn* < *lwanX* < **g-ron?* 'egg'

is part of the indicated pronunciation—providing support for medial **-r-* in 綰 *wǎn* < *ʔwænX*.[187]

The usual development of unrounded vowels in combination with **r* can be summarized as follows:

*ri
*ri
*re
} → [ɛ]

*ra → [æ]

As we have seen, MC -ɛ- and -æ- eventually merged, and in some syllable types they have merged already in the *Qièyùn*. They do not contrast before -*w*, for example; we would expect to have -*ɛw* < *-*riw*, but if there ever was an -*ɛw* it has merged with -*æw*, as illustrated by these two examples:

(558) 膠 *jiāo* < *kæw* < **kriw* 'glue'

(559) 郊 *jiāo* < *kæw* < **kraw* 'suburbs'

In a few cases we find -æ- when -ɛ- would be expected, or vice versa: for example, **K*^{w}*ren* became MC *Kwæn* rather than the expected *Kwɛn*:

(560) 環 *huán* < *hwæn* < **wren* (or **g*^{w}*ren*) 'ring'.

On the other hand, **K*^{w}*rak* becomes *Kwɛk* rather than the expected *Kwæk*:

(561) 獲 *huò* < *hwɛk* < **wrak* (or **g*^{w}*rak*) 'to catch'

These facts can be attributed to minor sound changes which were phonologically regular but affected only a few syllables.

As noted earlier, ***r*-color** generally seems to affect original **ru* and **ro* only when some diphthongization process has occurred. For example, ***-u(K)* > *-aw(K)*** applies in

(562) 包 *bāo* < *pæw* < **praw* < **pru* 'wrap up'

(563) 學 *xué* < *hæwk* < **grawk* < **gruk* (or **fikruk*?) 'to learn'

(564) 降 *jiàng* < *kæwngH* < **krawngH* < **krungs* 'to descend'.

A similar process seems to have applied to **-rong* and **-rok*, but not to **-ro*; **-o* and **-ro* apparently merged as MC *-uw* (similarly, **-oks* and **-roks* apparently merged as *-uwH*):

(565) 江 *jiāng* < *kæwng* < **krong* '(Yangtze) river'

(566) 角 *jiǎo* ~ *jué* < *kæwk* < **krok* 'horn'

(567) 殼 *què* < *khæwk* < **khrok* 'hollow shell, hollow'

Since this latter has medial **-r-*, perhaps we have **r* in the phonetic compound

(568) 彀 *gòu* < *kuwH* < **k(r)oks* 'draw a bow to the full'.

Before acute codas, **ru* and **ro* generally diphthongize to **rwɨ* and **rwa*:

(569) 綸 *guān* < *kwɛn* < **krwin* < **krun* 'blue or green sash; kombu; head kerchief' (also read *lún* < *lwin* < **C-rjun* 'cord; to twist')

(570) 關 *guān* < *kwæn* < **krwan* < **kron* 'barrier'

The development of syllables like **Pron* and **Prot* is more complex. If **rounding diphthongization** preceded ***w*-neutralization** (the change which made *-w-* nondistinctive after labials), then we would expect **Pron* > *Prwan* > *Pran* > *Pæn*. This would account for the development of

(571) 蠻 *mán* < *mæn* < **mron* 'Southern barbarian'.

But the following example seems to show a development **Prot* > *Pɛt*:

(572) 拔 *bá* < *bɛt* < **brot* 'pull out', also read *bèi* < *bajH* < **bots* 'thinned out (as a forest, some trees having been pulled up)'.

(The **o* is supported by rhymes of the second reading **bots* > *bajH* in Odes 237.8C and 241.3A.) This might reflect a dialect in which the vowel of **Prot*, instead of diphthongizing to **wa*, simply lost its rounding, giving **Prʌt* > *Prɛt* > *Pɛt*. But the *Qièyùn* has no syllable *bæt* (Shào Róngfēn 1982: 151), so perhaps original *bæt* and *bɛt* have simply fallen together.

7.2.3. Division-II syllables with initials of type *TSr-*

Although the majority of words with division-II finals may be reconstructed with medial **-r-* only, at least some division-II words with retroflex sibilant initials (MC *tsr-*, *tsrh-*, etc.) are to be reconstructed with **-rj-*. The **-j-* was eventually lost after initials of this type through the change I call ***TSrj-* > *TSr-***. (This change was discussed briefly in section 2.3.6 above.) An example is

(573) 生 *shēng* < *sræng* < *srjæng* < **srjeng* 'live, be born'

There is some vacillation in the representation of syllables like this in our Middle Chinese sources. For example, the *fǎnqiè* spelling for 生 *shēng* in the *Qièyùn* is

所京反
suǒ jīng fǎn, i.e. *sr(joX)* + *k(jæng)* = *srjæng*.

The use of the final speller 京 *jīng* < *kjæng* clearly indicates a pronunciation *srjæng*. The spelling in the *Guǎngyùn*, however, indicates *-æng*:

所庚切
suǒ gēng qiè, i.e. *sr(joX) + k(æng) = srængH*

Even in the *Qièyùn*, there is a *qùshēng* pronunciation for 生 whose *fǎnqiè* spelling indicates *-ængH*, not *-jængH*:

所更反
suǒ gèng fǎn = srjoX + kængH = srængH

We find many other similar alternations between division-III and division-II finals, as in

(574) 差 *cī ~ chā ~ chāi < tsrhje ~ tsrhɛi ~ tsrhɛj < *tshrjaj* 'distinction; to select'.

Here I suspect that the readings *tsrhɛi* and *tsrhɛj* result from the application of the change ***TSrj- > TSr-*** to an original *tsrhje* in two dialects with slightly different pronunciations of MC *-je*. Note that the reading *cī < tsrhje*, apparently unaffected by ***TSrj- > TSr-***, is still preserved in modern Mandarin, but chiefly in the expression 參差 *cēncī < tsrhim-tsrhje* 'of varying lengths', which occurs in Ode 1; its pronunciation reflects the reading tradition of the *Shījīng* preserved in the *Jīngdiǎn shìwén* and (more relevant to modern pronunciation, perhaps) in Zhū Xī's *Shī jí zhuàn* 詩集傳.[188]

Such vacillations probably indicate that the change ***TSrj- > TSr-*** was in progress during the Middle Chinese period; the division-III spellings represent synchronic variation, or conservative dialects, or *fǎnqiè* spellings preserved from an earlier period, or all of these. As a result of ***TSrj- > TSr-***, the retroflex *TSr-* initials and the palatal *TSy-* initials eventually fell into complementary distribution, and by Late Middle Chinese they merged.

Dǒng Tónghé (1944 [1948]: 20–21) also noticed the common alternation of division-II and division-III finals after *TSr*-type initials, but his explanation was the reverse of the one just outlined: he assumed that these words belonged originally to division II (reconstructed with distinctive Old Chinese vowels in his system), and that the division-III forms were later developments. He further attributed the development of retroflex sibilant initials to the influence of the distinctive division-II vowels. Translated into my framework, this amounts to proposing a change *TSr- > TSrj-* rather than ***TSrj- > TSr-***.

I see two main difficulties with Dǒng Tónghé's approach. First, the philological evidence indicates that the change was in the other direction: the division-III forms are preserved only in the classical reading tradition, while it is the division-II forms which have survived in modern speech. This is

illustrated by 差 *cī ~ chā ~ chāi* above. The same is true of 生 *shēng* in modern dialects; although Mandarin *shēng* could reflect either *srjæng* or *sræng*, the Cantonese reading *sàang* indicates *sræng* rather than *srjæng*.

The second difficulty with Dǒng's approach is that it fails to explain the final *-æng* in 生 *shēng*, which rhymes in the traditional 耕 Gēng group of Old Chinese (my **-eng*, Li's **-ing*). The final *-æng* usually comes from the 陽 Yáng group (**-ang*); the Middle Chinese reading *sræng* for 生 has generally been regarded as irregular (Karlgren 1957, item 812a; Li 1971 [1980]: 69). But we can account for the reading *sræng* once we recognize that the final **-rjeng* of the 耕 Gēng group regularly gives MC *-jæng*. (This is discussed further in section 7.3.1.3 below; see also section 10.2.9.) Thus OC **srjeng* regularly gives MC *srjæng*, which then becomes *sræng* by ***TSrj- > TSr-***. But if we assume that 生 *shēng* originally had no medial **-j-*, then the final *-æng* is unexplained.

Although some division-II words with *TSr-* initials originally had medial **-j-*, we need not assume that all of them did; I will assume that division-II syllables with MC *TSr-* initials might reflect either **TSr-* or **TSrj-*.

7.3. Syllables with medial **-j-* and **-rj-*: division III

So far, we have discussed the division-I and division-IV finals (reconstructed without medials) and the division-II finals (reconstructed with medial **-r-*). It remains to discuss the division-III finals, which I reconstruct with medials **-j-* and **-rj-*.[189] The major challenge in reconstructing the division-III finals is that there are so many of them: of over a hundred finals attested in the *Qièyùn*, more than half belong to division III.[190] In each case, we must decide what combinations of Old Chinese medials and main vowels to reconstruct.

7.3.1. Division-III finals and their Old Chinese origins

If we examine division-III finals in terms of the traditional analysis of Old Chinese rhyming, we find that a single rhyme group may include as few as one division-III final (as in the 東 Dōng group) or as many as six (as in the 元 Yuán group). In the following sections I will discuss representative rhyme groups, moving from simple to more complex cases in order to develop a reconstruction system for division-III finals.

7.3.1.1. The 東 *Dōng group* (*-ong)

The only Middle Chinese division-III final from the 東 Dōng group is *-jowng*, as in

(575) 衝 *chōng* < *tsyhowng* < **thjong* 'assaulting engine, knocker'.

However, even though there is only one division-III final from this group in Middle Chinese, we must reconstruct both **-jong* and **-rjong* in Old Chinese in order to account for the contrast between Middle Chinese palatal initials, as in the last example, and retroflex initials, as in

(576) 重 *chóng* < *drjowng* < **drjong* 'double' (also read *zhòng* < *drjowngX* < **drjong?* 'even more', *zhòng* < *drjowngH* < **drjongs* 'heavy').

There is *xiéshēng* evidence that this **-rjong* occurred after grave initials as well, as in

(577) 龔 *gōng* < *kjowng* < **krjong* 'respect'

whose phonetic is 龍 *lóng* < *ljowng* < **C-rjong* 'dragon'. The character 龔 *gōng* is now used chiefly as a surname, but in early script it was used also in the sense of its homonyms 供 'to furnish' and 恭 'to respect' (the latter also being the name of a Western Zhōu king; see Dīng Fúbǎo 1928–1932 [1976]: 1140). This suggests that both **-jong* and **-rjong* originally occurred after grave initials, but had merged by Middle Chinese times. (This is consistent with the view that ***r*-color** did not affect rounded vowels; see section 7.2.1 above.) Thus we can reconstruct the finals of the 東 Dōng group as follows:

**-ong* > *-uwng* (division I)
**-rong* > *-æwng* (division II)
**-jong*, **-rjong* > *-jowng* (division III)

7.3.1.2. The 陽 *Yáng group* (*-ang)

Other traditional rhyme groups show a more complex set of division-III reflexes. For example, the 陽 Yáng group includes the following finals:

I	*-ang*	*-wang*
II	*-æng*	*-wæng*
III	*-jang*	*-jwang*
	-jæng	*-jwæng*

The finals with *-w-* occur only after velar and laryngeal initials, so they can be accounted for by reconstructing Old Chinese initials of type $*K^w$-, and we need not discuss them separately.

Note that in this group there are finals of division I, but no finals of division IV, indicating that we should reconstruct this group with a back vowel. The division-I and division-II finals are easily reconstructed according to the hypotheses outlined so far:

I	*-ang*	< **-ang*
II	*-æng*	< **-rang*

But in division III, we have two contrasting finals *-jang* and *-jæng*, as in the following items:

(578) 疆 *jiāng* < *kjang* 'boundary'

(579) 京 *jīng* < *kjæng* 'hill, capital city'

Though these words no longer rhyme in Middle or Modern Chinese, they both clearly rhyme as **-ang* in Old Chinese. (For example, they rhyme with each other in Ode 241.6.) It seems natural to reconstruct MC *-jang* as OC **-jang*, but how should we reconstruct MC *-jæng*? Karlgren reconstructed MC *-jæng* as **-i̯ăng*, with a short **ă* (as opposed to MC *-jang* < **-i̯ang* with a long **a*). This requires assuming a contrast of vowel length which did not affect rhyming. Li Fang-kuei reconstructed MC *-jæng* as **-jiang*, but this is suspect from a distributional point of view, because **-iang* does not occur by itself in his system, but only after medial **-j-*.

The solution I propose is to reconstruct 京 *jīng* < *kjæng* as **krjang*. The reconstruction with **-r-* is supported by the fact that 京 *jīng* is phonetic in

(580) 涼 *liáng* < *ljang* < **g-rjang* 'cool, cold'.

Note also that the *Qièyùn* places 京 in the 庚 Gēng (Kæng) rhyme, along with division-II words in *-æng* which I have already reconstructed as **-rang*. If we assume that ***r-color** applied in syllables both with and without **-j-*, then we can account for the Middle Chinese reflex *kjæng* < **krjang* without assuming any additional changes: **r* fronted a following **a* to MC *-æ-* in both **-rang* and **-rjang*.

We must reconstruct a final **-rjang* after acute initials in any case to account for words like the following:

(581) 霜 *shuāng* < *srjang* < **srjang* 'hoarfrost'

(582) 張 *zhāng* < *trjang* < **trjang* 'to draw the bow'

Note, however, that while the vowel of OC **-rjang* is fronted after grave initials (as in 京 *kjæng* < **krjang*), the original back vowel remains after acute initials; perhaps this is because the **r* was already analyzed as a feature of the initial in syllables like **srjang* and **trjang* at the time ****r*-color** applied. Similarly, the original vowel remains in syllables like **g-rjang*, possibly because the initial **g-* had already disappeared, and **r* was in initial position when ****r*-color** applied.

As with the division-II words which show *xiéshēng* contacts with initial *l-*, the reconstruction *kjæng* < **krjang* simultaneously accounts for both the Middle Chinese vowel *-æ-* and the *xiéshēng* evidence; by contrast, Karlgren reconstructed 京 *jīng* as **klja̯ng* (Karlgren 1957, item 755a), with both **l* (to account for the *xiéshēng* connection with 涼 *liáng*) and short **a̯* (to account for the Middle Chinese final *-jæng*). Similarly, Li's reconstruction would be **kljiang* (1971 [1980]: 60–61]). In the reconstruction proposed here, a single element accounts for both phenomena.

Let us consider a similar contrasting pair with a labial initial:

(583) 倣 *fǎng* < *pjangX* < **pjang?* 'imitate'

(584) 丙 *bǐng* < *pjængX* < **prjang?* 'cyclical sign (3rd heavenly stem)'

Note that 倣 *fǎng*, which retained the original back vowel in Middle Chinese, later developed a labiodental initial *f-*, while 丙 *bǐng*, whose vowel was fronted by **r*, did not. This fits well with the theory of labiodentalization proposed by Y. R. Chao (1941), in which labial initials became labiodental before MC *-j-* followed by a back vowel (see section 6.1.1). In this case, too, the reconstruction of **-rjang* is supported by evidence from the writing system. In early script, 丙 *bǐng* looks like



which, when doubled to



becomes the early form of

(585) 兩 *liǎng* < *ljangX* < **b-rjang?* 'a pair'.

(See Zhōu Fǎgāo et al. 1974a: items 1037, 1038, and 1846.)

The pattern we find in the 陽 Yáng group can be extended to other back-vowel rhyme groups of Old Chinese which include more than one division-III final. For example, in the traditional 蒸 Zhēng rhyme group (**-ing*), we find contrasts like the following:

(586) 馮 *féng* < *bjuwng* < **bjing* '(surname)'

(587) 憑 *píng* < *bing* < **brjing* 'to rely on'

Here the vowel of 馮 **bjing* has been rounded under the influence of the labial initial; I call this change **rounding assimilation. Rounding assimilation** applied to OC **-ji, *-jing,* and **-jik* in syllables with labial, labiovelar, or labiolaryngeal initials; it was blocked in syllables with **-rj-*, presumably because of the fronting effect of ****r*-color**. Compare also the following pairs:

(588) 否 *fǒu* < *pjuwX* < **pji?* 'be not, be wrong'

(589) 丕 *pī* < *phij* (III) < **phrji* 'great, grand'

(590) 福 *fú* < *pjuwk* < **pjik* 'good fortune'

(591) 逼 *bī* < *pik* < **prjik* 'to urge, press'

Except for the rounding due to **rounding assimilation**, the development of **-jing* and **-rjing* is parallel to that of **-jang* and **-rjang*: when only medial **-j-* is present, the Middle Chinese reflex has a back vowel, which conditions labiodentalization of labial initials; but the combination **-rj-* fronts the main vowel and prevents labiodentalization from occurring.

In support of the reconstruction *Ping* < **Prjing,* consider the following pair of undoubtedly related words:

(592) 冰 *bīng* < *ping* < **prjing* 'ice'

(593) 凌 *líng* < *ling* < **b-rjing* 'ice'

To summarize: when Old Chinese back-vowel rhyme groups include more than one division-III final, we can usually account for them by reconstructing both **-j-* and **-rj-*, and assuming that ****r*-color** and ****r*-loss** applied in syllables with **-j-* more or less as it did in syllables without **-j-*.

7.3.1.3. The 耕 *Gēng group* (*-eng)

When we turn to a front-vowel rhyme group like 耕 Gēng (*-*eng*), we similarly find two division-III finals (again omitting the finals with medial *-w-*, which occur only with velar and laryngeal initials):

II	*-ɛng*
III	*-j(i)eng*
	-jæng
IV	*-eng*

(Recall that in my Middle Chinese notation, the final *-jeng* is written as *-jieng* after grave initials to indicate that it is placed in division IV of the rhyme tables; see section 2.4.1.4 above.) The following pair illustrates the contrast between *-jieng* and *-jæng* in this rhyme group:

(594) 名 *míng* < *mjieng* 'name'

(595) 鳴 *míng* < *mjæng* 'cry of birds; sound of animals generally'

Both clearly rhyme as *-*eng* in the *Shījīng* (for example, see Ode 106.2A for 名 *míng* < *mjieng*, and 96.1A for 鳴 *míng* < *mjæng*). Since MC *-jæng* usually comes from the 陽 Yáng (*-*ang*) rhyme group, words like 鳴 *míng* < *mjæng* in the 耕 Gēng group have commonly been regarded as irregular.[191] There are, however, a good number of words in MC *-jæng* in the 耕 Gēng group, including such common words as 平 *píng* < *bjæng* 'level, even' and 驚 *jīng* < *kjæng* 'to be afraid'. By analogy to the development *-jæng* < **-rjang* in the 陽 Yáng group, I reconstruct also *-jæng* < **-rjeng* in the 耕 Gēng group. In support of the reconstruction with **rj* we may cite the word

(596) 命 *mìng* < *mjængH* < **mrjeng(s)* < **mrjing(s)* 'command'

which is interchangeable in early script with

(597) 令 *lìng* < *ljengH* < **C-rjeng(s)* < **C-rjing(s)* 'command'.

(Here **-*eng* may be from earlier **-*ing*; see sections 7.1.5 and 10.1.4.) Thus, in grave-initial syllables, the finals of the 耕 Gēng group developed as below:

**-eng* > MC *-eng*
**-reng* > MC *-ɛng*
**-jeng* > MC *-jieng*
**-rjeng* > MC *-jæng*

It is somewhat surprising that *-*rjeng* and *-*reng* should have different Middle Chinese vowels; this means that, in order to account for the *Qièyùn* system, ***r*-color** must be formulated so as to apply slightly differently depending upon whether medial *-*j*- is present or not.[192]

The development of acute-initial syllables differs slightly from that of grave-initial syllables. We appear to have *-*rjeng* > *-jæng* after initials of the **TS*- type, as after grave initials. As noted earlier, this reconstruction, along with the change ***TSrj-* > *TSr-***, will account for the Middle Chinese development of

(598) 生 *shēng* < *sræng* < *srjæng* < **srjeng* 'live, be born',

which has commonly been treated as irregular in previous reconstructions. But syllables of the form **Trjeng* become *Trjeng* in the *Qièyùn*, not the *Trjæng* which might be expected:

(599) 貞 [*zhēn*] < *trjeng* < **trjeng* 'to divine'.

Middle Chinese dialects probably varied in their treatment of details of this kind, and it is possible that the *Qièyùn*'s treatment of these finals does not accurately represent any single dialect.

The 陽 Yáng and 耕 Gēng groups are typical back-vowel and front-vowel groups respectively: 陽 Yáng includes division-I finals (*-ang* and *-wang*) but no division-IV finals, and the 耕 Gēng group includes division-IV finals (*-eng* and *-weng*) but no division-I finals. Each group has two division-III finals (excluding finals with *-w*-), one reconstructed with *-*j*- and one with *-*rj*-. From a Middle Chinese point of view, we can illustrate the development of grave-initial syllables in the 陽 Yáng and 耕 Gēng groups as shown in Table 7.5.

Table 7.5. Old Chinese finals in *-*ang* and *-*eng* (after grave initials)

陽 Yáng group (*-*ang*)		MC	耕 Gēng group (*-*eng*)
*-*ang* >	I	*-ang*	
*-*rang* >	II	*-æng*	
		-ɛng	< *-*reng*
*-*jang* >	III	*-jang*	
*-*rjang* >		*-jæng*	< *-*rjeng*
		-jieng	< *-*jeng*
	IV	*-eng*	< *-*eng*

Note that medial *-*r*- had a fronting effect in both *-*rang* and *-*rjang*, which eventually merged with *-*reng* (in Late Middle Chinese) and *-*rjeng* (already in Early Middle Chinese) respectively. Medial *-*r*- must also have contributed some other feature or features (perhaps [– tense]), since after ***r*-loss**, division-II *-ɛng* < *-*reng* remained distinct from division-IV *-eng* < *-*eng*, and division-III *-jæng* < *-*rjeng* remained distinct from division-IV *-jieng* < *-*jeng*. The precise effect of *-*r*- in division-III syllables is discussed further in section 7.3.3 below.

7.3.1.4. The 元 *Yuán group* (*-an, *-en, *-on)

The basic pattern of the 陽 Yáng and 耕 Gēng groups may be extended to yet more complex cases, such as the 元 Yuán group. The traditional 元 Yuán group includes the following Middle Chinese finals:

I	*-an, -wan*
II	*-æn, -wæn*
	-ɛn, -wɛn
III	*-jon, -jwon*
	-jen, -jwen
	-jien, -jwien
IV	*-en, -wen*

The complexity of this group is directly related to the fact that it contains both division-I finals (*-an, -wan*) and division-IV finals (*-en, -wen*); it is as if a back-vowel group like 陽 Yáng and a front-vowel group like 耕 Gēng have been combined.[193] I have already shown that, according to the front-vowel hypothesis and the **r*-hypothesis, we must reconstruct

*-*an* > *-an*
*-*en* > *-en*
*-*ran* > *-æn* (> LMC *-(j)aan*)
*-*ren* > *-ɛn* (> LMC *-(j)aan*).

(The 元 Yuán group also includes words with finals in *-*on*, as we have seen, but these are irrelevant to the present discussion, and I will ignore them here.) These are directly analogous to the corresponding developments in the 陽 Yáng and 耕 Gēng groups:

**-ang* > *-ang*
**-eng* > *-eng*
**-rang* > *-æng* (> LMC *-(j)aajŋ*)
**-reng* > *-ɛng* (> LMC *-(j)aajŋ*)

The division-III finals of the 元 Yuán group also correspond directly to finals in *-ng*:

元 Yuán	陽 Yáng and 耕 Gēng
-jon	*-jang*
-jen	*-jæng*
-jien	*-jieng*

MC *-jon* and *-jang* are alike in that both probably had back main vowels in Early Middle Chinese, and both triggered labiodentalization of labial initials in Late Middle Chinese: compare

(600) 反 *fǎn* < LMC *faan´* < EMC *pjonX* < **pjan?* 'turn around'

(601) 倣 *fǎng* < LMC *faaŋ´* < EMC *pjangX* < **pjang?* 'imitate'.

Middle Chinese *-jen* and *-jien*, like *-jæng* and *-jieng*, probably had front vowels, and did not trigger labiodentalization. But *-jen* and *-jæng* were placed in division III of the rhyme tables, while *-jien* and *-jieng* were placed in division IV. By analogy to the reconstructions of the 陽 Yáng and 耕 Gēng groups, we may reconstruct the division-III finals of the 元 Yuán group as follows:

**-jan* > MC *-jon* (cf. **-jang* > MC *-jang*)
**-jen* > MC *-jien* (cf. **-jeng* > MC *-jieng*)
**-rjan* > MC *-jen* (cf. **-rjang* > MC *-jæng*)
**-rjen* > MC *-jen* (cf. **-rjeng* > MC *-jæng*)

From a Middle Chinese point of view, these developments can be summarized as shown in Table 7.6. The parallelism with the 陽 Yáng and 耕 Gēng groups is apparent if one compares Table 7.6 with Table 7.5.

There are, to be sure, some differences between the 元 Yuán group on the one hand and the 陽 Yáng and 耕 Gēng groups on the other. The main vowel of *-jon* (which was probably [jʌn]) underwent a change ****a*-raising**, specific to syllables with acute codas: while MC *-jang* < **-jang* still rhymed with MC *-ang* < **-ang*, MC *-jon* [jʌn] < **-jan* did not rhyme with MC *-an* < **-jan*, but rather with MC *-on* [ʌn] < **-in*.[194] Also, *-jon*, unlike *-jang*, occurs only with grave initials. This is because original **-jan* was fronted to

Table 7.6. Old Chinese finals in **-an* and **-en*

OC **-an* finals		MC	OC **-en* finals
**-an* >	I	*-an*	
**-ran* >	II	*-æn*	
		-ɛn	< **-ren*
**-jan* >	III	*-jon*	
**-rjan* >		*-jen*	< **-rjen*
		-jien	< **-jen*
	IV	*-en*	< **-en*

-jen in acute-initial syllables by the change **acute fronting**, illustrated by the following pair:

(602) 言 *yán* < *ngjon* < **ngjan* 'word'

(603) 然 *rán* < *nyen* < **njan* 'thus'

Another difference is that MC *-jen* and *-jien*, unlike *-jæng* and *-jieng*, are placed in the same *Qièyùn* rhyme: 仙 Xiān (Sjen). MC *-jen* and *-jien* are thus an example of the *chóngniǔ* distinctions, described in section 2.4.1.4 above. (The synchronic and diachronic analysis of these distinctions is discussed further in section 7.3.3 below.) However, the parallels between *-jæng* and *-jieng* on the one hand and *chóngniǔ* finals like *-jen* and *-jien* on the other are clear, and the proposed reconstruction accounts for the parallels.

7.3.1.5. The 宵 *Xiāo group* (*-aw, *-ew)

We may complete our survey of division-III finals in representative rhyme groups by examining the 宵 Xiāo group. This group is parallel in many ways to the 元 Yuán group; it includes the following Middle Chinese finals:

I	*-aw*
II	*-æw*
III	*-jew*
	-jiew
IV	*-ew*

Like 元 Yuán, this group includes both a division-I final (*-aw*) and a division-IV final (*-ew*); this indicates that both front and back vowels are

involved, and we will see in Chapter 10 that the rhyme data generally bear this out. I reconstruct

*-*aw* > -*aw*
*-*ew* > -*ew*.

But note that in divisions II and III we have fewer Middle Chinese finals in this group than in the 元 Yuán group. In division II, there is only a single final -*æw*, where the 元 Yuán group had both -*æn* < *-*ran* and -*ɛn* < *-*ren*. Perhaps there was originally a final -*ɛw* < *-*rew*, but if so it has already merged as -*æw*, just as -*æn* and -*ɛn* eventually merged in Late Middle Chinese.

Similarly, there are only two division-III finals in this group: -*jew* and -*jiew*, a *chóngniǔ* pair which contrast only after grave initials. What is missing is a labiodentalizing final parallel to MC -*jon* < *-*jan* and -*jang* < *-*jang*. We might expect a syllable like original **Pjaw* to develop a labiodental initial in Late Middle Chinese, but this does not happen (with the result that modern Mandarin lacks syllables like *fāo*). I will assume that original *-*jaw* merged with *-*rjaw* and *-*rjew* as division-III -*jew*, so that we have the pattern shown in Table 7.7.

Table 7.7. Old Chinese finals in *-*aw* and *-*ew*

OC *-*aw* finals		MC	OC *-*ew* finals
*-*aw* >	I	-*aw*	
*-*raw* >	II	-*æw*	< *-*rew*
-(r)jaw* >	III	-*jew*	< *-*rjew*
		-*jiew*	< *-*jew*
	IV	-*ew*	< *-*ew*

We would find a similar situation in the 元 Yuán group if -*jon* had merged with -*jen* before the development of labiodental initials. In fact, after nonlabial initials, -*jon* and -*jen* did eventually merge; this is indicated by the ninth-century *fǎnqiè* of Huìlín's *Yíqiè jīng yīnyì*, and by the treatment of these finals in the rhyme tables. There are several other rhyme groups where back-vowel finals with *-*j-* and *-*rj-* had merged or partially merged already in Early Middle Chinese. For example, *-*jaj* and *-*rjaj* merged as MC -*je*; **Kjɨ* and **Krjɨ* merged as MC *Ki*; **Kjɨng* and **Krjɨng* merged as MC *King*; and **Kjɨk* and **Krjɨk* merged as MC *Kik*.

7.3.2. The **rj*-hypothesis

The rhyme groups just discussed illustrate the reconstruction of **-j-* and **-rj-* in division-III finals in my reconstruction. This approach to the effects of medial **-r-* in division-III syllables, which we may call the **rj*-hypothesis, is adapted from Pulleyblank (1962: 111–14). We may summarize this approach as follows:

> Contrasts among Middle Chinese division-III syllables whose predecessors rhymed with each other in Old Chinese are often due to the contrast of **-j-* and **-rj-*. In particular,
>
> - labiodentalizing finals (including the independent division-III finals) generally reflect OC **-j-* plus back vowels;[195]
> - division-IV *chóngniǔ* finals reflect OC **-j-* plus front vowels;
> - division-III *chóngniǔ* finals reflect OC **-rj-* plus back or front vowels (or, in some cases, **-j-* plus an original back vowel which was fronted by some other process).

As Pulleyblank pointed out (1962: 111–13), there is often *xiéshēng* evidence to support the presence of **r* in division-III *chóngniǔ* words. I have already cited the use of 京 **krjang* as phonetic in 涼 **g-rjang*. Here are some other examples:

1. The division-III *chóngniǔ* word

(604) 變 *biàn* < *pjenH* (III) < **prjons* 'change'

has as phonetic the *l*-initial word

(605) 巒 *luán* < *lwan* < **b-ron* 'bells on horse's trapping'.

2. The *l*-initial word

(606) 律 *lǜ* < *lwit* < **b-rjut* 'law, rule'

has the same phonetic as the division-III *chóngniǔ* word

(607) 筆 *bǐ* < *pit* (III) < **prjut* 'writing pencil'.

These two forms could well be from the same root, both being perhaps semantic extensions of a root meaning "to draw a line".[196]

3. The *l*-initial word

(608) 立 *lì* < *lip* < **g-rjɨp* 'to stand'

is phonetic in the division-III *chóngniǔ* word

(609) 泣 *qì* < *khip* (III) < **khrjip* 'to weep' (cf. Tibetan *khrab-khrab* 'a weeper, one who weeps').

Support for the **rj*-hypothesis can also be found in early sound glosses and character substitutions. For example, Coblin (1983: 232, gloss 119) quotes a gloss from the commentary on *Huáinánzǐ* 淮南子 by Gāo Yòu 高誘 (fl. A.D. 196–219) in which the division-III *chóngniǔ* word

(610) 菌 [*jūn*] < *gwinX* (III) < **grjun?* 'mushroom'[197]

is said to be "read like [dú sì 讀似]" the *l*-initial word

(611) 綸 *lún* < *lwin* < **g-rjun* 'cord; to twist'.

Note that this latter also has the division-II reading

(612) 綸 *guān* < *kwɛn* < **krun* 'blue or green sash; kombu; kerchief'.[198]

To take another example, the division-III *chóngniǔ* word

(613) 緡 *mín* < *min* (III) < **mrjun* 'line, string'

occurs in Ode 24.3, in the line

維絲伊緡
wéi sī yī mín
'Of silk is the line'

where it rhymes as **-un*. Both the *Ěryǎ* and the Máo commentary gloss 緡 *mín* < **mrjun* here as

(614) 綸 *lún* < *lwin* < **g-rjun* 'cord; to twist'.

(Perhaps the use of **g-rjun* to gloss **mrjun* indicates that the "disappearing **g-*" of **g-rjun* had already disappeared by the time of this gloss.) Moreover, 緡 *mín* occurs in the line

言緡之絲
yán mín zhī sī
'one strings it with silk'

in Ode 256.9, which is closely paralleled by the line

言綸之繩
yán lún zhī shéng
'I twisted the line for him'

in Ode 226.3, where we have 綸 *lún* < *lwin* in place of the division-III 緡 *mín* < *min*. These associations support the reconstruction of **-rj-* (and the rounded vowel **u*) in 緡 *mín* < *min* < **mrjun* 'line, string', and suggest, moreover, that this word and 綸 *lún* < *lwin* < **g-rjun* 'twist a cord' were both derived from the same root.

As with medial **-r-*, the effects of medial **-rj-* can be attributed to the change ***r-color**, by which medial **-r-* contributed certain features to the following segments, and ***r-loss**, by which these features became distinctive when medial **-r-* was lost. The exact formulation of these processes depends, however, on how the *chóngniǔ* distinctions of Middle Chinese are analyzed synchronically. This is the subject of the following section.

7.3.3. The nature of the Middle Chinese *chóngniǔ* distinctions

The *chóngniǔ* distinctions, such as that mentioned above between *-jen* and *-jien,* are a long-standing puzzle in Chinese historical phonology, for they have left few traces in modern dialects. (As noted in Chapter 2, the distinction in my Middle Chinese notation between *-j-* and *-ji-* is merely for convenience, and is not intended as a serious synchronic analysis.) I believe the answer to this problem probably lies in specifying more precisely the characteristics of the various dialects at the time of the *Qièyùn*; it seems likely that the *Qièyùn*'s treatment of such syllables is a compromise between two or more varieties of Early Middle Chinese. A detailed consideration of such matters is beyond the scope of this book, and I will not attempt a definite answer here. Nevertheless, since the analysis of this distinction in Middle Chinese obviously bears on the reconstruction of Old Chinese, I will discuss here some of the proposed solutions and their implications for Old Chinese reconstruction.

As mentioned in section 2.4.1.4, there are some scholars who regard the *chóngniǔ* distinctions as artificial archaisms in the *Qièyùn,* and thus do not mark them in their Middle Chinese reconstructions. While it is quite possible that some varieties of Early Middle Chinese failed to make these distinctions, they persist in the Late Middle Chinese rhyme tables and other later sources, and leave traces in Sino-Korean and Sino-Vietnamese, and in the Japanese *man'yōgana* script; it is most unlikely that they were entirely artificial.

Among those scholars who recognize the *chóngniǔ* distinctions, there are two major points of view about how they should be interpreted: some attribute the distinction to the medial, and some to the main vowel. The

medial approach was taken by Arisaka Hideyo (1937–1939 [1957]) and Kōno Rokurō (1939), who made the first serious attempt to reconstruct the *chóngniŭ* distinctions. They proposed to account for the *chóngniŭ* doublets by reconstructing two distinct Middle Chinese medials corresponding to Karlgren's "weak consonantal -*i̯*-" (my -*j*-): a palatal medial -*i̯*- in division-IV *chóngniŭ* words like 便 *biàn* < *bjienH* 'comfortable, convenient', and a nonpalatal medial -*ï̯*- in division-III *chóngniŭ* words like 弁 *biàn* < *bjenH* 'cap'.[199] This way of accounting for the *chóngniŭ* doublets appears to have many advantages. As we saw in section 7.1.2.1, division-IV *chóngniŭ* words with velar initials show up in Sino-Korean with medial -*y*-, but division-III *chóngniŭ* words do not:[200]

(615) 遣 *qiǎn* < *khjienX* (IV) 'send', Sino-Korean *kyən*, Arisaka's *khi̯ən:*

(616) 愆 *qiān* < *khjen* (III) 'exceed', Sino-Korean *kən*, Arisaka's *khï̯ən*

One can account for these Sino-Korean reflexes by saying that Sino-Korean preserved palatal -*i̯*- but ignored nonpalatal -*ï̯*-. Also, in Sino-Vietnamese, labial initials usually show up as dentals before division-IV *chóngniŭ* finals, but as labials elsewhere:

(617) 民 *mín* < *mjin* (IV) 'people', Sino-Vietnamese *dân*, Arisaka's *mi̯en*

(618) 珉 *mín* < *min* (III) 'precious stone', Sino-Vietnamese *mân*, Arisaka's *mï̯en*

(The consonant written *d*- in Vietnamese is now pronounced [z] or [j], depending on dialect.) One can account for the Sino-Vietnamese pronunciations by saying that labials became dentals before palatal -*i̯*- but not before nonpalatal -*ï̯*-. And of course, attributing the *chóngniŭ* distinction to the medial rather than the main vowel accounts nicely for the fact that division-III and division-IV *chóngniŭ* words are placed in the same *Qièyùn* rhymes; we usually assume that all syllables in the same *Qièyùn* rhyme share the same main vowel, but it is not uncommon for a single rhyme to contain syllables with different medials.

This evidence seems to favor interpreting the *chóngniŭ* distinctions as a distinction in the Middle Chinese medial. However, it is clear from the Old Chinese evidence that main-vowel distinctions must also have been involved, at least in the origins of the *chóngniŭ* distinction, whatever the synchronic nature of the distinction was in Middle Chinese. The finals -*je* and -*jie* will serve as an example. In non-*chóngniŭ* syllables, MC -*je* can originate in either the 歌 Gē group or the 支 Zhī group of the traditional

analysis. For example, the following are homonyms in Middle Chinese, but rhymed differently in Old Chinese:

(619) 池 *chí* < *drje* < **lrjaj* 'pool, pond' (歌 Gē group, rhymes as **-aj*)

(620) 篪 *chí* < *drje* < **lrje* 'a kind of flute' (支 Zhī group, rhymes as **-e*)

But Chinese scholars at least as early as Zhāng Bǐnglín (1869–1936) noticed that among grave-initial syllables, the division-IV *chóngniǔ* final *-jie* comes only from the front-vowel 支 Zhī group, and that division-III *chóngniǔ* words in *-je* come mostly from the back-vowel 歌 Gē group. A typical example is the following contrast:

(621) 陂 *bēi* < *pje* (III) < **p(r)jaj* 'slope, bank' (歌 Gē group)

(622) 卑 *bēi* < *pjie* (IV) < **pje* 'low, humble' (支 Zhī group)

The situation in the 真 Zhēn (Tsyin) rhyme is similar. In non-*chóngniǔ* words, MC *-in* can originate in either the front-vowel 真 Zhēn group (**-in*) or in the back-vowel 文 Wén group (**-in* or **-un*), but the division-IV *chóngniǔ* final *-jin* comes only from the front-vowel 真 Zhēn group. Such apparent agreement between the *chóngniǔ* distinctions and the Old Chinese rhyme groups led Zhāng Bǐnglín to the conclusion that the *chóngniǔ* distinctions were an archaism, preserving traces of Old Chinese distinctions long lost from actual speech.

The fact that the *chóngniǔ* distinctions are related to main-vowel distinctions in Old Chinese suggests that main-vowel distinctions may have been involved in Middle Chinese as well. Dǒng Tónghé (1948a [1974]) and Zhōu Fǎgāo (1948a [1968]) took the main-vowel approach in their early papers on the *chóngniǔ* problem; their reconstructions of 珉 *mín* < *min* and 民 *mín* < *mjin* are listed below, together with Arisaka's, for comparison:

	民	珉
MC	*mjin*	*min*
Arisaka	*mi̯en*	*mïen*
Dǒng Tónghé	*mi̯en*	*mi̯ěn*
Zhōu Fǎgāo	*mi̯ěn*	*mi̯ěn*

There are advantages and disadvantages to both the medial approach and the main-vowel approach. Clearly, the medial approach is easier to reconcile with the fact that division-III and division-IV *chóngniǔ* syllables are assigned to the same *Qièyùn* rhymes; supporters of the main-vowel solution must explain why the *Qièyùn* authors, who give the impression of being very meticulous in making rhyming distinctions, would have assigned

syllables with different main vowels to the same rhyme. The medial solution also seems to fit the Sino-Korean and Sino-Vietnamese evidence well. But the medial solution also requires us to assume a rather unusual-looking contrast between two unrounded medials -i̯- and -ï̯-, and the Old Chinese evidence makes it clear that vowel distinctions were involved at some stage. Note also that the finals *-jæng* (division III) and *-jieng* (division IV), which are analogous in many ways to the true *chóngniŭ* distinctions, are in fact assigned to different *Qièyùn* rhymes. Perhaps in some dialects the true *chóngniŭ* distinctions took a similar form.

It is quite possible that both the medial solution and the main-vowel solution are correct, but for different dialects or different time periods. As it turns out, either type of solution is easily derivable from the reconstruction proposed here, with minor alterations of the phonological changes assumed. To illustrate this, let us consider two analyses of the Middle Chinese finals listed in Table 7.8: analysis 1, a main-vowel analysis, and analysis 2, a medial analysis like Arisaka's:

Table 7.8. Two analyses of selected finals in *-n*

MC	analysis 1	analysis 2	OC origins
-æn	/-æn/	/-æn/	**-ran*
-ɛn	/-ɛn/	/-ɛn/	**-ren*
-jon	/-jʌn/	/-ï̯ʌn/	**-jan*
-jen	/-jɛn/	/-ï̯en/	**-rjan, *-rjen*
-jien	/-jen/	/-i̯en/	**-jen*
-en	/-en/	/-en/	**-en*

Analysis 1 may be derived from my Old Chinese reconstruction by using the changes ***r*-color**, ***a*-raising**, and ***r*-loss**. We may formulate ***r*-color** as follows:

V → [− back], [− tense] / *r(j)* ___.

In other words, the main vowel of syllables with medial **-r-* becomes front and lax. For the syllables under consideration, this formulation will work equally well for division-II and division-III finals; after **r* or **rj*, original **a* will be changed to [æ] (which we may regard as redundantly [− tense]), and original **e* will be changed to [ɛ].[201] At this point, [æ] and [ɛ] can still be regarded as allophones of /a/ and /e/ respectively, conditioned by the presence of medial **-r-*.

The change ***a*-raising** is responsible for the raising of original **-jan* to *-jon* [jʌn] and for the merger of **-rjan* and **-rjen*; it raises low vowels to mid height between **j* and a coronal (i.e., acute) coda:

$$V \rightarrow [-\text{ low}] \,/\, j \_\_\_ [+\text{ coronal}]$$

The effect of this change is to raise [a] to [ʌ] and [æ] to [ɛ].

Finally, ***r*-loss** is simply the loss of medial **-r-*; but as a result, [æ] and [ɛ], which had been merely allophones of /a/ and /e/ respectively, become phonologically distinctive. The operation of these changes is shown in Table 7.9.

Table 7.9. Development of selected finals in *-n*: analysis 1 (main-vowel analysis)

	**-jan*	**-ran*	**-rjan*	**-jen*	**-ren*	**-rjen*	**-en*
***r*-color:**	——	[-ræn]	[-rjæn]	——	[-rɛn]	[-rjɛn]	——
***a*-raising:**	[-jʌn]	——	[-rjɛn]	——	——	——	——
***r*-loss:**	——	[-æn]	[-jɛn]	——	[-ɛn]	[-jen]	——
result:	/-jʌn/	/-æn/	/-jɛn/	/-jen/	/-ɛn/	/-jɛn/	/-en/
MC:	*-jon*	*-æn*	*-jen*	*-jien*	*-ɛn*	*-jen*	*-en*

The same changes may be used to derive analysis 2, except that in this case ***r*-color** need not include the feature [– tense] for syllables with medial **-j-*. That is, in this analysis, [e] and [ɛ] need not be distinguished in division-III syllables. However, this feature is still necessary to derive the division-II final *-ɛn*; I will keep the original formulation of the rule, and assume that the tenseness distinction is simply lost in division-III finals at a later date, by a change we may label ***jɛ* > *je***. In addition, we must assume that a change of ***j*-backing** causes *-j-* to become [+ back] (i.e. [ɨ̯]) in either of two environments: after **r* or before back vowels. The developments under this analysis are then as shown in Table 7.10.

A similar analysis can be extended also to derive an Arisaka-style medial analysis of the other *chóngniǔ* finals. Perhaps further research on Middle Chinese and its varieties will clarify which type of analysis of the *chóngniǔ* distinction is to be preferred, but it seems unlikely that the choice of analysis will invalidate the Old Chinese reconstruction system presented here.

Table 7.10. Development of selected finals in *-n*: analysis 2 (medial analysis)

	*-jan	*-ran	*-rjan	*-jen	*-ren	*-rjen	*-en
***r*-color:**	——	[-ræn]	[-rjæn]	——	[-rɛn]	[-rjɛn]	——
***a*-raising:**	[-jʌn]	——	[-rjɛn]	——	——	——	——
***jɛ* > *je*:**	——	——	[-rjen]	——	——	[-rjen]	——
***j*-backing:**	[-i̯ʌn]	——	[-ri̯en]	——	——	[-ri̯en]	——
***r*-loss:**	——	[-æn]	[-i̯en]	——	[-ɛn]	[-i̯en]	——
result:	/-i̯ʌn/	/-æn/	/-i̯en/	/-jen/	/-ɛn/	/-i̯en/	/-en/
MC:	*-jon*	*-æn*	*-jen*	*-jien*	*-ɛn*	*-jen*	*-en*

7.3.4. The origin and phonetic nature of **-j-*

The existence of the feature I write as **-j-* is beyond question, but its phonetic nature is open to debate. I have written it as a high front glide *-j-*, basically identical to Karlgren's **i̯*. However, there are several reasons to hesitate before accepting this reconstruction:

1. When Chinese characters are used to transcribe foreign words in ancient texts, words with *-j-* are often used for foreign words with no high front glide, e.g.

(623) 佛 *fó* < *bjut* for 'Buddha'

(624) 鳩摩羅什 *Jiūmóluóshí* < *kjuw-ma-la-dzyip* for 'Kumārajīva'

2. Chinese words with *-j-* often appear to have Tibeto-Burman cognates without *-j-*, as in the following examples:

(625) 涼 *liáng* < *ljang* < **g-rjang* 'cool' (compare Tibetan *grang-ba* 'cold, cool')

(626) 九 *jiǔ* < *kjuwX* < **k^{w}ju?* 'nine' (compare Tibetan *dgu* 'nine')

(627) 耳 *ěr* < *nyiX* < **nji?* 'ear' (compare Tibetan *rna-ba* 'ear')

3. Syllables with and without medial **-j-* seem to occur freely in the same phonetic series. For example, the character

(628) 余 *yú* < [*yo*] < **lja?* 'I, we'

is phonetic in

(629) 途 *tú* < *du* < **la* 'road'.

At first glance, at least, it seems odd that the creators of the Chinese script should have regarded a syllable-internal segment to be irrelevant in judging phonetic similarity.

4. The proportion of division-III syllables in Middle Chinese is quite high: according to Shào Róngfēn's statistics (1982: 137), more than half of the syllables of the *Qièyùn* (1871 out of 3603) have division-III finals. It seems odd to find a high front medial with such distributional prominence; the numbers suggest that the characteristic feature of division III may originally have been some more basic prosodic feature, or that it may have had more than one origin.

Largely because of these considerations, a number of alternative reconstructions of the division-III finals have been proposed for the Old Chinese stage. Pulleyblank at first reconstructed division-III finals with distinctively long vowels (1962); later (1973: 118–19) he reconstructed a distinction between syllables with stress on the second mora (type A, indicated by an acute accent over the vowel) and those with stress on the first mora (type B, indicated by a grave accent over the vowel), assuming that type B developed a high vocalic segment *-i-*, *-i̯-*, or *-u-* before the main vowel in Early Middle Chinese. Lorenz G. Löffler (1966) proposed reconstructing a schwa prefix **ə-* in division-III syllables, which affected the vocalism and then dropped out. This suggestion is based on a similar process observed in the Tibeto-Burman language Mru. Jaxontov (1965: 32) suggests a similar development of *-j-* from a voiced stop prefix. In a recent paper, Pejros and Starostin (1984) reconstruct division-III syllables with a distinctively short vowel in Old Chinese—just the opposite of Pulleyblank's earlier proposal.[202]

Rather than doing away with **-j-* entirely, Bodman (1980) proposes that there was a distinction at the Proto-Chinese level between "primary yod", which is cognate to Tibeto-Burman **y*, and "secondary yod", which arose secondarily within Chinese from some other feature. He adopts Pulleyblank's grave accent as a notation for syllables with secondary yod (without committing himself to Pulleyblank's account of the phonetic process involved). Thus at the Proto-Chinese stage, Bodman proposes two elements: (1) **y*, responsible for primary yod (written **y*, Tibeto-Burman style, to distinguish it from the later **j*) and (2) type-B syllable type, indicated by a grave accent, and responsible for secondary yod.

However, this distinction between primary and secondary yod is based largely on comparison of Chinese with Tibeto-Burman; it is difficult to find

convincing evidence for it at the Old Chinese level—that is, on the basis of Chinese evidence alone. To be sure, there are problems which an extra medial distinction could be used to solve. For example, if we assumed that **K-* palatalized to *TSy-* before primary yod but not before secondary yod (or the other way around), we could have an airtight account of the palatalization of velars, whose exact conditions are now unclear (see section 6.1.5). The fact that OC **-j-* often seems to serve a morphological function might help us distinguish between primary and secondary yod; perhaps primary yod was used as a morphological element, while secondary yod was not (or vice versa). But without a more principled way of distinguishing primary and secondary yod in Old Chinese, these proposals would be little more than ad hoc notations for problems which remain unsolved. I am therefore reluctant to add this extra wild card to the game, and will stick to a single **-j-*. Its earlier origins must remain a topic for future research.

As for the phonetic nature of the element I write as **-j-*, I find that the arguments against reconstructing it as a high front glide are really not very strong. The transcription evidence is complex and open to various interpretations. To take the transcription of Kumārajīva's name as an example, perhaps *kjuw* was simply the closest available equivalent in the relevant fourth-century Chinese dialect to the foreign *ku*. Indeed, if our reconstruction of the change **hi > mid** is correct, then by the end of the Hàn period, high vowels had generally lowered to mid height except after **-j-*, and the only syllables which retained high vowels were those with **-j-*. (The Middle Chinese syllables I transcribe as *ku* and *kuw* may have had mid or even low vowels at the time.) Thus if one wanted to match the high vowel of the foreign syllable *ku*, there may have been no choice but to use a syllable with *-j-*.[203]

Pulleyblank's own theory that velar initials had uvular allophones in type-A syllables (those without our **-j-*; see Pulleyblank 1965, 1984: 167–68) provides another possible explanation for such transcriptions, which is consistent with the reconstruction of **-j-* as a high front glide. If, say, 鈎 *gōu* < *kuw* was phonetically [quw], with a uvular initial, then 鳩 *jiū* < *kjuw* [kjuw] with a velar initial might well have been preferred to transcribe a foreign velar-initial syllable, in spite of its medial [j]. These arguments should be sufficient to show that the transcription evidence does not rule out the reconstruction of **-j-* at the Old Chinese stage.[204]

The lack of clear Tibeto-Burman correspondences for **-j-* is also insufficient reason to reject its reconstruction as a high front glide in Old Chinese. The ultimate Sino-Tibetan source of Old Chinese **-j-*—whatever its

phonetic nature may have been at the Sino-Tibetan stage—may simply have been lost in Tibeto-Burman languages; or **-j-* as a morphological element may have been an Old Chinese innovation. Similarly, although the high proportion of division-III syllables in Middle Chinese is curious, it suggests little in itself about how to reconstruct them.

If we look at the phonological changes conditioned by what I write as **-j-*, we find that reconstructing it as a high front glide actually works fairly well. It seems quite natural that a high front glide should provide the condition for palatalization of dentals and velars, and for the development of palatalized allophones of initial consonants. The other major change conditioned by **-j-* is **hi > mid**, which lowered high vowels to mid height except when preceded by **-j-*. Here, too, it seems natural that a high glide would cause a following high vowel to remain high.

Of course, arguments based on the naturalness of sound changes are, strictly speaking, relevant only for the period when the sound changes took place. Both the palatalizations and the lowering process just mentioned probably took place during the Hàn period, so at most they provide evidence that the element in question was a high front glide in Hàn times. But there is at present little evidence for reconstructing this element as anything but **-j-* in Old Chinese as well.

Chapter 8

The Old Chinese syllable: codas and post-codas

The present chapter examines the coda and post-coda positions of the Old Chinese syllable. As summarized in Chapter 5, I reconstruct the following elements in coda position:

*[zero]	*-*k*	*-*ng*
*-*j*	*-*t*	*-*n*
*-*w*	*-*wk*	
	*-*p*	*-*m*

Absent from this list are final voiced stops *-*g*, *-*d*, etc., reconstructed by Karlgren and others in order to account for relationships of various kinds between Middle Chinese *rùshēng* words (those ending in voiceless stops) and *yīnshēng* words (those ending in vowels or semivowels). In the systems of Karlgren and Li Fang-kuei, for example, final *-*g* is reconstructed in *yīnshēng* words which appear to show rhyme or *xiéshēng* connections with words ending in MC -*k*. I will argue below (section 8.3) that a voicing contrast in coda position is unexpected in a language like Old Chinese, and that such *rùshēng-yīnshēng* relationships should be accounted for by other means: rather than reconstructing such *yīnshēng* words with a *-*g* which uniformly disappears, I will reconstruct a coda *-*k* as in the related *rùshēng* words, but assume that this *-*k* was lost under certain conditions (especially before the post-codas *-*s* and *-*ʔ*). But many words which others reconstruct with *-*g* actually show little or no connection with *rùshēng* words, and these I reconstruct as open syllables.

Also missing from the list of codas are final liquids *-*l* and *-*r;* generally, the *-*r* coda of other systems corresponds to my *-*j*. Comparison with Tibeto-Burman suggests that there may have been codas like *-*r* or *-*l* or both at an earlier stage, but it is difficult to find direct evidence for them within Chinese. (This issue is discussed further in section 8.1 below.)

In the post-coda position I reconstruct two elements, *-*ʔ* and *-*s*, which are responsible for the development of the Middle Chinese *shǎng* and *qù* tones respectively. The fact that Middle Chinese *rùshēng* syllables exhibit no tonal contrasts can be attributed to sound changes which caused voiceless

stops to be lost before these post-codas. This hypothesis also accounts for the great majority of *rùshēng-yīnshēng* contacts.

Section 8.1 discusses the codas of Old Chinese; section 8.2 discusses the post-codas and the question of tonal categories in Old Chinese. Section 8.3 is devoted specifically to the question of whether Old Chinese had final voiced stops—an issue that involves both codas and post-codas.

8.1. The codas of Old Chinese

8.1.1. Codas *zero, *-*j*, and *-*w*

8.1.1.1. The zero coda

Unlike some Old Chinese reconstructions, the present system assumes a full set of vocalic-final syllables. All vowels appear in syllable-final position, except possibly for *-*i*:

(*-*i*)	*-*ɨ*	*-*u*
*-*e*		*-*o*
	*-*a*	

Though there seems to be no final *-*i*, there is a final *-*ij*. On the other hand, final *-*u* does occur, but there is no contrasting *-*uw*. The system would be more symmetrical if we reconstructed either *-*i* and *-*u* or *-*ij* and *-*uw;* but the present reconstruction seems to allow a simpler formulation of subsequent sound changes than either of these more symmetrical systems, and I retain it for the present.[205]

Other systems typically have final *-*g* (or in the case of Li Fang-kuei, sometimes *-*gw*) where my system has a zero coda (though Karlgren has *-*o* for my *-*a* and *-*u* for my *-*o*). By way of illustration, I list below the five zero-coda finals, as they develop without medial *-*r*- or *-*j*-, with the corresponding finals in the systems of Karlgren and Li, and their Middle Chinese reflexes:

Baxter	Karlgren	Li	MC
*-*i*	*-*əg*	*-*əg*	*-oj*
*-*u*	*-*ôg*	*-*əgw*	*-aw*
*-*e*	*-*ieg*	*-*ig*	*-ej*
*-*o*	*-*u*	*-*ug*	*-uw*
*-*a*	*-*o*	*-*ag*	*-u*

Note that original *-*i* and *-*e* acquire a coda *-j* (by the process I call ***j*-insertion**), and original *-*u* and *-*o* acquire a coda *-w* through diphthongization (***-u(K) > *-aw(K)*** and ***-o(K) > -uw(K)***).

8.1.1.2. *The coda* *-j

The coda *-*j* is reconstructed after all main vowels, though the evidence for a final *-*ej* is not clear:

*-*ij*	*-*ɨj*	*-*uj*
(-ej*)		*-*oj*
	*-*aj*	

My coda *-*j* generally corresponds to Karlgren's *-*r* and to Li's *-*r* or *-*d*. The simple finals in *-*j* are listed below, with the corresponding reconstructions in Karlgren's and Li's systems, and Middle Chinese reflexes:[206]

Baxter	Karlgren	Li	MC
*-*ij*	*-*iər*	*-*id*	*-ej*
*-*ɨj*	*-*ər*/*-*iər*	*-*əd*/*-*iəd*	*-oj*/-ej*
*-*uj*	*-*wər*	*-*əd*	*-woj*
*-*oj*	*-*wâ(r)*	*-*(u)ar*	*-wa*
*-*aj*	*-*â(r)*	*-*ar*	*-a*

Generally, the coda *-*j* remained in Middle Chinese, but original *-*aj* became a monophthong (by ***-aj* monophthongization**), probably in Hàn times (when original *-*aj* and *-*raj* came to rhyme with *-*ra*). The same change affected *-*waj* < *-*oj*, showing that ***-aj* monophthongization** occurred after **rounding diphthongization**:

(630) 歌 *gē* < *ka* < **kaj* 'sing'

(631) 坐 *zuò* < *dzwaX* < **dzwaj?* < **dzoj?* 'to sit'

In previous reconstructions, the traditional 歌 Gē rhyme group has generally been reconstructed with either an *-*r* coda or an open syllable.

Karlgren reconstructed both **-â* and **-âr*, the latter being restricted to words which have contacts with words in **-ân*; Dǒng Tónghé reconstructed **-â*; Li reconstructed **-ar*. In the present system, I reconstruct **-aj* and **-oj* (and tentatively **-ej*) in this rhyme group. There is actually little evidence within Chinese for a coda **-r* in words with these finals, and the reconstruction with **-j* fits rather well with colloquial items in Mǐn and certain other dialects which seem to have escaped the effects of ****-aj* monophthongization**. The **-j* coda is also preserved in some early loan words from Chinese in other languages. Some examples are listed below.[207] (Numerals after Chinese dialect forms indicate tone classes.)

(632) 舵 *duò* < *daX* < **lajʔ* 'rudder, helm', Fúzhōu *tuai 6*, Cháoyáng *tai 4*, Vietnamese *lái*.

(633) 磨 *mó* < *ma* < **maj* 'to grind', Fúzhōu *muai 2*, Vietnamese *mài*, Korean *may* (Martin & Chang 1967, s.v.)[208]

(634) 個 *gè* < *kaH* < **kajs* 'individual', Cháoyáng *kai 2*, Wēnzhōu *kai 5*, Vietnamese *cái*, Zhuàng (Lóngzhōu 龍州 dialect) *ka:i 5*.

(635) 我 [*wǒ*] < *ngaX* < **ngajʔ* 'I', Fúzhōu *ŋuai 3*, Méixiàn (Hakka) *ŋai 2*; compare Tibeto-Burman **ngay* 'I'

(636) 蛾 *é* < *nga* < **ngaj* 'silkworm', Vietnamese *ngái*

(637) 破 *pò* < *phaH* < **phajs* 'to break', Fúzhōu *phuai 5*, Miǎn Yáo (Xīng'ān 興安 dialect) *phai 5*

(638) 跛 *bǒ* < *paX* < **pajʔ* 'lame', Fúzhōu *pai 3*, Méixiàn (Hakka) *pai 2*

(639) 簸 *bò* < *paH* < **pajs* 'to winnow' (also read *bǒ* < *paX* < **pajʔ*), Fúzhōu *puai 5*, Wēnzhōu *pai 5*; compare Tibeto-Burman **pwa·y* 'husks, shavings'.

Words with the coda **-j* sometimes show contacts of various kinds with words in **-n*. Karlgren's choice of the coda **-r* in such words was intended to account for these contacts (1954: 300–301). However, these contacts may be accounted for equally well, and possibly better, by reconstructing **-j*. Confusion of original **-j* and **-n* could easily occur through the denasalization of final **-n*. Some such process has affected modern Wú dialects such as Sūzhōu, where earlier *-aj* and *-an* (including *-an* from MC *-am*) have merged as a front vowel:

(640) 來 *lái* 'come', Sūzhōu [le] < LMC *laj* < EMC *loj*

(641) 藍 *lán* 'blue', Sūzhōu [le] < *lan* < LMC *lam* < EMC *lam*.

So far as I know, no one has suggested that this merger requires us to reconstruct 來 *lái* with a final **-r* in some earlier stage of Sūzhōu pronunciation; the merger can be accounted for by assuming processes of denasalization and monophthongization.

A similar denasalization process appears to have affected some dialects of Hàn time and perhaps earlier dialects as well. Many of the contacts between **-j* and **-n* in early texts probably reflect such dialects. One especially well-documented case is the eastern dialect spoken in and near the Shāndōng peninsula, for which we have the following examples (Luó & Zhōu 1958: 73–75):

1. The character

(642) 衣 *yī* < *ʔjij* < **ʔjij* 'garment'

is frequently used to write

(643) 殷 *yīn* < *ʔjin* < **ʔjin* 'dynastic name'.

(This is true even in Zhōu-dynasty bronze inscriptions; see Zhōu Fǎgāo et al. 1974a, item 1125.) For example, the *Zhōng yōng* 中庸 section of the *Lǐ jì* 禮記 has the line

壹戎衣
yī róng yī
'destroy the great Yīn (dynasty)',

where a parallel line in the *Kāng gào* 康誥 section of the *Shūjīng* has 殷 *yīn* instead of 衣 *yī*. Concerning the *Zhōng yōng* passage, the Hàn commentator Zhèng Xuán (A.D. 127–200), himself a native of Gāomì 高密 in the Shāndōng peninsula, says

> 衣 *yī* should be read as 殷 *Yīn*; this [i.e. the substitution of 衣 for 殷] is an error in pronunciation. When the people of Qí 齊 [an ancient state in the Shāndōng peninsula] pronounce 殷 *yīn*, the sound is like 衣 *yī*. Nowadays there is a surname 衣 Yī; perhaps this is descended from 殷 Yīn.

Similarly, the Hàn-time scholar Gāo Yòu 高誘, who flourished during the Jiàn'ān 建安 period (A.D. 196–219), commenting on a passage in *Lǚ shì chūn qiū* 呂氏春秋, says

> Nowadays the people of Yǎnzhōu 兗州 [in modern-day Shāndōng province] all pronounce the clan-name 殷 *Yīn* as 衣 *Yī*.

These comments seem to indicate a substitution of **-j* for **-n* in this dialect.

2. In his commentary on Ode 231, Zhèng Xuán notes that in the vicinity of Qí 齊 and Lǔ 魯 (also an ancient state in modern Shāndōng), the pronunciation of

(644) 鮮 *xiān* < *sjen* < **sjen* 'fresh'

was near to that of

(645) 斯 *sī* < *sje* < **sje*, usually 'this'.

Similarly, the *Shìmíng* says that in Qīng 青 and Xú 徐 (Eastern Hàn provinces in Shāndōng and somewhat to the south of it),

(646) 癬 *xiǎn* < *sjenX* < **sjen?* 'scab'

was pronounced like

(647) 徙 [*xǐ*] < *sjeX* < **sje?* 'to move towards'.

(MC *sjenX* could reflect either **sjan?* or **sjen?*, but the reconstruction with **e* in these two words is supported by the fact that 鮮, in the reading *xiǎn* < *sjenX*, rhymes—exceptionally—as **-e* in Ode 43.1.) In these front-vowel syllables, it would appear that the coda **-n* has simply been dropped, not replaced with **-j*.

3. Finally, Rú Chún 如淳, an annotator of the *Hàn shū* 漢書 who lived in the Three Kingdoms period (third century A.D.), says that in the colloquial speech of the Chén 陳 and Sòng 宋 area, just west and southwest of the Shāndōng peninsula,

(648) 桓 *huán* < *hwan* < **wan* 'pillar-like'

was pronounced like

(649) 和 *hé* < *hwa* < **gwaj* < **goj* 'harmonious'.

We may compare this statement with the following rhyme sequence from Ode 137.2, where **-an* rhymes with **-aj*. Ode 137 is from the *Chén fēng* 陳風 section, traditionally regarded as originating in this same geographical area:

差 *chā* < *tsrhɛi* < **tshrjaj* 'choose'
原 *yuán* < *ngjwon* < **ng*^{w}*jan* '(proper name)'
麻 *má* < *mæ* < **mraj* 'hemp'
娑 *pósuō* < *ba-sa* < **baj-saj* 'dance'

These examples give us good reason to believe that at least in Hàn times, and possibly much earlier as well, certain eastern dialects had some

nonnasal coda where other dialects had **-n*. In some cases **-j* appears to be substituted for **-n*, while in other cases perhaps **-n* is simply dropped; the details are, of course, difficult to reconstruct with confidence. This same dialect feature is found repeatedly in Eastern Hàn sound glosses (see Coblin 1983: 89–92). These cases are easily explained as a substitution of **-j* for **-n* or a simple loss of **-n*; they are not in themselves a sufficient reason to reconstruct a coda **-r* for Old Chinese.[209]

Incidentally, though Tibeto-Burman comparisons suggest that Proto-Sino-Tibetan may have had liquid codas like **-r* or **-l* or both, they offer little support for an Old Chinese coda **-r* as reconstructed in the systems of Karlgren or Li. In many cases, in fact, OC **-j* as I reconstruct it corresponds to Tibeto-Burman **-y* (Tibeto-Burman forms are from Benedict 1972 and Coblin 1986):

(650) 移 *yí* < *ye* < **ljaj* 'transfer, move; change, alter', Tibeto-Burman **lay* (tone **B*) 'change'

(651) 死 *sǐ* < *sijX* < **sjij?* 'die', Tibeto-Burman **səy* (tone **A*)[210]

(652) 妣 *bǐ* < *pjijX* ~ *pjijH* < **pjij?* ~ **pjijs* 'ancestress', Tibeto-Burman **pəy* (tone **B*) 'grandmother'

(653) 蜾 *guǒ* < *kwaX* < **k^{w}aj?* or **koj?* 'bee, wasp', Tibeto-Burman **kwa·y* (tone **B*) 'bee'

(654) 蝸 *guā* ~ [*wō*][211] < *kwæ* < **k^{w}raj* or **kroj* 'snail', Tibeto-Burman **kroy* (tone **A*) 'shellfish, shell'

(655) 多 *duō* < *ta* < **taj* 'much, many', 侈 *chǐ* < *tsyheX* < **thjaj?* 'great, large', Tibeto-Burman *tay* (tone **A*) 'big; very'[212]

(656) 簸 *bǒ* ~ *bò* < *paX* ~ *paH* < **paj?/s* 'to winnow, sift', Tibeto-Burman **pwa·y* 'husks, shavings'

8.1.1.3. The coda *-w

The coda **-w* occurs after **i*, **e*, and **a* only; so far, I see no need to reconstruct it after the other vowels. My **-w* corresponds to Li's **-gw*, and to Karlgren's **-g* after his rounded vowels; it remained unchanged in Middle Chinese:

Baxter	Karlgren	Li	MC
**-iw*	**-iôg*	**-iəgw*	*-ew*
**-ew*	**-iog*	**-iagw*	*-ew*
**-aw*	**-og*	**-agw*	*-aw*

8.1.2. Nasal codas **-m*, **-n*, and **-ng*

The nasal codas are fairly stable between Old Chinese and the Middle Chinese of the *Qièyùn*, although, as we have seen, at each stage there were probably dialects where final nasals underwent some degree of denasalization. I reconstruct **-m* after all six main vowels, though later mergers have made some of the distinctions difficult to recover; the arguments for the existence of these distinctions are made in detail in section 10.3:

**-im* **-im* **-um*
**-em* **-om*
**-am*

These finals correspond as follows to the reconstructions of Karlgren and Li:

Baxter	Karlgren	Li	MC
**-im*	**-iəm*	**-iəm*	*-em*
**-im*	**-əm*	**-əm*	*-om*
**-um*	**-əm*	**-əm*	*-om*
**-em*	**-iam*	**-iam*	*-em*
**-om*	**-əm*	**-əm*	*-om*
**-am*	**-âm*	**-am*	*-am*

The coda **-m* remains in Middle Chinese except when affected by **labial dissimilation**, as in

(657) 風 *fēng* < *pjuwng* < **p(r)jɨ/um* 'wind'[213]

The precise conditions of this dissimilation are not clear, for in other cases, the coda **-m* remained, as in the following item, which is phonetic in 風 *fēng* 'wind':

(658) 凡 *fán* < *bjom* < **b(r)jom* 'all'.

From an early date there were probably dialects where final **-m* had changed to **-ng* more generally. In Hàn times, according to Luó & Zhōu (1958: 52), original **-m* sometimes rhymed as **-ng* in the poetry of Sīmǎ Xiāngrú 司馬相如, Wáng Bāo 王褒, and Yáng Xióng 揚雄, all Western

Hàn writers from the Shǔ 蜀 area (modern Sìchuān). In the *Shījīng*, too, the confusion of **-m* and **-ng* may be a western dialect feature. Rhymes mixing **-m* and **-ng* appear, for instance, in Ode 128, in the *Qín fēng* 秦風 section, and in Ode 154 of the *Bīn fēng* 豳風 section; Qín and Bīn were both in modern Shǎanxī province, in the northwest.

The distribution and reconstruction of syllables with the codas **-n* and **-ng* were discussed in Chapter 7. These codas likewise remain largely unchanged in Middle Chinese, though there is some confusion between them after front vowels **i* and **e*. As we shall see in Chapter 10, the word

(659) 命 *mìng* < *mjængH* < **mrjeng(s)* < **mrjing(s)* 'command'

and other words in this phonetic series rhyme as **-in* in the *Shījīng*, but have the coda *-ng* in Middle Chinese; I account for this by assuming that the relevant *Shījīng* rhymes were affected by a change **-ing* > **-in* not inherited by the *Qièyùn* system (where **-ing* merged instead with **-eng*). There are also cases where Middle Chinese has *-n*, but comparative evidence suggests earlier **-ng*:

(660) 薪 *xīn* < *sin* < **sjin* (< **sjing*?) 'firewood, brushwood'

Compare Tibetan *sying* 'wood', Tibeto-Burman **siŋ* (Benedict 1972: 55; Coblin 1986: 162).

Similarly, there is frequent confusion between **-en* and **-eng*, as in

(661) 還 *huán* < *hwæn* < **wren* or **g^{w}ren* 'turn round, return', also read *qióng* < *gjwieng* < **g^{w}jeng* 'scared, alone and helpless'

Such confusions become common in Hàn times. For example, Coblin (1983: 206) quotes a loangraph gloss of Zhèng Xuán's (no. 210 in Coblin's list), which says that in a certain passage in the *Lǐ jì*,

(662) 繕 *shàn* < *dzyenH* < **gjens* 'repair, put in order'[214]

is "read as [dú yuē 讀曰]"

(663) 勁 *jìng* < *kjiengH* < **kJengs* 'strong'.[215]

8.1.3. Voiceless stop codas: **-p, *-t, *-k,* and **-wk*

When not followed by post-codas **-s* or **-ʔ*, the codas **-p*, **-t*, and **-k* remained relatively stable from Old Chinese to Middle Chinese. The finals with these codas are largely parallel to those with **-m*, **-n*, and **-ng* as listed above. However, it is difficult to find clear cases of dissimilation of

final *-*p* to *-*k* parallel to the dissimilation of *-*m* to *-*ng* in 風 *fēng* < *pjuwng* < **p(r)ji/um* 'wind'.[216]

As with the nasals *-*n* and *-*ng*, there is occasional confusion between the parallel stop codas *-*t* and *-*k*, especially after front vowels As an example of confusion between *-*et* and *-*ek*, consider Ode 261.2, where the Máo text has the following rhyme sequence:

幭 *miè* < *met* < **met* 'covering'
厄 *è* < *ʔɛk* < **ʔrek* 'part of a yoke'

The Middle Chinese reading *met* for 幭 is that of the *Qièyùn*, and is supported by the structure of the character, for its phonetic is

(664) 蔑 *miè* < *met* < **met* 'to destroy, have no',

which must be related to

(665) 滅 *miè* < *mjiet* (IV) < **mjet* 'to annihilate, destroy'.

But here, 幭 *miè* rhymes with **ʔrek*; in fact, the *Jīngdiǎn shìwén* gives the Middle Chinese reading *mek* (with *met* as an alternative) for 幭. Other versions of the *Shījīng*, preserved in quotations in other ancient works, have instead of 幭 the character

(666) 羃 *mì* < *mek* < **Npek* 'covering on carriage'

which fits the rhyme better;[217] the phonetic of this character clearly indicates *-*ek*:

(667) 辟 *bì* < *pjiek* < **pjek* 'ruler, prince', also read *bì* < *bjiek* < **fipjek* 'law, rule', *bì* < *bek* < **fipek* 'inner coffin' (this latter meaning perhaps related to 幭 ~ 羃 'covering').

Probably the version of the text with 幭 originated in a dialect where *-*et* and *-*ek* had merged.[218]

We also find contacts between MC *-it* and *-ik*, which could reflect different dialect treatments of an original OC *-*jik*. For example,

(668) 即 *jí* < *tsik* < **tsjik* 'approach'

rhymes consistently as *-*it* in the *Shījīng* (Odes 89.2A, 99.1A, 250.6D), and is phonetic in

(669) 節 *jié* < *tset* < **tsit* < **tsik* 'knot, joint in plants'.

It is possible that the reading 即 *tsik* preserves the original coda, while 節 *tset* represents a dialect shift (such as that represented in the *Shījīng*) where original *-*ik* shifted to *-*it*, parallel to the dialect shift of *-*ing* to *-*in*.

Notice that MC *-it* and *-et* often correspond to Tibeto-Burman **-ik,* as in the word 節 MC *tset* itself (cf. Tibeto-Burman **tsik* 'joint, section'), and other words in the same *xiéshēng* series. The following examples are from Coblin (1986: 50, 108).[219]

(670) 堲 *jí* < *tsit* < **tsjit* < **tsjik* 'masonry'; cf. Tibetan *rtsig-pa* 'to build, to wall up; a wall, masonry'

The same character is also used for the following word:

(671) 堲 *jí* < *tsit* < **tsjit* < **tsjik* 'coaled part of a burning torch; to burn or scorch earth which is to be placed around a coffin as grave lining'; cf. Tibetan *'tshig-pa* 'to burn, destroy by fire; to glow (of the evening sky); to be in rut; to be inflamed, feverish'

This strongly suggests that there were Old Chinese finals **-ing* and **-ik* which shifted to **-in* and **-it* in some dialects (including, apparently, one or more dialects represented in the *Shījīng*). Middle Chinese readings frequently show the same shifts, but in a few cases like 即 *jí* < *tsik,* perhaps the original velar coda is preserved.

8.1.3.1. The coda *-wk

I reconstruct OC **-wk* only after **i, *e,* and **a.* The corresponding finals in Karlgren's and Li's systems, and in Middle Chinese, are as follows:

Baxter	Karlgren	Li	MC
**-iwk*	**-iôk*	**-iəkw*	*-ek*
**-ewk*	**-iok*	**-iakw*	*-ek*
**-awk*	**-ok*	**-akw*	*-ak* ~ *-owk* ~ *-uwk*

The usual development is that **-wk* simplifies to *-k*—except that **-awk* sometimes becomes *-owk* or *-uwk* rather than the expected *-ak.* Structurally, the coda **-wk* is somewhat isolated: although there is a parallel coda **-w,* there is no corresponding nasal coda **-wng.* The distribution of **-wk* is parallel to that of **-w,* and **-wk* shows contacts of various kinds with **-w;* for example, **-w* and **-wk* are not infrequently found in the same phonetic series, as in the following examples:

(672) 條 *tiáo* < *dew* < **liw* 'extend; branch, twig',

(673) 滌 *dí* < *dek* < **liwk* 'to clean'.

Perhaps such examples simply show that *-*w* and *-*wk* were considered similar enough to allow *xiéshēng* contacts. However, in some cases it might be desirable to analyze *-*wk* as *-*w* plus some post-coda, possibly having a morphological function. In an earlier paper (Baxter 1980b: 16–17), I proposed that the Middle Chinese coda *-k* in words like this may have developed from a glottal stop ***ʔ*** in post-coda position. Such an element would enable us to relate the following two words:

(674) 喬 *qiáo* < *gjew* (III) < ****ɦik(r)jaw*** 'high, rising aloft'

(675) 蹻 *jué* < *gjak* < ****ɦik(r)jawk*** 'lifting the feet high, strong-looking (horses etc.); conceited', also read *kjewX* < ****k(r)jawʔ*** 'martial'

Both these words are probably related to

(676) 高 *gāo* < *kaw* < **kaw* 'high, tall'.

In the present reconstruction, however, it will not do to reconstruct MC *-k* < *-ʔ, since I reconstruct *-ʔ as the source of MC *shǎngshēng*; so I now reconstruct *-*wk* for my earlier *-*wʔ*, at least for the Old Chinese stage.

8.2. Post-codas and the development of tones

8.2.1. The Old Chinese origins of tones

It is not necessary to assume that Old Chinese had tones simply because later stages of Chinese have tones. Recent research on the origin of tones in various languages demonstrates that tones frequently arise through the loss of consonantal distinctions (Matisoff 1973). Typically, tones arise from pitch differences which begin as predictable concomitants of consonantal distinctions; for example, initial voiced consonants may be accompanied by lowered pitch, and final glottal stops by raised pitch. If these consonantal distinctions are lost, the associated features of pitch may become distinctive. Such processes have been documented for a variety of languages in the growing body of literature on tonogenesis (a term coined by Matisoff). The development of high and low tone registers through the loss of initial voicing distinctions is common and well known in Chinese and other Asian languages. The development of the Middle Chinese *rùshēng* syllables in Mandarin shows that the loss of final consonants can also produce tonal effects. Tibetan has both tonal dialects (such as the speech of Lhasa) and nontonal ones (such as the Amdo dialects); the tone systems of dialects such

as that of Lhasa can be shown to be innovations which developed through the loss of consonant distinctions (see Hú Tǎn 1980, 1982).

Since tones can arise from nontonal distinctions and need not be inherited, tonality, like other typological characteristics, cannot be used as a defining characteristic of a language family. Languages like Vietnamese and Thai, traditionally assigned to the Sino-Tibetan family because of their tones, are now widely believed to be unrelated to Sino-Tibetan. In Southeast Asia, tone has evidently spread as an areal feature among unrelated languages, just as clicks in southern Africa have spread from the Khoisan languages Bushman and Hottentot to Bantu languages like Zulu and Xhosa (Crabb 1988: 772). Just as we cannot conclude that Vietnamese and Thai are Sino-Tibetan because they are tonal, so we cannot conclude that Old Chinese was tonal because it was Sino-Tibetan.

Nevertheless, the Middle Chinese tonal distinctions must have come from some distinctions of Old Chinese, whether tonal or not. The phonetic nature of the Old Chinese features ancestral to tone is discussed in more detail in sections 8.2.2 and 8.2.3; in this section I will use the terms "tonal distinctions" and "tonal categories" somewhat loosely to refer to the Old Chinese distinctions or categories which may have become tonal only later.

8.2.1.1. Traditional views of tones and their origin

The traditional terms for the four tones of Middle Chinese (*píng* 平 'even' or 'level', *shǎng* 上 'rising', *qù* 去 'going' or 'departing', and *rù* 入 'entering') are attributed to Shěn Yuē 沈約 (441–513) and Zhōu Yóng 周顒 (who flourished about the beginning of the sixth century). Probably their interest in tones was largely literary; it was at about this time that patterns of tonal alternation began to play a structural role in verse, eventually leading to the intricate patterns of tone alternation required in regulated verse (*lǜshī*). We must not conclude, of course, that Shěn Yuē and Zhōu Yóng invented the four tones; they merely established names for them. It is possible that scholars became aware of tone categories at about this time because the relevant distinctions had only recently become tonal.

The traditional names for the four tones are themselves examples of the tones they name, as we can see from their Middle Chinese transcriptions:

平 *píng* < *bjæng* 'level, even' (*píngshēng*, no tone letter)
上 [*shǎng*] < *dzyangX* 'rising' (*shǎngshēng*, marked by *-X*)[220]
去 *qù* < *khjoH* 'to depart' (*qùshēng*, marked by *-H*)
入 *rù* < *nyip* 'to enter' (*rùshēng*, marked by final *-p*, *-t*, or *-k*)

It is quite likely that these terms were intended as descriptive as well as illustrative; perhaps *píngshēng* ('even tone' or 'level tone') was level in pitch, and *shǎngshēng* ('up tone' or 'rising tone') was high or rising. It is widely assumed that *qùshēng* ('departing tone') was falling, and that *rùshēng* ('entering tone'), the tone of syllables with a final voiceless stop, was abrupt or checked. But it is difficult to infer precise phonetic values from the traditional names, and in any case, the descriptions may have applied to some dialects but not others.

The development of ideas about Old Chinese tonal categories parallels the development of ideas about rhyme categories outlined in Chapter 4. Just as early investigators got the impression that Old Chinese rhyming was very loose and permissive, so they also noticed cases where different Middle Chinese tonal categories rhymed with each other in the *Shījīng*, and concluded that Old Chinese poetry paid little attention to tonal distinctions. Chén Dì of the Míng dynasty stated in his *Máo Shī gǔ yīn kǎo* (see section 4.3.3) that "the ancients did not distinguish the four tones.... The theory of the four tones arose in later ages" (quoted in Dǒng Tónghé 1968: 305). He did not necessarily mean that the four tones did not exist at all—perhaps only that they were not consistently distinguished in poetry.[221] Similar views were held by Gù Yánwǔ in early Qīng (see section 4.3.4), who said that in Old Chinese times, "the ancients strung all four tones together".[222]

It is true that *Shījīng* rhyming sometimes deviates from Middle Chinese tone categories, but it cannot be said to ignore tone categories entirely. Jiāng Yǒng (see section 4.3.5), after careful research in Old Chinese rhymes, arrived at the following summary of the tone patterns he found:

> *Rùshēng* is closest to *qùshēng*, and they often rhyme with each other in the *Shī*. Rhymes [of *rùshēng*] with *shǎngshēng* are also occasionally found. Rhymes [of *rùshēng*] with *píngshēng* are fewest; because they are distant from each other, they are not harmonious. Although *rùshēng* rhymes with other categories, it still retains its own sound. When Gù [Yánwǔ] says that *rùshēng* can always shift to *píng*, *shǎng*, or *qù*, this is a great error. (*Gǔyùn biāozhǔn, juàn* 4, quoted by Zhōu Zǔmó 1941 [1966]: 36.)

The relatively frequent contacts between *rùshēng* and *qùshēng* syllables mentioned by Jiāng Yǒng led some scholars to conclude that Old Chinese lacked the *qùshēng-rùshēng* distinction entirely. Duàn Yùcái (see section 4.3.6) believed that Old Chinese had *píng*, *shǎng*, and *rù*, but not *qù*. Kǒng Guǎngsēn favored another of the logical possibilities—that Old Chinese had *píng*, *shǎng*, and *qù*, but not *rù*.[223]

Duàn Yùcái's tone theory would appear to suggest that *qùshēng* and *rùshēng* words of Middle Chinese rhymed freely with each other in Old Chinese. One way to test this theory would be to apply the methods of Chapter 3 to the traditional 月 Yuè and 祭 Jì rhyme groups, which include *rùshēng* and *qùshēng* words respectively. (Li Fang-kuei reconstructed 月 Yuè with **-at* and 祭 Jì with **-adh*; in my system, 月 Yuè includes **-at*, **-et*, and **-ot*, while 祭 Jì includes **-ats*, **-ets*, and **-ots*.) If Duàn Yùcái was right, then these two groups should rhyme freely with each other.

The only difficulty with testing this hypothesis is that there is some overlap between the two rhyme groups: for example, the character 說 is traditionally read in *rùshēng* as *yuè* < *ywet* < **ljot* in Ode 14.2, but in *qùshēng* as *shuì* < *sywejH* < **hljots* in Ode 16.3. If we assign words to 月 Yuè or 祭 Jì according to the reading tradition represented in the *Jīngdiǎn shìwén* and the rhyme books, then the methods of Chapter 3 show that it is highly improbable that the observed degree of rhyming separation could have occurred by chance.[224] However, this procedure may involve some circularity, since the reading tradition may have assigned some of the rarer *Shījīng* rhyme words to 月 Yuè or 祭 Jì according to their rhyming behavior in the *Shījīng* (see the discussion in section 3.2.7.2). A more careful test would be to use only more common words whose tone category can be established independently of the *Shījīng* rhymes; but I have not done such a test.

Jiāng Yǒugào (see section 4.3.10) arrived at a view of Old Chinese tone categories which is widely held today: "The ancients actually did have four tones, but the tones they read were not the same as [those of] the men of later times."[225] (Wáng Niànsūn independently arrived at a similar conclusion.) That is, the same basic tonal classes can be identified in Old Chinese as in Middle Chinese, but some words have shifted from one class to another.

The existence of long *Shījīng* rhyme sequences from a single Middle Chinese tone category demonstrates that there is considerable continuity in tonal classes between Old Chinese and Middle Chinese. Examples were cited in a careful study by Xià Xiè 夏燮, a friend of Jiāng Yǒugào's (Yú Nǎiyǒng 1985: 15); for example, Ode 177.6A has a sequence of seven *shǎngshēng* rhyme words; in Ode 108.1A we find a sequence of five *qùshēng* rhyme words. But at least as early as Chén Dì, it was recognized that sometimes a word of one Middle Chinese tone category rhymes consistently in Old Chinese as if it belonged to a different tone category. Here are some examples:

1. The word

(677) 偕 [*xié*] < *kɛj* 'together; strong'

has only the *píngshēng* reading *kɛj* in the *Qièyùn*, but it rhymes consistently as *shǎngshēng* in the *Shījīng* (Odes 110.3B, 169.4C, 170.5A, and 220.1B).

2. Traditionally, the character 予 has two readings: a *píngshēng* reading

(678) 予 *yú* < *yo* 'I, me',

and a *shǎngshēng* reading

(679) 予 *yǔ* < *yoX* 'to give'.

But in the *Shījīng*, this character rhymes as *shǎngshēng*, not *píngshēng*, even when it means "I, me" (Odes 141.2B, 155.2A, 192.9A, 201.1A, 204.1A, and 258.4A).[226]

When a word with one tone in Middle Chinese rhymes repeatedly and consistently as if it had another tone in Old Chinese, we can reconstruct the Old Chinese tone category on the basis of the Old Chinese rhymes, and assume that some irregular process has intervened. In other cases there may be only one or two *Shījīng* rhymes to go by, or the *Shījīng* rhymes may be inconsistent. For example, the word

(680) 隕 *yǔn* < *hwinX* < **wrjɨn(ʔ)* 'to fall'

rhymes with a *shǎngshēng* word, as expected, in Ode 237.8A, but with a *píngshēng* word in Ode 58.4A. In such cases we can only add parentheses or other marks of equivocation to our reconstructions.

Origins of tonal irregularities

It is not surprising that our Middle Chinese sources do not always give reliable information about the tonal categories of Old Chinese. This situation may be compared with the development of tones between Middle Chinese and modern dialects, where we find similar irregularities. The mechanisms involved in these later irregularities may give us some insight into the mechanisms which produced tonal discrepancies between Old Chinese and Middle Chinese.

It often happens that Middle Chinese sources indicate readings in two different tones for related meanings of a single character, but only one of the readings survives in modern Mandarin. For example, the Middle Chinese sources give two readings for the character 深:

(681) 深 *shēn* < *syim* < **hljim* 'deep'; *syimH* < **hljims* 'depth'[227]

We would expect to find Mandarin *píngshēng shēn* < *syim* and *qùshēng shèn* < *syimH*, but only the *píngshēng* reading *shēn* has survived; the earlier morphological distinction has been leveled away. Sometimes both forms survive, but only in the reading tradition. For example, the character

(682) 行 *xíng* < *hæng* < **grang* 'to go, to act'

is also traditionally read

(683) 行 *xìng* < *hængH* < **grangs* 'action, behavior'.

But this reading is obsolescent; the 1979 edition of *Cíhǎi* gives the reading *xíng* for the second meaning also, and lists *xìng* only as an "old reading".

The leveling of such words is partly graphic, of course, there being a tendency to give each single character a single pronunciation, no matter what its meanings are. This tendency can be seen in modern Mandarin also when synchronically unrelated morphemes are written with the same character:

1. The character 燕 is traditionally read as fourth-tone *yàn* (< *ʔenH*) when it means "swallow", but first-tone *Yān* (< *ʔen*) as the name of the ancient state in the vicinity of modern Beijing. But the name of Beijing's Yānjīng University is now commonly pronounced *Yànjīng*, even by people who "know better".

2. The character 濟 is traditionally read as fourth-tone *jì* (< *tsejH*) in the meaning "to aid", but third-tone *Jǐ* (< *tsejX*) as the name of a river in Shāndōng. But the city name Jǐnán 濟南 in Shāndōng is now commonly pronounced *Jìnán*.

3. In standard Mandarin, the character 假 is read as third-tone *jiǎ* (< *kæX*) when it means "false, fake", and *jià* (< *kæH*) when it means "vacation". But many speakers pronounce standard *fàng jià* 放假 'to go on vacation' as *fàng jiǎ*, and *jiàqī* 假期 'vacation-time' as *jiǎqī*.[228]

These kinds of leveling, both morphological and graphic, doubtless began well before the Middle Chinese period, and there must have been some variants which did not make it even as far as the Middle Chinese rhyme books. In a few cases, as we shall see below, the *Shījīng* rhymes can help us reconstruct some of these lost forms. In any case, it should not be surprising to find occasional disagreements between Old Chinese and Middle Chinese tone categories.

8.2.2. The origin of *qùshēng* (departing tone)

*8.2.2.1. The *-s hypothesis (Haudricourt)*

I adopt the theory of *qùshēng* origins originally proposed by André Haudricourt (1954a [1972]). Haudricourt noted that among early Chinese loan words in Vietnamese (borrowed before the main wave of Sino-Vietnamese borrowing which took place in Táng), words with Middle Chinese *qùshēng* usually have either the *hỏi* tone (marked with a stroke resembling a small glottal stop) or the *ngã* tone (marked with a tilde) in Vietnamese. (By contrast, *qùshēng* words in the later Sino-Vietnamese stratum regularly have either the *sắc* tone, marked with an acute accent, or the *nặng* tone, marked with an under-dot.) Here are some examples of *qùshēng* words borrowed into Vietnamese with the *hỏi* tone:

(684) 卦 *guà* < *kwɛiH* 'prognosticate with yarrow stalks; divination figures', Vietnamese *quẻ* 'classifier for divinations, prophecies, horoscopes' (Sino-Vietnamese *quái* 'trigram')

(685) 芥 *jiè* < *kɛjH* 'mustard', Vietnamese *cải* 'cabbage, greens'

(686) 兔 *tù* < *thuH* 'rabbit, hare', Vietnamese *thỏ* 'rabbit, hare' (Sino-Vietnamese *thỏ*)

Early loan words with the *ngãi* tone include the following:

(687) 箸 *zhù* < *drjoH* 'chopsticks', Vietnamese *đũa* (Sino-Vietnamese *trợ*)

(688) 帽 *mào* < *mawH* < **mus* < **muks* 'hat', Vietnamese *mũ* (Sino-Vietnamese *mạo*)

The distinction between *hỏi* and *ngã* is assumed to be one of register: syllables with original voiceless initials went to the high-register *hỏi* tone, and syllables with original voiced initials went to the low-register *ngã* tone.[229]

Haudricourt further observed that in words of Mon-Khmer origin (assumed to be native in Vietnamese), the *hỏi* and *ngã* tones generally correspond to a final *-h* in other Mon-Khmer languages, which in turn reflects earlier *-s* or *-ś*. Here are some of his examples, with additional data added from Gregerson and Thomas (1976).[230] These examples show the *hỏi* tone:

Vietnamese *bẩy*, Mon *tpah*, Rơngao *tơpâih*, Chrau *pâh*, Bahnar *tơpơ'h* 'seven'

Vietnamese *chẻ* 'cleave', Rơngao *klah*, Pacŏh *klah* 'divide', Chrau *chreh* 'split'

Vietnamese *tỏi*, Rơngao *toih* 'garlic'

Vietnamese *vải* 'cloth', Rơngao *kơpeih*, Chrau *paih*, Bahnar *kơpaih* 'cotton', cf. Sanskrit *karpāsa* 'cotton'.[231]

With the *ngã* tone:

Vietnamese *muỗi*, Chrau *moih*, Bahnar *moih* 'mosquito'.

Vietnamese *mũi*, Mon *muh*, 'nose'

Vietnamese *rễ*, Mon *rũh*, Mnong *ries*, Rơngao *ríh*, Chrau *diyeih*, Bahnar *rơh* 'root'.

Haudricourt concluded that *-h* from earlier **-s* may have been the origin of *qùshēng* in Chinese as well, and that at the time of the borrowing, the Chinese tones had perhaps not yet arisen. Pulleyblank also adopted this theory of *qùshēng*, and has found evidence for the proposed **-s* in Chinese transcriptions of foreign words, as we shall see below.

Following Haudricourt's hypothesis, I reconstruct Middle Chinese *qùshēng* syllables with a post-coda **-s* which can occur after codas of all types—vocalic, nasal, and voiceless stop. For example:

**-as > -uH*
**-angs > -angH*
**-aks > -uH*

As these examples show, voiceless stop codas are lost before **-s*. I assume these developments:

**-ps > *-ts > *-js > -jH*
**-ts > *-js > -jH*
**-ks > *-s > -H*
**-wks > -ws > -wH*

Let us examine in more detail the sound changes which effected these developments.

**-ps > *-ts*

The earliest change is ****-ps > *-ts***, which is reflected already in *Shījīng* rhymes; this means that final **-ps* probably cannot be reliably reconstructed

from rhyme evidence, but only from *xiéshēng* characters or morphological relationships with words in plain **-p*. For example, we find the following sequence in Ode 257.13A:

隧 *suì* < *zwijH* < **zjuts* 'path'
類 *lèi* < *lwijH* < **C-rjut/ps* 'good'
對 *duì* < *twojH* < **k-lups* 'respond'
醉 *zuì* < *tswijH* < **tsjuts* 'drunk'
悖 *bèi* < *bwojH* < **buts* 'silly'

Here I reconstruct

(689) 對 *duì* < *twojH* < **k-lups* 'to respond, answer'

with **-ps* because of its probable etymological connection with the synonymous

(690) 答 *dá* < *top* < **k-lup* 'to respond',

which is often used as a gloss for it.[232]

But some of the other rhyme words in this sequence probably had original **-ts*. For example, the word 悖 *bèi* < *bwojH* < **buts* 'silly' also has an apparently synonymous reading *bó* < *bwot* < **but* (Karlgren 1957, item 491d).

The word

(691) 類 *lèi* < *lwijH* < **C-rjut/ps*

could be reconstructed with either **-ts* or **-ps*; if it is the latter, then perhaps we have a consistent **-ups* rhyme in Ode 255.3A (*Dà yǎ* 大雅: *Dàng* 蕩):

類 *lèi* < *lwijH* < **C-rjut/ps* 'good'
憝 *duì* < *drwijH* < **g-ljups* 'ill-will'
對 *duì* < *twojH* < **k-lups* 'respond'
內 *nèi* < *nwojH* < **nups* 'inside'

The absence of **-uts* words in this rhyme might indicate that it is of early origin, predating the ****-ps* > **-ts*** shift. In fact, according to Qū Wànlǐ (1983a: 512), this ode (a justification of the overthrow of the Shāng) probably dates from early Zhōu, while Ode 257 (where **-uts* and **-ups* appear to be mixed) is probably from early Eastern Zhōu (1983a: 522). This raises the possibility that the change ****-ps* > **-ts*** affected the *Shījīng* language some time in Western Zhōu: too late to affect Ode 255, but early enough to affect Ode 257.

One of the advantages of Haudricourt's theory of *qùshēng* is that the merger of **-ps* with **-ts* can be formulated as an assimilation, while in other systems it is phonetically unmotivated. Karlgren has **-b* and **-d* for our **-ps* and **-ts*, but in such a system there is no explanation for why **-b* and **-d* merge while **-p* and **-t* do not.

Final cluster simplification

The next process affecting *qùshēng* words is what we may call **final cluster simplification**: stop codas are lost before **-s*, leaving certain features behind as semivowels:

**-ts* > **-js*
**-ks* > **-s*
**-wks* > **-ws*

As a result of this change, *qùshēng* finals which originally had stop codas merged with those originally having vocalic codas; that is, **-ks* merged with original **-s*, **-ts* merged with original **-js*, and so on. For example, I reconstruct **-ks* in the noun

(692) 意 *yì* < *ʔɨH* < **ʔ(r)jɨks* 'think; thought, intention',

because of its obvious morphological and graphic connections with the verb

(693) 憶 *yì* < *ʔɨk* < **ʔ(r)jɨk* 'to remember'.[233]

On the other hand, I reconstruct no **-k* coda in

(694) 字 *zì* < *dziH* < **fitsjɨ(ʔ)s* 'to breed, nurture, love, cherish'

because of its probable etymological relationship to

(695) 子 *zǐ* < *tsiX* < **tsjɨʔ* 'child'.

Compare also 慈 *cí* < *dzi* < *fitsjɨ* 'loving, kind' and Tibetan *mdza'-ba* 'to love (as friends or kinsmen)', cited by Coblin (1986: 107). By Middle Chinese times, as a result of **final cluster simplification**, both 憶 **ʔj(r)ɨks* and 字 **fitsjɨ(ʔ)s* have the same final *-iH*.

Final cluster simplification also seems to be reflected in at least some *Shījīng* rhyming, though it is possible that the change occurred in several steps, only some of which were complete in *Shījīng* times. In Ode 124.4A, for example, we have the rhyme sequence

夜 *yè* < *yæH* < **(l)jAks* 'night'
居 *jū* < *kjo* < **k(r)ja(s)* 'abode'

Here 居 *jū* is used as a noun; the full line is

歸于其居
guī yú qí JŪ
'I shall join him in his ABODE'.

The parallel stanza 124.5 also has a noun in this position:

歸于其室
guī yú qí SHÌ
'I shall join him in his CHAMBER'.

The rhyme of 居 *jū* with *qùshēng* 夜 *yè* < *yæH* in 124.4A suggests that we should reconstruct a nominal reading

(696) 居 **k(r)jas* 'abode, dwelling, position',

not preserved in the rhyme books, derived from the verb

(697) 居 *jū* < *kjo* < **k(r)ja* 'to stay at, remain, dwell'.

(A nominal sense of 居 *jū* also appears to rhyme as *qùshēng* in Ode 114.1B.) Here there seems to be no reason to reconstruct a **k* in the coda position of 居 **k(r)ja(s)*. But there is clearly a **k* in the other rhyme word,

(698) 夜 *yè* < *yæH* < **(l)jAks* 'night',

which must be related to

(699) 夕 *xī* < *zjek* < **z(l)jAk* 'evening'.

The fact that 居 **k(r)jas* and 夜 **(l)jAks* rhyme in this ode suggests that **final cluster simplification** had already applied by this time, and had simplified **-ks* to **-s*.

It is likely, however, that **final cluster simplification** took place in several stages. While the *Shījīng* shows evidence that **-ks* had already changed to **-s*, evidently **-ats*, at least, was still distinct from **-ajs*; indeed, the change **-ts* > **-js* evidently occurred after ****-aj* monophthongization**—otherwise we would expect a development **-ats* > **-ajs* > MC *-aH*.[234]

The mergers involved in **final cluster simplification** sometimes make it difficult to decide whether or not to reconstruct a stop in coda position. Rhymes are little help, as we have seen; *xiéshēng* characters are not always a reliable guide either, since some of them may have been created after **final**

cluster simplification took place. In some such cases we are forced to use an equivocal reconstruction with parentheses or the like.

Qùshēng formation

The final change affecting the post-coda *-*s* may be called ***qùshēng* formation**. Haudricourt suggested that the first step, in Chinese as in Mon-Khmer, was a change of final *-*s* to *-h*, followed eventually by a loss of the final *-h* and its replacement by a falling tone. The falling tone would originally be a predictable concomitant of the final *-h*, resulting from the relaxation of the vocal bands in anticipation of the glottal fricative *-h*. This relaxation would have lowered the fundamental frequency of preceding voiced sounds; after the loss of *-h*, this lowering of pitch would become distinctive. I will use the term ***qùshēng* formation** for this whole process, without attempting to date its parts separately. It is not even certain that the process was complete by the time of the *Qièyùn*. It is certainly plausible, however, that the development of distinctive pitch contours in one or more prestigious varieties of Chinese was the linguistic stimulus leading to the poetic use of tone alternations, which reached its height in Táng poetry.

Evidence for final *-*s*

Haudricourt's original argument for a final *-*s* in *qùshēng* was of course rather indirect, involving a typological analogy with Mon-Khmer. But Pulleyblank and others have turned up more direct evidence for this reconstruction. In early Chinese transcriptions and borrowings of foreign words, *qùshēng* words were often used to transcribe foreign syllables in final *-s*. Here are some of Pulleyblank's examples (1962: 217–18):

(700) 波羅奈 *Bōluónài* < *pa-la-najH* for Sanskrit *Vārāṇasī* 'Benares'

(701) 阿魏 *ēwèi* < *ʔa-ngjwɨjH* and 央匱 *yāngkuì* < *ʔjang-gwijH*, Tocharian B *ankwaṣ* 'asafoetida'

(702) 阿迦貳吒 *Ējiā'èrzhā* < *ʔa-kja-nyiH-træ* for *Akaniṣṭha*

(703) 都賴 *Dūlài* < *tu-lajH* for *Talas* (name of a river)

(704) 對馬 *Duìmǎ* < *twojH-mæX* for *Tsushima* < *Tusima* (name of an island)

In subsequent studies (1973a, 1984), Pulleyblank argues that there were probably dialects which retained a final *-s* from original **-ts* as late as the early part of the sixth century. Pulleyblank connects this with the four *Qièyùn* rhymes 泰 Tài (ThajH), 祭 Jì (TsjejH), 夬 Guài (KwæjH), and 廢 Fèi (PjojH) which occur only in *qùshēng*, without counterparts in *píng* or *shǎng* tones. The existence of these all-*qùshēng* rhymes is not, however, a good argument in itself for the late persistence of final **-s*, because they may be accounted for entirely by ****-aj* monophthongization**. When **-ts* changed to *-jh* as part of **final cluster simplification**, most finals in original **-ts* merged with corresponding finals in **-js*, which then aligned them with corresponding *píngshēng* and *shǎngshēng* finals in original **-j* and **-j?*. For example, in the word

(705) 蔚 *wèi* < *ʔjwɨjH* < **ʔjujs* < **ʔjuts* 'mugwort (Artemisia absinthum)',

I reconstruct **-ts* because the word also has a Middle Chinese reading *ʔjut* < **ʔjut* with final **-t* (no difference in meaning known).

When 蔚 **ʔjuts* was affected by **final cluster simplification**, it merged with the *qùshēng* reading of

(706) 畏 *wèi* < *ʔjwɨjH* < **ʔjuj(s)* 'to fear, be afraid; be fearsome, majestic'.

Thus both 蔚 **ʔjuts* and 畏 **ʔjujs* merged as MC *ʔjwɨjH*, the *qùshēng* syllable parallel to *píngshēng*

(707) 威 *wēi* < *ʔjwɨj* < **ʔjuj* 'to overawe, terrorize'.

(威 *wēi* and 畏 *wèi* both represent a single root, with both *píngshēng* and *qùshēng* readings; by tradition, the *píngshēng* reading has become attached to 威 *wēi* and the *qùshēng* reading to 畏 *wèi*.) Thus 蔚 *wèi* and 畏 *wèi* were both placed in the *Qièyùn*'s 未 Wèi (MjɨjH) rhyme, the *qùshēng* rhyme corresponding to the *píngshēng* 微 Wēi (Mjɨj) rhyme where we find 威 *wēi*.

But in the dialects ancestral to Middle Chinese, ****-aj* monophthongization** had already changed original **-aj* to **-a* before **-ats* became **-ajs*; as a result, there was then no original *qùshēng* **-ajs* for **-ats* to merge with, and no parallel **-aj* or **-aj?* in *píngshēng* and *shǎngshēng*; thus the final **-ajH* remained isolated in *qùshēng*. Similarly, original **-raj* became MC *-æ* (by ****-aj* monophthongization**, ****r*-color**, and ****r*-loss**); when **-rats* subsequently became MC *-æjH*, there was no parallel *-æj* and *-æjX* in *píngshēng* or *shǎngshēng*. For similar reasons, *-jejH* < **-(r)jats* and *-jojH* < **-jats* had no corresponding finals in *píngshēng* or *shǎngshēng*, because original **-(r)jaj* had become MC *-je*. The isolation of the *qùshēng*-only rhymes of the

Qièyùn is thus explained by the independently needed change ***-aj* monophthongization**, and appears to be irrelevant to the question of when *-*s* disappeared.

8.2.2.2. Qùshēng *-s *as a derivational morpheme*

As we have seen, the classical reading tradition often preserves several different pronunciations for a single character, and for some words different readings are associated with slightly different meanings. For example, in section 6.2.1 we found cases where voiced-initial forms were used for intransitive or passive senses of a verb, and voiceless-initial forms for transitive or active senses. By far the most common such derivational process involves a distinction between *qùshēng* and non-*qùshēng* forms of a root; by Haudricourt's *-*s* hypothesis, these represent forms with and without an *-*s* suffix. Sometimes both forms are written with the same character, but in other cases separate characters have developed. This *-*s* suffix seems to have a variety of derivational functions, the most common of which is to make a noun from a verb, as in these examples, based on Downer (1959):

(708) 傳 *chuán* < *drjwen* < **drjon* 'to transmit'
傳 *zhuàn* < *drjwenH* < **drjons* 'a record'

(709) 研 *yán* < *ngen* < **ngen* 'to grind'
硯 *yàn* < *ngenH* < **ngens* 'inkstone'

(710) 磨 *mó* < *ma* < **maj* 'to grind'
磨 *mò* < *maH* < **majs* 'grindstone'

Particularly interesting are the alternations of *rùshēng* and *qùshēng*, which show the operation of **final cluster simplification**:

(711) 結 *jié* < *ket* < **kit* (< **kik*) 'to tie'[235]
髻 *jì* < *kejH* < **kits* (< **kiks*) 'knot in hair, chignon'

(712) 納 *nà* < *nop* < **nup* 'to bring in'
內 *nèi* < *nwojH* < **nuts* < **nups* 'inside'

(713) 責 *zé* < *tsrɛk* < **tsr(j)ek* 'to exact, demand payment'
債 *zhài* < *tsrɛiH* < **tsr(j)eks* 'debt'

(714) 刺 [*cì*] < *tshjek* < **tshjek* 'to prick, stab'

刺 *cì* < *tshjeH* < **tshjeks* 'thorn'

(715) 塞 *sè ~ sāi* < *sok* < **sɨk* 'to block'

塞 *sài* < *sojH* < **sɨks* 'border, frontier'

(716) 宿 *sù* < *sjuwk* < **sjuk* 'to stay overnight'

宿 *xiù* < *sjuwH* < **sjuks* 'celestial "mansion" (in which the moon is found on successive nights)'

Another common pattern is for the **-s* suffix to form a denominal verb:

(717) 冠 *guān* < *kwan* < **kon* 'cap'

冠 *guàn* < *kwanH* < **kons* 'to cap (manhood ceremony)'

(718) 衣 *yī* < *ʔjɨj* < **ʔjɨj* 'clothing'

衣 *yì* < *ʔjɨjH* < **ʔjɨjs* 'to wear, to clothe'

(719) 雨 *yǔ* < *hjuX* < **w(r)jaʔ* 'rain (noun)'

雨 *yù* < *hjuH* < **w(r)ja(ʔ)s* 'to rain (transitive)'

(720) 王 *wáng* < *hjwang* < **wjang* 'king'

王 *wàng* < *hjwangH* < **wjangs* 'to be king'

The reader is referred to Zhōu Zǔmó (1946 [1966]) and Downer (1959) for more extensive analysis of these derivational patterns.

The antiquity of this derivational process was doubted by the Qīng scholars, who suspected that many such readings, if not all, were created by teachers of the classics in the fifth and sixth centuries A.D. It is quite possible that some derived forms may have been created in this way by analogy to others, but as Downer points out, it is most implausible that the whole phenomenon is artificial (1959: 264). In some cases there seem to be traces of this derivational process in the rhymes of the *Shījīng*, even for words where the Middle Chinese sources give only a single reading. The cases cited above where nominal sense of 居 *jū* rhyme as *qùshēng* are an example of this kind. Another possible example is the word

(721) 害 *hài* < *hajH* 'harm'.

Middle Chinese sources indicate that this word is to be read as *qùshēng hajH* when it means "harm", whether as a noun or a verb. It is also read in

rùshēng as *hé* < *hat,* but only as an interrogative pronoun "what", also written

(722) 曷 *hé* < *hat* < **gat* 'what'.

But the line

我獨何害
wǒ dú hé hài
'Why am I alone harmed?',

where 害 *hài* seems to be a verb meaning "to suffer harm", occurs twice in similar passages in the *Shījīng* (Odes 202.5 and 204.3), and in both cases it rhymes with words in **-at,* not **-ats.* On the other hand, the line

不瑕有害
bù xiá yǒu hài
'There is sure to be harm',

where 害 *hài* seems to be a noun (the object of 有 *yǒu* 'to have, to exist'), also occurs twice in the *Shījīng* (Odes 39.3B and 44.2A), and it seems to rhyme as **-ats* in both cases.[236] This suggests that 害 originally had two readings: a *rùshēng* reading in **-at* representing the verb "to suffer harm", and a *qùshēng* reading in **-ats* representing the derived noun "harm". Moreover, 害 *hài* is surely from the same root as

(723) 割 *gē* < *kat* < **kat* 'to injure',

so perhaps we have the following derivational paradigm, only imperfectly preserved in the Middle Chinese reading tradition:

割 **kat* 'to injure, to harm' (transitive verb)
害 **fikat* 'to suffer harm or injury' (intransitive verb)
害 **fikats* 'harm, injury' (noun)

As Pulleyblank has suggested (1973b), since *-s* serves a similar derivational function in Tibetan, the Old Chinese **-s* suffix could well be inherited from Proto-Sino-Tibetan. We should note, however, that not all cases of the post-coda **-s* are necessarily suffixes; in some cases it may be part of the root, as possibly in

(724) 二 *èr* < *nyijH* < **njijs* 'two' (cf. Tibetan *gnyis*).

8.2.2.3. *Dialects with early loss of* *-s*?

Although *qùshēng* words and *rùshēng* words generally rhyme separately in the *Shījīng*, they do rhyme with each other occasionally, and this phenomenon requires some explanation. A certain number of the apparent rhyme contacts of this kind probably result from textual corruptions, or leveling away of old derived forms.[237] However, it is also possible that in some dialects the **-s* of clusters like **-ts* and **-ks* was simply lost, before the regular **final cluster simplification** process had a chance to occur. Such early loss of **-s* would cause **-ts* to merge with **-t*, **-ks* with **-k*, and so forth. It might also explain the occasional occurrence of final *-t* in *xiéshēng* series with **-p* and **-ps*, as in

(725) 訥 *nè* < *nwot* < **nut* (perhaps a dialect form from < **nuts* < **nups*) 'slow of speech'.

In this case the dialectal loss of **-s* might have followed the earlier process ****-ps* > **-ts***, leaving **-t* as the reflex of original **-ps*. (Alternatively, the character 訥 for **nut* might have been created after the phonetic element 內 **nups* had already changed to **nuts*).

There is a variety of evidence that such dialects may have existed. For one thing, the distribution of *qùshēng-rùshēng* rhyme contacts in the *Shījīng* is not uniform: they seem to occur mainly in the *Xiǎo yǎ* and *Dà yǎ* sections (Odes 161–234 and 235–65 respectively), and are rare in the *Guó fēng* (Odes 1–160), the *Lǔ sòng* (Odes 297–300), and the *Shāng sòng* (Odes 301–5).[238] It is possible to interpret this pattern either chronologically or geographically. The *Xiǎo yǎ* and *Dà yǎ*, where the most mixed rhymes occur, are considered older (generally speaking) than the *Guó fēng*, the *Lǔ sòng*, and the *Shāng sòng*, where *qùshēng-rùshēng* contacts are rare.[239] But a geographical interpretation is also possible, for the main cultural and political centers in early times were in the west, and moved to the east later. This suggests the hypothesis that mergers of *qùshēng* with *rùshēng*, possibly through early loss of **-s* in final clusters, were characteristic of western dialects spoken in the core cultural area of the Western Zhōu dynasty.

There is additional evidence from later periods which could be relevant to this hypothesis. In his preface to the *Qièyùn*, Lù Fǎyán states that "In Qín 秦 and Lǒng 隴, *qùshēng* becomes *rù*".[240] Qín and Lǒng are ancient terms for areas of the northwest part of China proper, corresponding roughly to modern Shǎanxī and Gānsù. Zhào Zhènduó (1962: 469) cites several other comments from Middle Chinese sources which seem to refer to the same

phenomenon. In Xuányìng's *Yíqiè jīng yīnyì* (see section 2.2.1.3) we find the following note:

> 狡獪 *jiǎo*[*kuài*] < *kæwX-kwajH* (~ *kwæjH*): The *Tōngsú wén* 通俗文 says: small children playing is called 狡獪 *kæwX-kwajH* [or *kæwX-kwæjH*]. Nowadays, within the pass [guānzhōng 關中, i.e. in the central plain of Shǎanxī] it is pronounced 狡刮 *kæwX-kwæt;* this is an error.

From the early Táng work *Kuāng miù zhèng sú* 匡謬正俗 [Correcting errors and rectifying vulgarisms] by Yán Shīgǔ 顏師古:

> 斃 [*bì* < *bjiejH* (IV) 'to die, to kill'] means "to assault". Its sound is the same as 弊 [*bjiejH*].... Nowadays, west of the pass, 斃 is vulgarly pronounced with the sound of 甓 [*bek*].[241]

From Huìlín's *Yíqiè jīng yīnyì*:

> 無復 [*wúfù* < *mju-bjuwH*]: The second character in the Wú 吳 pronunciation is 扶救反 [*b(ju) + (k)juwH = bjuwH*]; in the Qín 秦 pronunciation it is 馮目反 [*b(juwng) + (m)juwk = bjuwk*].

Another form which might reflect a dialect merger of *qùshēng* and *rùshēng* is

(726) 鼻 [*bí*] < *bjijH* < **bjit(s)* 'nose',

where the Middle Chinese form would lead us to expect Mandarin *bì*, with fourth tone. The unaspirated initial *b-* in Mandarin second tone can regularly reflect only an earlier *rùshēng* form such as MC *bjit*, since voiced-initial *píngshēng* words (the only other source of the Mandarin second tone) regularly have aspirate initials. Several dialects which preserve *rùshēng* have *rùshēng* in this morpheme.

8.2.3. The origin of *shǎngshēng* (high or rising tone)

*8.2.3.1. The *-ʔ hypothesis*

The existence of an Old Chinese category corresponding to Middle Chinese *shǎngshēng* has long been recognized. Consider, for example, the following sequence of seven *shǎngshēng* rhyme words from the 之 Zhī group, in Ode 177.6A:

喜 *xǐ* < *xiX* < **x(r)jɨʔ* 'rejoice'
祉 [*zhǐ*] < *trhiX* < **thrjɨʔ* 'blessings'
久 *jiǔ* < *kjuwX* < **kʷjɨʔ* 'long time'
友 *yǒu* < *hjuwX* < **wjɨʔ* 'friend'
鯉 *lǐ* < *liX* < **C-rjɨʔ* 'carp'
矣 *yǐ* < *hiX* < **ɦjɨʔ* '(particle)'
友 *yǒu* < *hjuwX* < **wjɨʔ* 'friend'

I follow Pulleyblank (1962: 225–27) and Mei Tsu-lin (1970) in reconstructing a glottal stop **-ʔ* in post-coda position as the origin of Middle Chinese *shǎngshēng*; we may call this the "**-ʔ* hypothesis". Like Haudricourt's **-s* hypothesis, it is suggested by the development of tones in Vietnamese. Just as the Vietnamese *hỏi* and *ngã* tones in native Mon-Khmer words can be traced to an earlier final *-h*, so the Vietnamese *sắc* and *nặng* tones (marked by an acute accent and an under-dot respectively) correspond to a glottal stop in Mon-Khmer languages. Mei Tsu-lin (1970: 95) cites the following examples from Haudricourt (1954b [1972]: 158):

Vietnamese *cá*, Khmu *kaʔ*, Riang *kaʔ* 'fish'
Vietnamese *lá*, Khmu *hlaʔ*, Riang *laʔ* 'leaf'
Vietnamese *chó*, Khmu *soʔ*, Riang *soʔ* 'dog'
Vietnamese *gạo*, Khmu *rənkoʔ*, Riang *koʔ* 'rice'

In early Chinese loan words in Vietnamese (as opposed to the later stratum of Sino-Vietnamese loans), it is these *sắc* and *nặng* tones which correspond to Chinese *shǎngshēng*. In the *sắc* tone, we have

(727) 卷 *juǎn* < *kjwenX* < **krjonʔ* 'to roll, roll over, turn over', Vietnamese *cuốn* 'to roll, to carry away' (Sino-Vietnamese *quyển*)

(728) 錦 *jǐn* < *kimX* < **k(r)jɨmʔ* 'brocade', Vietnamese *gấm* (Sino-Vietnamese *cẩm*)

(729) 藕 *ǒu* < *nguwX* < **ng(r)oʔ* 'lotus root', Vietnamese *ngó* (Sino-Vietnamese *ngẫu*)

In the *nặng* tone, we have

(730) 簿 *bù* < *buX* < **baʔ* 'register', Vietnamese *bạ* 'register, account book' (Sino-Vietnamese *bộ*)

(731) 市 *shì* < *dzyiX* < **djɨʔ* 'market, marketplace', Vietnamese *chợ* (Sino-Vietnamese *thị*)

These correspondences would be accounted for if we assumed that early Chinese final glottal stop was borrowed as a final glottal stop in early Vietnamese. Moreover, there is other evidence to support the reconstruction of a glottal stop, including evidence from modern Chinese dialects (see section 8.2.3.2 below).

In earlier studies, I used a colon **:* (borrowed from Karlgren's Ancient Chinese) as an arbitrary notation for the Old Chinese source of *shǎngshēng*. I assumed that it may have been some kind of glottal feature, but took an agnostic view as to its exact phonetic nature. Part of the reason for this was that I earlier reconstructed **-w?* as a source of MC *-k* (see section 8.1.3 above). But in the present system I have removed this notational conflict by reconstructing a coda **-wk*, and I follow the now widely adopted reconstruction of *shǎngshēng* as a final glottal stop.

The final glottal must be reconstructed after both vocalic and nasal codas:

(732) 子 *zǐ* < *tsiX* < **tsjɨ?* 'child'

(733) 指 *zhǐ* < *tsyijX* < **kjij?* 'to point'

(734) 早 *zǎo* < *tsawX* < **tsaw?* 'early'

(735) 反 *fǎn* < *pjonX* < **pjan?* 'turn around'

(736) 景 *jǐng* < *kjængX* < **krjang?* 'to measure by the shadow'

We should probably assume that **-?* originally could be followed by the derivational suffix **-s*, though **-?s* probably changed early to **-s;* the two do not seem to be distinguished in *Shījīng* rhyming:

(737) 好 *hǎo* < *xawX* < **xu?* 'good'

好 *hào* < *xawH* < **xu(?)s* 'to love'

(738) 坐 *zuò* < *dzwaX* < **dzwajX* < **dzoj?* 'to sit'

座 *zuò* < *dzwaH* < **dzwajs* < **dzoj(?)s* 'seat'

(739) 種 *zhǒng* < *tsyowngX* < **tjong?* 'seed'

種 *zhòng* < *tsyowngH* < **tjong(?)s* 'to sow'

I will write **-(?)s* in such cases, since the reconstruction of **?* before **-s* is based on morphological analogy only, and not supported by rhyme evidence as far as I know.

In section 8.2.3.3 below I discuss the possibility that **?* might also have occurred after oral stops in combinations like **-k?* etc., with subsequent loss of the stop: **-k?* > **-?*. If so, this raises the possibility that there could have

been final clusters as complex as **-k?s*; but I know of no cases where it is actually necessary to reconstruct this.

If a typable form of the Old Chinese reconstruction is desired, an apostrophe **'* or a **q* may be substituted for the symbol **?*.

*8.2.3.2. Evidence for *-?*

Mei Tsu-lin (1970) found considerable evidence for the **-?* hypothesis within Chinese itself. There are in fact modern Chinese dialects which have a final glottal stop in words which are *shǎngshēng* in Middle Chinese; the dialects cited by Mei are Wēnzhōu 温州 in Zhèjiāng, generally assigned to the Wú group, and four Mǐn dialects: Pǔchéng 浦城 and Jiànyáng 建陽 in northwestern Fújiàn, and Dìng'ān 定安 and Wénchāng 文昌 on Hǎinán island. These dialects contain a number of early features not preserved in Middle Chinese; the glottal stop in *shǎngshēng* is probably such a feature.

The reconstruction of a final glottal stop in *shǎngshēng* also accounts nicely for the fact that early Buddhist sources found by Mei describe the *shǎng* tone as high and short. Also, *shǎngshēng* syllables are often used to transcribe Sanskrit short vowels. This shortness is a natural concomitant of the final glottal stop; *rùshēng* syllables are often similarly short in modern dialects which have a final glottal stop in *rùshēng*. As for pitch, as Haudricourt pointed out with reference to Vietnamese (1954b [1972]: 159]), the vocal bands must be tightened to produce a glottal stop, and if this tightening begins while the vocal bands are still vibrating, the pitch will rise. A similar process was proposed by Matisoff (1970) to explain the origin of the Lahu high-rising tone. Of course, once consonantal features have been replaced by features of pitch, the pitch can continue to change; Mandarin tone three, the main reflex of the *shǎng* tone, is actually a low tone (low rising in prepausal position).

The **-?* hypothesis might also explain occasional *Shījīng* rhymes between *shǎngshēng* words and words in final **-k*, as in the following sequence in Ode 249.1A:

子 *zǐ* < *tsiX* < **tsjɨʔ* 'son'
德 *dé* < *tok* < **tɨk* 'virtue'

Such rhymes might reflect a dialect where final **-k* had merged with **-?* or vice versa; such a change is, of course, quite natural. But such rhymes could also simply be hedge rhymes, or places where the text or the reading tradition is faulty.

Finally, Pulleyblank cited a number of cases where Chinese *shǎngshēng* words may have been used to represent a foreign *k* in borrowings and transcriptions (1962: 226–27); an example is the word for "lion", apparently borrowed from Tocharian:

(740) 獅子 *shīzi* < *srij-tsiX* < **srjij-tsjiʔ* 'lion', Tocharian A *ṣecake*, Tocharian B *śiśāk*.

*8.2.3.3. Old Chinese *-ʔ after oral stops?*

There are some morphological and *xiéshēng* relationships between *shǎngshēng* words and *rùshēng* words which suggest that perhaps we should reconstruct OC **-ʔ* after oral stops **-p, *-t, *-k,* and **-wk*. Possibly this **-ʔ* was a derivational suffix analogous to the *qùshēng* suffix **-s*. The example

(741) 負 *fù* < *bjuwX* < **fipji(k)ʔ* 'carry on the back',

possibly related to 北 *běi* < *pok* < **pik* '(back side:) north' and 背 *bèi* < *pwojH* < **pik(s)* 'the back, posterior part', was cited in section 5.5 above. Another example is

(742) 有 *yǒu* < *hjuwX* < **wjiʔ* (< **wjikʔ?*) 'there is; possess',

possibly related to

(743) 或 *huò* < *hwok* < **wik* 'some; sometimes, perhaps'.[242]

In section 6.2.3.1 above, in support of the development **sr-* > *tsh-*, I also cited the following case of parallel etymological relationships between homonyms:

(744) 采, 採 *cǎi* < *tshojX* < **sri(k)ʔ* 'gather, pluck'

穡 *sè* < *srik* < **srjik* 'farming, husbandry; to reap, harvest'

(745) 采, 彩 *cǎi* < *tshojX* < **sri(k)ʔ* 'color, pigment'

色 *sè* < *srik* < **srjik* 'color, appearance, countenance, mien'

The following word is listed as *qùshēng* in the rhyme books, but seems to rhyme as *shǎngshēng* in Ode 90.3A; in 255.5A it rhymes with a *shǎngshēng* word and a *rùshēng* word:

(746) 晦 *huì* < *xwojH* < **hmi(k)ʔ(s)* 'dark, obscure'.

It is probably cognate to

(747) 黑 *hēi* < *xok* < **hmik* 'black'.

Examples of *xiéshēng* relationships between *shǎngshēng* and *rùshēng* include

(748) 寫 *xiě* < *sjæX* < **sjA(k)ʔ* 'to disburden, relieve',

whose phonetic is

(749) 舄 *xì* < *sjek* < **sjAk* 'shoe, slipper'.

Likewise the phonetic of

(750) 浩 *hào* < *hawX* < **gu(k)ʔ* 'vast'

is

(751) 告 *gào* < *kawH* < **kuks*, also read *gù* < *kowk* < **kuk* 'to tell, report'.

The rhymes between *shǎngshēng* and *rùshēng* words mentioned above, while they could be simply hedge rhymes or rhymes from a dialect where **-k* had become **-ʔ*, might in some cases reflect characters with alternations between **-k* and **-kʔ* which have not survived in the reading tradition. For example,

(752) 祀 *sì* < *ziX* < **zjɨk(ʔ)* 'sacrifice'

sometimes rhymes as *shǎngshēng* (e.g. four times in Ode 245; also Odes 282.1D, 300.3B), but sometimes as *rùshēng* (Odes 209.4B, 212.4B, and 281.1C). This pattern could reflect dialect differences, but it is also possible that the word originally had both *shǎngshēng* and *rùshēng* forms, and that the *rùshēng* form was not preserved in Middle Chinese. If **-ʔ* was originally a derivational suffix like **-s*, this would also explain other cases which do not involve *rùshēng*, such as

(753) 長 *zhǎng* < *trjangX* < **trjangʔ* 'to grow up; elder',

which seems to be related to these forms:

(754) 張 *zhāng* < *trjang* < **trjang* 'to make long, stretch'

(755) 長 *cháng* < *drjang* < **ɦtrjang* 'long'

But the derivational suffix **-ʔ*, if there really was one, seems to have lost its productivity early; there are not nearly so many examples of it as there are of **-s*. The fact that the *shǎngshēng-rùshēng* contacts involve mostly *rùshēng* words in **-k* or **-wk* suggests that a phonological confusion of **-ʔ* and **-k* may be responsible for most of these cases.

8.3. Karlgren's final voiced stop hypothesis

Having reviewed the details of the coda and post-coda systems I reconstruct for Old Chinese, I now turn to a more detailed examination of the final voiced stop hypothesis—Karlgren's proposal that Old Chinese had a series of final voiced stops **-b*, **-d*, and **-g*, parallel to voiceless **-p*, **-t*, and **-k*. (Li also added **-gw*, parallel to his **-kw*.)[243] According to Karlgren's proposal, the final voiceless stops remained in Middle Chinese, but the final voiced stops were lost or vocalized, as in the following examples:

(756) 極 *jí* 'to reach the end', MC *gik* < Karlgren's **g'i̯ək*, Li's **gjək*

(757) 其 *qí* '(grammatical particle)', MC *gi* < Karlgren's **g'i̯əg*, Li's **gjəg*

(758) 結 *jié* 'to tie', MC *ket* < Karlgren's **kiet*, Li's **kit*

(759) 髻 *jì* 'hair-knot, chignon', MC *kejH* < Karlgren's **kied*, Li's **kidh*

(760) 盍 *hé* 'to thatch, to cover', MC *hap* < Karlgren's **g'âp*, Li's **gap*

(761) 蓋 *gài* 'cover', MC *kajH* < Karlgren's **kâd* < **kâb*, Li's **kabh*.

The purpose of reconstructing final voiced stops is to account for contacts of various kinds between Middle Chinese *rùshēng* words and the *yīnshēng* words, which in a vowel or semivowel in Middle Chinese; for example, the *rùshēng* 結 *jié* 'to tie' and the *qùshēng* 髻 *jì* 'knot, chignon' have the same phonetic element (吉 *jí* < *kjit* 'auspicious'), and appear to be etymologically related to each other as well. As we have seen, these connections are accounted for differently in the present reconstruction system; for example, 結 *jié* and 髻 *jì* are related by reconstructing an **-s* suffix in the latter. But since the final voiced stop hypothesis has been so widely accepted, I will examine it here and give my reasons for rejecting it. It will be useful to begin with a brief sketch of how this hypothesis developed.

8.3.1. The development of the final voiced stop hypothesis

To my knowledge, the first suggestion that Old Chinese had final voiced stops appears in Karlgren's *Analytic dictionary* (1923 [1973]). Karlgren proposed this reconstruction in order to explain why some *yīnshēng* words (words ending in a vowel or glide in Middle Chinese) rhyme or have *xié-shēng* connections with *rùshēng* words. Karlgren cited the following examples:

(762) 乍 *zhà* < *dzræH* 'in a moment, suddenly' (my **dzraks*),

(763) 昨 *zuó* < *dzak* 'yesterday' (my **dzak*)

(764) 敝 *bì* < *bjiejH* (IV) 'worn out, shabby' (my **bjets*),

(765) 瞥 *piē* < *phet* 'to glance at' (my **phet*).

In other cases, a single character has both *yīnshēng* and *rùshēng* readings:

(766) 覺 *jué* < *kæwk* 'to awake' (my **kruk*), also read *jiào* < *kæwH* (my **kruks*).

Karlgren further observed that in such cases,

> it is a rule that holds good in nine cases out of ten that the member which has lost its final consonant has got the k'ü ṣəng [*qùshēng*], the falling tone. (1923 [1973]: 28)

Observing that voiced consonants in initial position tended to depress the pitch of the initial part of the syllable (giving rise to low-register tones), Karlgren reasoned that a voiced consonant in final position could depress the pitch of the final part, producing a falling tone. He proposed final stops **-d*, **-g*, and **-b* (the last more reluctantly, since there were fewer clear examples). Karlgren observed that the elements in question might have been voiced fricatives instead of voiced stops, but saw no reason to assume that they were (Karlgren 1923 [1973]: 27–30).[244]

At this time, Karlgren was already aware of some aspects of traditional Chinese phonology, for he mentions the "tradition among Chinese philologists that the falling tone is the youngest Chinese tone" (1923 [1973]: 28), but he shows no familiarity with the traditional rhyme categories for Old Chinese; or perhaps he knew them but did not yet take them seriously.[245] At this stage, then, his proposals on Old Chinese were not based on traditional scholarship, but on Middle Chinese readings and *xiéshēng* series alone, and he proposed final voiced stops only when there was *xiéshēng* evidence to support them. For example, in series 685 of the *Analytic dictionary*, the entry for

(767) 怕 *pà* < *phæH* 'to fear'

includes the annotation "< *-g*", indicating that the word originally had a final **-g*, because of the final *-k* in the phonetic

(768) 白 *bái* < *bæk* 'white'.

But there is no such annotation in the entry for

(769) 五 *wǔ* < *nguX* 'five'

(series 1280), because there are no *rùshēng* words in this series. Similarly, in series 1069, the entry for

(770) 砌 *qì* < *tshejH* 'masonry; to pave'

contains the annotation "< *-d*" because the phonetic element 切 ends in *-t:*

(771) 切 *qiē ~ qiè* < *tshet* 'to cut'

But there is no such annotation in series 1215 under

(772) 稽 *qǐ* < *khejX* 'to bow the head',

because there are no *rùshēng* words in this series. Similarly, in series 203 he writes "< *-g*" in the entry for

(773) 意 *yì* < *ʔɨH* 'thought, idea',

since some words with this phonetic have final *-k,* including the cognate verb

(774) 憶 *yì* < *ʔɨk* 'to remember'.

But no final **-g* is suggested in

(775) 其 *qí* < *gi* 'his, her, its, their; that',

since this series contains no *rùshēng* words.

In his later work (such as Karlgren 1933), Karlgren retained the distinction made in the *Analytic dictionary* between words like 怕 *pà* < *phæH,* with direct *rùshēng* connections (which he therefore reconstructed with **-g*), and words like 五 *wǔ* < *nguX,* without such connections (which he therefore reconstructed with open syllables). In other cases, however, he dropped the distinction between words with direct *rùshēng* connections and those without: thus at this later stage, 意 *yì* < *ʔɨH* and 其 *qí* < *gi* were reconstructed as **ɨəg* and **g'ɨəg* respectively (see Karlgren 1957, items 957a and 952a), both with final **-g,* even though only the first shows *xiéshēng* connections with *-k.*

Karlgren's decision to reconstruct final **-g* in words like 其 *qí* < *gi,* even though there is no *xiéshēng* evidence to support it, is probably influenced by *Shījīng* rhymes: Although the word 其 *qí* itself has no direct *xiéshēng* connections with *rùshēng* words, it can be linked to *rùshēng* words indirectly through a chain of rhymes and *xiéshēng* connections. For example, 其 (used as a particle, with the reading *jī* < *ki*) rhymes in Ode 109.1B–2B with

(776) 思 *sī* < *si* < **sjɨ* 'to think',

which in turn rhymes repeatedly (Odes 30.2A, 33.3A, 66.1A, 91.2A) with

(777) 來 *lái* < *loj* < **C-rɨ(k)* 'to come; wheat',

which rhymes with *rùshēng* words in Odes 168.1A, 203.4A, 242.2A, and 263.6A; moreover, 來 *lái* is phonetic in and (in its meaning "wheat") etymologically related to

(778) 麥 *mài* < *mɛk* < **mrɨk* 'wheat'.

It is this indirect chain of relationships which connects 其 *qí* with words in final *-k*, and is held to justify its reconstruction with a final **-g*.

Chinese scholars such as Li Fang-kuei (1931) and Dǒng Tónghé (1944 [1948]) noted that it is difficult to make a clear separation in *Shījīng* rhyming between words where Karlgren reconstructed open syllables and words where he reconstructed final voiced stops. For example, the open-syllable word

(779) 旅 *lǚ* < *ljoX* 'multitude; younger men of the family' (Karlgren: **glɨo*)

rhymes in Ode 290.1C with the *rùshēng* word

(780) 伯 *bó* < *pæk* < **prak* 'eldest' (Karlgren: **pǎk*).

Li and Dǒng therefore preferred to reconstruct Karlgren's **-o* and **-âg* as **-âg* in all cases. This was also more consistent with the traditional rhyme categories, since Karlgren's **-o* and **-âg* both belong to the traditional 魚 Yú group. Similarly, they rejected Karlgren's distinction between **-ug*, which shows connections with *rùshēng* **-uk*, and the open-syllable final **-u*; both of these belong to the traditional 侯 Hóu group. As a result of their critique, these distinctions proposed by Karlgren are now not widely accepted.

In examining the final voiced stop hypothesis, there are actually two issues which need to be kept distinct:

1. Which words actually had significant connections with *rùshēng* words?
2. What should be reconstructed to account for such connections?

On the second question, I will argue below that reconstructing a final voicing distinction to account for *rùshēng* connections was a bad choice; but on the first question, I believe Karlgren was on the right track in the *Analytic dictionary*, and that he was correct to distinguish **-o* from **-âg* and **-u* from **-ug*. Let us consider this question first.

8.3.2. Direct and indirect contacts with *rùshēng*

According to the final voiced stop hypothesis, final voiced stops are reconstructed to account for connections with the final voiceless stops of *rùshēng* syllables. A central issue in applying such a hypothesis is, what counts as a real connection with *rùshēng*? In the case of a word like

(781) 路 *lù* < *luH* 'road, way' (Karlgren's **glâg*, my **g-raks*)

the connections are direct and obvious; the character's phonetic is the *rùshēng* word

(782) 各 *gè* < *kak* 'each', (Karlgren's **klâk*, my **kak*),[246]

and 路 *lù* itself could well be from the same root as the *rùshēng* word

(783) 格 *gé* < *kæk* 'come to, go to' (Karlgren's **klak*, my **krak*).

But in the case of a word like

(784) 五 *wǔ* < *nguX* 'five' (Karlgren's **ngo*, my **ngaʔ*),

where Li Fang-kuei and Dǒng Tónghé also reconstructed a coda **-g*, the connection with *rùshēng* is much less direct—we might say, spurious. There are no *rùshēng* words with 五 *wǔ* as phonetic, nor does 五 *wǔ* appear to be etymologically related to any *rùshēng* words, nor does it ever rhyme with *rùshēng* words. At most, a chain of relationships can be built connecting it to *rùshēng* words indirectly, as we did with 其 *qí* in the previous section. (For example, 五 *wǔ* rhymes in Ode 53.2B with 予 *yǔ* < *yoX* 'give'; this character 予, as a first-person pronoun, rhymes in Odes 141.2B and 258.4A with 顧 *gù* < *kuH* 'regard'; 顧 *gù* rhymes in Odes 207.2A and 258.6A with 莫 *mù* < *muH* 'late'; and 莫 *mù* also has the *rùshēng* reading *mò* < *mak*.)

Of course, in a static synchronic system one would expect rhyme relations, and perhaps even *xiéshēng* connections, to be transitive: if A rhymes with B and B rhymes with C, then one would expect that A would also rhyme with C, and so on, even though the rhyme corpus does not happen to include a rhyme of A with C. But such reasoning is valid only if the corpus represents a single synchronic system. The fact that

A rhymes with B at time t_1 (or in dialect X)

and

B rhymes with C at time t_2 (or in dialect Y)

does not allow us to conclude that

A rhymes with C.

The *Shījīng* poems were composed over the course of several centuries, and we have already seen examples of probable dialect differences among them. Reconstructing the same final in 路 *lù* and 五 *wǔ* treats this corpus as a single static system and ignores phonological variation within the text.[247] Thus I believe that Karlgren was correct to distinguish **-o* from **-âg*, even though I do not accept the particular phonetic values he reconstructed.

In other cases, such as words reconstructed with **-əg*, Karlgren too overlooked the distinction between words with direct and obvious *rùshēng* connections and those whose connections with *rùshēng* words are distant and indirect; but the distinction is still there. Again, the connection between

(785) 意 *yì* < *ʔiH* < **ʔ(r)jiks* 'think; thought, intention, will'

and the *rùshēng* word

(786) 憶 *yì* < *ʔik* < **ʔ(r)jik* 'remember'

is undeniable; 意 *yì* < *ʔiH* is phonetic in 憶 *yì* < *ʔik* and surely cognate to it, and it rhymes as *rùshēng* in Ode 192.10A (where it is used as a verb, and is probably best regarded as a loan character for 憶 *yì* < *ʔik*). But the *rùshēng* connections of 其 *qí* < *gi* are much less direct, as we saw above. In this particular case, we can probably pinpoint the place in the chain of connections where transitivity fails. It is the word

(787) 來 *lái* < *loj* 'to come; wheat',

which clearly rhymes with both *rùshēng* and non-*rùshēng* words in the *Shījīng*. Now it is clear that 來 *lái* must have had a final **-k* at one time, for its *rùshēng* connections are as clear as those of 意 *yì* < *ʔiH* (see section 8.3.1 above). But it is significant that 來 *lái* rhymes with *rùshēng* words only in the earlier parts of the *Shījīng*—the *Xiǎo yǎ* (Odes 168.1A and 203.4A) and the *Dà yǎ* (Odes 242.2A, 263.6A)—never in the generally later *Guó fēng* (Odes 30.2A, 33.3A, 66.1A, 82.3A, 91.2A). This distribution is striking, and suggests that this common verb may have lost its final **-k* by some irregular process between the time represented by the earlier parts of the *Shījīng* and the time represented by the later ones. To assume that it must have had a single value throughout the entire *Shījīng* is to ignore such patterns.

To sum up: Some Middle Chinese *yīnshēng* words have clear and obvious connections with *rùshēng* words—etymological connections, *xiéshēng* relationships, and rhymes. Others can be connected with *rùshēng* words only through a chain of intermediate connections. The significance of such

indirect connections is questionable, since the different links in the chain may represent different dialects and different time periods. An adequate reconstruction of Old Chinese should distinguish the direct (and probably valid) connections from the indirect (and probably spurious) ones. In 1923, Karlgren distinguished the two types by reconstructing final voiced stops only in words with direct *rùshēng* connections. Some of these distinctions remain in the final version of his Archaic reconstruction. But scholars who followed the traditional rhyme categories more closely (such as Li Fang-kuei and Dǒng Tónghé) rejected these distinctions; for them, if some words of a rhyme group showed *rùshēng* connections, then the rest of the words in the group were reconstructed as if they also had such connections. In these cases, my reconstruction makes the same distinctions that Karlgren made (though not necessarily in exactly the same words):

rhyme group	Li	Karlgren	Baxter
魚 Yú	*-*ag*	*-*o*	*-*a*
		*-*âg*	*-*aks*
侯 Hóu	*-*ug*	*-*u*	*-*o*
		*-*ug*	*-*oks*
微 Wēi	*-*əd*	*-*ər*	*-*ɨj*
		*-*əd*	*-*ɨts*
脂 Zhī	*-*id*	*-*iər*	*-*ij*
		*-*ied*	*-*its*

But I carry this distinction further than Karlgren did, for in other rhyme groups Karlgren's later system fails to distinguish direct from indirect *rùshēng* connections. The finals involved all have *-*g* in Karlgren's system:

rhyme group	Li	Karlgren	Baxter
之 Zhī	*-*əg*	*-*əg*	*-*ɨ*
			*-*ɨks*
幽 Yōu	*-*əgw*	*-*ôg*	*-*u*
			*-*uks*
宵 Xiāo	*-*agw*	*-*og*	*-*aw*
			*-*awks*

支 Zhī	*-ig	*-ieg	*-e / *-eks

We have answered, in a general way, the first question posed above: Which words actually had *rùshēng* connections? Now we turn to the second question: how these connections should be accounted for in the reconstruction system.

8.3.3. Arguments against final voiced stops

The first objection to the reconstruction of final voiced stops can be simply stated: Old Chinese was probably not the type of language where one would expect to find final voiced stops. Karlgren's original decision to reconstruct final voiced stops was clearly influenced by his experience with European languages, as the following passage from the *Analytic dictionary* shows. Having concluded that words like 怕 *pà* < *phæH* had "lost explosives", he says:

> What then has been the exact nature of these lost explosives?
> Already the fact that Anc[ient] Chin[ese] possessed *-p, -t, -m, -n, -ng* but not *-b -d -g* suggest these latter. And this seems so much the more natural as the experience from other languages shows that the mediae [i.e. voiced stops] more easily fall than the tenues. To cite my own language again, there are many Swedish dialects where *bēd* > *bē* but *bēt* > *bēt*. It is therefore likely that it is a final *g* and a final *d* we have to expect in words like 𠂇下, 敝. (Karlgren 1923 [1973]: 28)

Now I do not object in general to Karlgren's looking in European languages for ideas on how to reconstruct Old Chinese; cross-linguistic comparison is our major basis for evaluating the naturalness of a putative sound change. However, in making such comparisons one must be aware of differences in language type: what is natural for languages of one type is not necessarily natural for languages of another. Final voiced obstruents are a phenomenon which seems to vary with language type. Though final voiced obstruents are found in English and Swedish, they are not especially common even in European languages. They tend to arise from voiced medial consonants which become final through the loss of a final vowel: e.g. English *food* < Old English *fōda, red* < Old English *rēad* < Proto-Germanic **raudhaz*, French *froide* [frwad] 'cold (f. sg.)' < Latin *frigida*. Once having arisen, they are commonly lost again through a process of final devoicing

(as in German and Russian); where they are preserved, it is probably due in part to analogical pressure from suffixed forms where the obstruent retains its voicing because it is nonfinal:

red
redder
reddest

Yiddish offers an example of the importance of analogical forces in maintaining final voicing; in Yiddish it appears that final voicing in obstruents was lost and then restored analogically in morphemes which preserved the voicing before a suffix (Sapir 1915 [1949]).

To summarize: In European languages, final voiced obstruents tend to arise through the loss of final (unstressed) vowels, and there is a natural tendency for them to be lost through final devoicing; where they persist, it is probably due in part to analogical pressure from suffixed forms (derivational or inflectional) where the voicing is preserved. Neither final unstressed vowels nor suffixes are common in Chinese or typologically similar languages, where monosyllables predominate and derivational and inflectional suffixes are rather few. These facts probably explain the scarcity of final voiced stops in East and Southeast Asia at the present time. Of course, languages can change typologically in the course of their history, and we have no guarantee that Old Chinese was typologically like modern varieties of Chinese. As reconstructed here, it is typologically more similar to Written Tibetan: still largely monosyllabic, with little or no inflection, but with more derivational morphology and more complex syllable structure than we find in modern Chinese dialects.[248] Thus, while I would not argue that final voiced obstruents are actually impossible in a Sino-Tibetan language, it seems unlikely that Old Chinese was the type of language where final voiced obstruents are most likely to occur.

An additional problem with some reconstructions which adopt the final voiced stop hypothesis is that they allow no open syllables, or almost none, and this, too, seems typologically odd. Dǒng Tónghé's reconstruction has open syllables in one rhyme group only (in the 歌 Gē group, where he reconstructed *-*â*), and Li Fang-kuei's has none at all. Supporters of Old Chinese open syllables cannot resist pointing out that Old Chinese poetry seems to lose some of its grandeur when pronounced with the final voiced stops assumed in a reconstruction like Dǒng Tónghé's or Li's. Consider the following solemn phrase from Ode 265.7, transcribed first in modern Mandarin and Middle Chinese:

於乎哀哉
wūhū āi zāi!
MC: *ʔu-xu ʔoj tsoj!*
'Oh, alas!'

In my Old Chinese reconstruction, these interjections, probably representing sighs, still have vocalic codas:

**ʔa-xa ʔɨj tsɨ!*

In Li's reconstruction, however, they are all closed syllables:

**·ag-hag ·əd tsəg!*

Admittedly, however, this is not a very powerful argument, since we are ill-equipped to judge what would sound solemn to a speaker of Old Chinese and what would sound comical.

Final voiced consonants also complicate the attempt to account for fusion words such as

(788) 諸 *zhū* < *tsyo* < **tja* '(particle)',

traditionally regarded as a fusion of

(789) 之 *zhī* < *tsyi* < **tjɨ* '(3rd person object pronoun)'

with the preposition

(790) 於 *yú* < *ʔjo* < **ʔja* 'in, on, from'.

A derivation

**tjɨ + *ʔja > *tja*

looks more plausible than Li's

**tjəg + *·jag > *tjag.*

The generalization of final voiced stops to whole traditional rhyme groups also becomes something of an embarrassment in Sino-Tibetan comparison, for Chinese words commonly reconstructed with voiced stops often correspond to Tibeto-Burman forms without final stops. Here are some examples (with Tibeto-Burman forms from Benedict 1972):

(791) 吾 *wú* < *ngu* < **nga* 'I', Tibeto-Burman **ŋa*, Karlgren **ngo*, Li **ngag*

(792) 魚 *yú* < *ngjo* < **ng(r)ja* 'fish', Tibeto-Burman **ŋya*, Karlgren **ngi̯o*, Li **ngjag*

(793) 狐 *hú* < *hu* < **g^{w}a* 'fox', Tibeto-Burman **gwa*, Karlgren **g'wo*, Li **gwag*

(794) 于 *yú* < *hju* < **w(r)ja* 'to go', Tibeto-Burman **s-wa*, Karlgren **g̱o*, Li **gwjag*

(795) 牛 *niú* < *ngjuw* < **ng^{w}jɨ* 'ox, bull, cow', Tibeto-Burman **ŋwa*, Karlgren **ng̱ŭg*, Li **ngwjəg*

(796) 鳩 *jiū* < *kjuw* < **k(r)ju* 'pigeon; name of various birds', Tibeto-Burman **kuw* 'pigeon', Karlgren **ḵôg*, Li **kjəgw*

(797) 支, 枝 *zhī* < *tsye* < **kje* 'branch, separate; branch of a tree', Tibetan *'gye-ba / gyes* 'to be divided, separate; to part', *'gyed-pa / bgyes / bkye* 'to divide' (cited in Coblin 1986: 66), Karlgren **k̂i̯ĕg*, Li **krjig*

(798) 臊 *sāo* < *saw* < **saw* 'fat of swine or dog', Tibeto-Burman **sa·w* 'fat', Karlgren **sog*, Li **sagw*

(799) 熬 *áo* < *ngaw* < **ngaw* 'fry, roast', Tibeto-Burman **r-ngaw*, Karlgren **ngog*, Li **ngagw*

These comparisons do not in themselves prove that the forms with final voiced stops are wrong, of course; there is no guarantee that the phonological correspondences between Old Chinese and Tibeto-Burman will be simple. If there were good reasons within Chinese to reconstruct the final voiced stops, we would have to live with them, no matter how difficult they make life for the Sino-Tibetanist. Benedict (1948) noticed the problem (though it is less severe with Karlgren's Archaic Chinese reconstruction than with Li's, as these examples show) and proposed that **-g* and **-d* had developed from Sino-Tibetan offglides **-w* and **-y*; Coblin (1986), following Li's system for Old Chinese, reconstructs Sino-Tibetan ***-ɣ*, which becomes OC **-g* and generally disappears in Tibeto-Burman. (Similarly, Coblin's Sino-Tibetan ***-ɣw* becomes OC **-gw*, Tibeto-Burman **-w*.)

But none of the examples cited above have genuine, direct connections with *rùshēng* words; the only justification for reconstructing them with final voiced stops is that they belong to the same traditional rhyme groups as other words which do have such connections. Moreover, these final voiced stops must be gotten rid of within Chinese too, in order to derive the forms of Middle Chinese. Reconstructing Old Chinese without final voiced stops not only simplifies Sino-Tibetan comparison; it also fits the Chinese evidence better.

Finally, Karlgren's original proposal in *Analytic dictionary* to reconstruct final voiced stops had the advantage that it accounted for both the loss of

final stops and the development of a special tone; but later versions of the final voiced stop hypothesis are weaker because they must assume tone distinctions independently of final voicing. In Li's system, for example, it appears to be a coincidence that **-ad* occurs only in *qùshēng*, or that *qùshēng* words often have clear and obvious *rùshēng* connections, while words in other tones can usually be connected with *rùshēng* only indirectly. In the present reconstruction, these are not accidents; the same features which account for *shǎng* and *qù* tones are also held responsible for the loss of stops in coda position.

8.3.4. Accounting for *rùshēng* contacts

Since the purpose of reconstructing final voiced stops was to account for contacts with *rùshēng* words, let us see how well we can account for such contacts in the system I propose. What contacts with *rùshēng* need to be accounted for, and how do we account for them? Let us recall Karlgren's statement, quoted earlier, about *xiéshēng* series involving *rùshēng* and non-*rùshēng* words:

> It is a rule that holds good in nine cases out of ten that the member which has lost its final consonant has got the k'ü ṣəng [*qùshēng*], the falling tone. (1923 [1973]: 28)

Recall also Jiāng Yǒng's summary of the connections of *rùshēng* with the other tones:

> *Rùshēng* is closest to *qùshēng*, and they often rhyme with each other in the *Shī*. Rhymes [of *rùshēng*] with *shǎngshēng* are also occasionally found. Rhymes [of *rùshēng*] with *píngshēng* are fewest; because they are distant from each other, they are not harmonious. (quoted above, section 8.2.1.1)

These statements correctly summarize the actual evidence about *rùshēng* contacts: the vast majority of non-*rùshēng* words involved are *qùshēng*; there are occasional cases involving *shǎngshēng* words, and only very rarely cases with *píngshēng* words. The *rùshēng-qùshēng* alternations are successfully accounted for by Haudricourt's **-s* hypothesis, as we have seen. Connections of *rùshēng* with *shǎngshēng* are fewer, and it is noteworthy that they almost always involve syllables in **-k* or **-wk*. The phonetic similarity of **-k* and the final glottal stop **-ʔ* is probably sufficient to account for many

such connections. However, some could result from the loss of original *-*k* before a post-coda *-*ʔ* which had a morphological function.

This leaves a small residue of *píngshēng* words which seem to have *rùshēng* connections, and are as yet unaccounted for. Let me outline several mechanisms which might explain the existence of such forms.

The most common *píngshēng* item with *rùshēng* connections is 來 *lái* < *loj* 'to come', whose character is said to be a picture of the wheat plant:

(800) 來 *lái* < *loj* 'to come; wheat'

It must surely be related to the usual word for wheat, which has a final *-*k*:

(801) 麥 *mài* < *mɛk* < **mrik* 'wheat'.

We have also seen above that 來 *lái* rhymes occasionally with *rùshēng* words (Odes 168.1A, 203.4A, 242.2A, 263.6A). These rhymes are all from the *Xiǎo yǎ* or *Dà yǎ* parts of the Odes, however, which are generally earlier than the *Guó fēng* section, where 來 *lái* never rhymes with *rùshēng* words. The character itself, and its rhymes in the older parts of the *Shījīng*, would best be accounted for by a reconstruction **C-rik*; but the rhymes in the newer parts, and the Middle Chinese reading *loj*, would fit better with a reconstruction **C-ri*, without the final *-*k*. Is it plausible that 來 *lái* might have lost its final *-*k* through some irregular process?

One possible mechanism for such a change might be the restressing of an unstressed variant which lost its *-*k*. Such a phenomenon is illustrated by the development of the English third-person singular neuter pronoun *it*, which irregularly lost the initial *h-* of Old English *hit*. Many English pronouns have unstressed variants in which the original initial *h-* is dropped:

	stressed	unstressed
he	[hi]	[i]
him	[hɪm]	[ɪm]
her	[hɚ]	[ɚ]

The irregular form *it* in place of the expected *hit* is assumed to be an analogical extension of the unstressed form [ɪt] to stressed position (Pyles 1982: 120–21). Similarly, perhaps **C-rik* had an unstressed variant **C-ri* without final *-*k*, which was extended by analogy to stressed position, replacing the original form.[249]

Another possible process by which final stops might have been lost is analogy based on *qùshēng* forms in which stops were lost through **final cluster simplification**. For example, the word 來 *lái* also has a *qùshēng* reading

(802) 來 *lài* < *lojH* < **C-rɨ(k)s* 'to present',

possibly originating as a causative ("to cause to come"). Before **final cluster simplification**, the relationship of **C-rɨks* 'to present' to **C-rɨk* 'to come' would have been transparent. But after **final cluster simplification**, the forms became **C-rɨs* and **C-rɨk*. At this point, a form **C-rɨ* might have been created by back-formation from **C-rɨs* < **C-rɨks*, especially if there was already an unstressed form without the **-k*. Such a process of analogy from *qùshēng* forms might well explain other cases of apparent *píngshēng-rùshēng* contacts also.

Similar analogies within the writing system might well explain other cases where *rùshēng* words furnish the phonetic elements for *píngshēng* words or vice versa. For example, consider the words with the phonetic

(803) 止 *zhǐ* < *tsyiX* < **tjɨʔ* 'foot; to stop' (Karlgren 1957, item 961a).

A good many words in this phonetic series are *píngshēng* words, such as the following examples:

(804) 持 *chí* < *dri* < **drjɨ* 'to grasp, hold'

(805) 時 *shí* < *dzyi* < **djɨ(ʔ)* 'time' (sometimes seems to rhyme as *shǎng-shēng*, e.g. in Ode 170.6A)

(806) 詩 *shī* < *syi* < **stjɨ* 'poem, ode'

There are also *qùshēng* words such as

(807) 志 *zhì* < *tsyiH* < **tjɨs* 'aim, goal; will, purpose',

and the single *rùshēng* word

(808) 特 [*tè*] < *dok* < **dɨk* 'bull; male animal; single, an only one; only'.

How can we account for this *rùshēng* word in the same *xiéshēng* series with *píngshēng* words such as 持 *chí* and 詩 *shī* unless we reconstruct a final stop in the *píngshēng* words? One possibility is that 止 *zhǐ* < **tjɨʔ* is the link, its glottal stop being similar enough to **-k* that it could be used as a phonetic in words with **-k*, but weak enough that it could be used as phonetic in words with open syllables.

However, a more interesting possibility is that the character 特 *tè* was created after **final cluster simplification** had already made *rùshēng-yīnshēng* connections common in the writing system. The character 特 *tè* does not seem to occur in early inscriptions; the first example cited by Gāo Míng (1980: 188) is from the Warring States period (475–221 B.C.). Another graph found as a variant of 特 *tè* may be older:

(809) 犆 [*tè*] < *dok* < **dik* 'single'

In this case, the phonetic is the *rùshēng* word 直 *zhí* < **drik* < **drjik* 'straight, right'. This series (number 919 in Karlgren 1957) shows a coda **-k* consistently. Gāo Míng also records a character 戠 in oracle bone inscriptions (1980: 189), with phonetic

(810) 戠 *zhī* < *tsyik* < **tjik* 'stick to, adhere'? (meaning uncertain; see Karlgren 1957, item 920a).

This *xiéshēng* series also consistently shows **k* in coda position.

I conjecture that 犆 and 戠 may be earlier forms than 特, and more representative of early Zhōu phonology. Once **final cluster simplification** had changed **-ks* to **-s*, there would have been ample precedent among characters already in use for allowing *xiéshēng* connections between **-is* and **-ik*, as in these examples:

(811) 意 *yì* < *ʔiH* < **ʔ(r)jis* (< **ʔ(r)jiks*) 'thought',

(812) 憶 *yì* < *ʔik* < **ʔ(r)jik* 'to remember',

(813) 置 *zhì* < *triH* < **trjis* (< **trjiks*) 'to place, set, arrange',

(814) 直 *zhí* < *drik* < **drjik* 'straight, right'.

By analogy with such cases, a character 特 **dik* would not seem out of place in *xiéshēng* series with 志 **tjis*. This in turn would connect it indirectly to *píngshēng* words like 持 *chí* < **drji* 'to grasp' or 時 *shí* < **dji(ʔ)* 'time'. The patterns of phonetic similarity found in late *xiéshēng* characters like 特 [*tè*] < **dik* were most likely influenced by the patterns found in characters already in use; and this could result in *xiéshēng* connections which are not necessarily representative of the earliest stages of Zhōu phonology. (We will return to this point in Chapter 9.) Thus the final **-k* in 特 *tè* < *dok* does not, by itself, entitle us to reconstruct a final velar coda elsewhere in the series.

Given the possibility of such alternate explanations of occasional *xiéshēng* and rhyming contacts between *píngshēng* words and *rùshēng* words, the relatively small number of such items does not justify reconstructing final stops in *píngshēng* items across the board.

8.4. Comparison with other systems

In order to facilitate comparison with the coda and post-coda systems of other reconstructions, I summarize in Table 8.1 the correspondences of my system with those of Pulleyblank (1977–1978), Wáng Lì (1982), Karlgren (1954), and Li Fang-kuei (1971 [1980]). The traditional rhyme category labels are also included, and the Middle Chinese reflex of each final is listed after my reconstruction. In each case only division-I finals are included (or division-IV finals if there is no division-I final).

Each traditional rhyme group is listed in Table 8.1, but not all possible combinations of vowel and coda are represented. For example, I reconstruct **-an*, **-en*, and **-on* in the traditional 元 Yuán group, but only **-an* is included in Table 8.1, since the focus here is on codas and post-codas rather than on main vowels. The reader is referred to Chapter 10 for more detailed reconstructions of each group.

As Table 8.1 shows, the present system of codas and post-codas is closest in structure to Pulleyblank's, although the phonetic values reconstructed are rather different; his system makes the same distinctions between direct (genuine) *rùshēng* connections and indirect (spurious) ones. Wáng Lì also makes this distinction, but he makes no distinction between *rùshēng* and *rùshēng*-related *qùshēng*, reconstructing final voiceless stops for both; thus his **-ak* corresponds to the **-aks* and **-ak* of my system (and Pulleyblank's). As noted earlier in this chapter, in some cases Karlgren distinguishes between direct and indirect *rùshēng* connections, but in other cases he does not. Li's system most closely follows the traditional rhyme analysis, which consistently treats a whole rhyme category as *rùshēng*-related (reconstructed with final voiced stop) if any of its members are.

Table 8.1. Codas and post-codas in various reconstruction systems

Baxter		Pulleyblank	Wáng Lì	Karlgren	Li	Group
*-*i*	> *-oj*	*-*əɣ*	*-*ə*	*-*əg*	*-*əg*	之 Zhī
*-*iks*	> *-ojH*	*-*əks*	*-*ək*			
*-*ik*	> *-ok*	*-*ək*		*-*ək*	*-*ək*	職 Zhí
*-*ing*	> *-ong*	*-*əŋ*	*-*əng*	*-*əng*	*-*əng*	蒸 Zhēng
*-*u*	> *-aw*	*-*əw*	*-*u*	*-*ôg*	*-*əgw*	幽 Yōu
*-*uks*	> *-awH*	*-*ək^{w}s*	*-*uk*			
*-*uk*	> *-owk*	*-*ək^{w}*		*-*ôk*	*-*əkw*	覺 Jué
*-*ung*	> *-owng*	*-*əŋ^{w}*	*-*(u)əm*	*-*ông*	*-*əngw*	冬 Dōng
*-*aw*	> *-aw*	*-*aʁ*	*-*ô*	*-*og*	*-*agw*	宵 Xiāo
*-*awks*	> *-awH*	*-*aqs*	*-*ôk*			
*-*awk*	> *-ak*	*-*aq*		*-*ok*	*-*akw*	藥 Yào
*-*o*	> *-uw*	*-*aw*	*-*o*	*-*u*	*-*ug*	侯 Hóu
*-*oks*	> *-uwH*	*-*ak^{w}s*	*-*ok*	*-*ug*		
*-*ok*	> *-uwk*	*-*ak^{w}*		*-*uk*	*-*uk*	屋 Wū
*-*ong*	> *-uwng*	*-*aŋ^{w}*	*-*ong*	*-*ung*	*-*ung*	東 Dōng
*-*a*	> *-u*	*-*aɣ*	*-*a*	*-*o*	*-*ag*	魚 Yú
*-*aks*	> *-uH*	*-*aks*	*-*ak*	*-*âg*		
*-*ak*	> *-ak*	*-*ak*		*-*âk*	*-*ak*	鐸 Duó
*-*ang*	> *-ang*	*-*aŋ*	*-*ang*	*-*âng*	*-*ang*	陽 Yáng
*-*e*	> *-ej*	*-*aj*	*-*ye*	*-*ieg*	*-*ig*	支 Zhī
*-*eks*	> *-ejH*	*-*acs*	*-*yek*			
*-*ek*	> *-ek*	*-*ac*		*-*iek*	*-*ik*	錫 Xī
*-*eng*	> *-eng*	*-*aŋ*	*-*yeng*	*-*ieng*	*-*ing*	耕 Gēng

Continued on next page

Table 8.1, continued

Baxter		Pulleyblank	Wáng Lì	Karlgren	Li	Group
*-*ij*	> -*ej*	*-*əj*	*-*yej*	*-*iər*	*-*id*	脂 Zhī
*-*its*	> -*ejH*	*-*əcs*	*-*yet*	*-*ied*		
*-*it*	> -*et*	*-*əc*		*-*iet*	*-*it*	質 Zhì
*-*in*	> -*en*	*-*əɲ*	*-*yen*	*-*ien*	*-*in*	真 Zhēn
*-*ij*	> -*oj*	*-*əl*	*-*əi*	*-*ər*	*-*əd*	微 Wēi
*-*its*	> -*ojH*	*-*əts*	*-*ət*	*-*əd*		
*-*it*	> -*ot*	*-*ət*		*-*ət*	*-*ət*	物 Wù
*-*in*	> -*on*	*-*ən*	*-*ən*	*-*ən*	*-*ən*	文 Wén
*-*aj*	> -*a*	*-*al*	*-*ai*	*-*â(r)*	*-*ar*	歌 Gē
*-*ats*	> -*ajH*	*-*ats*	*-*at*	*-*âd*	*-*adh*	祭 Jì
*-*at*	> -*at*	*-*at*		*-*ât*	*-*at*	月 Yuè
*-*an*	> -*an*	*-*an*	*-*an*	*-*ân*	*-*an*	元 Yuán
*-*əps*	> -*ojH*	*-*əps*	*-*əp*	*-*əb*	*-*əbh*	(> 微 Wēi)
*-*əp*	> -*op*	*-*əp*		*-*əp*	*-*əp*	緝 Qī
*-*əm*	> -*om*	*-*əm*	*-*əm*	*-*əm*	*-*əm*	侵 Qīn
*-*aps*	> -*ajH*	*-*aps*	*-*ap*	*-*âb*	*-*abh*	(> 祭 Jì)
*-*ap*	> -*ap*	*-*ap*		*-*âp*	*-*ap*	盍 Hé
*-*am*	> -*am*	*-*am*	*-*am*	*-*âm*	*-*am*	談 Tán

Chapter 9

The script and text of the *Shījīng*

The reconstruction system outlined in Chapters 5 through 8 is based largely on hypotheses suggested by the phonological pattern of Middle Chinese. For example, the rounded-vowel hypothesis was suggested by the limited distribution of MC *-w-*; the front-vowel hypothesis was suggested by the distributional similarity of division-I and division-IV finals. It remains to determine whether these hypotheses are supported by the other two main kinds of evidence on Old Chinese phonology: the *xiéshēng* characters and the *Shījīng* rhymes. This chapter examines some of the issues which arise in using these other kinds of evidence.

The *xiéshēng* characters are useful in reconstruction because, like rhymes, they are based on a relation of phonological similarity. In order for the character for one word to be used as the phonetic element in the character for another, the two words must bear a certain phonological relation to each other. Let us call this phonological relation, however it is defined, "*xiéshēng* similarity". The major points of our discussion of *xiéshēng* characters will be (1) that the relation of *xiéshēng* similarity can be assumed only for the time and place at which the *xiéshēng* character was created, and (2) that standards for *xiéshēng* similarity changed over time as sound changes affected the pronunciations of characters already in use. *Xiéshēng* characters created in early Zhōu tell us about early Zhōu phonology, but later *xiéshēng* characters often reflect later phonology and later notions of *xiéshēng* similarity. Whenever possible, we should use *xiéshēng* characters contemporary with the linguistic stage we are reconstructing. Duàn Yùcái's statement "same phonetic, same rhyme group [tóng shēng bì tóng bù 同聲必同部]" cannot be applied blindly to characters which originated at different times.

Similar care must be used in approaching the text of the *Shījīng*. We use the *Shījīng* and its rhymes to reconstruct Old Chinese because of a well-founded belief that it was composed in Western and early Eastern Zhōu. But the *Shījīng* as we find it today is not simply an early Zhōu document, and its script is not the script of early Zhōu. Both the text itself and the script in which it is written evolved until more or less standardized in the late Hàn dynasty, and have not ceased to evolve even now. Without attention to the textual problems of the *Shījīng*, we risk anachronistically basing

conclusions about Old Chinese on features of the text which arose as late as Hàn times.

A thorough account of either the problems of Chinese paleography or the textual study of the *Shījīng* would take us far beyond the scope of this book, which aims only at presenting a new reconstruction system for Old Chinese. It has not been possible to review the paleographical evidence for each reconstructed word, nor has it been possible to review all the textual problems relevant to interpreting the *Shījīng* rhyme evidence. My comments on these topics, in this chapter and in Chapter 10, are essentially anecdotal. However, the discussion will illustrate the important connections among phonology, paleography, and textual history.

9.1. Stages in the development of the Chinese script

As background for the discussion of using *xiéshēng* characters as evidence in reconstruction, I will give in this section a basic outline of the development of the Chinese script down to time of the *Shuōwén jiězì*.[250]

Some Chinese neolithic pottery bears marks which have sometimes been described as writing or proto-writing. While the status of these pottery marks is an interesting question,[251] the earliest examples of Chinese written texts in the usual sense are the so-called oracle bone inscriptions (*jiǎgǔ wén* 甲骨文 'shell and bone writing'). These inscriptions, discovered at the end of the nineteenth century, consist of inscribed animal bones and turtle shells used in divination in the late Shāng dynasty. The divination process consisted of heating a specially prepared shell or bone until it cracked, and interpreting the cracks as answers to questions being posed. The date of the divination, the content of the question, the interpretation of the answer, and sometimes a record of the actual outcome were recorded on the shell or bone itself. Since the Shāng royal house apparently used this method of divination on a daily basis for guidance in a great variety of matters, these texts give priceless historical information about late Shāng history and society. (For example, the lists of royal ancestors which appear in oracle-bone inscriptions verified the essential correctness of the Shāng genealogy preserved in the early Hàn *Shǐjì* 史記 [Historical records] of Sīmǎ Qiān 司馬遷.) The script of the oracle-bone inscriptions, while perhaps somewhat specialized for its purpose and not necessarily typical of Shāng writing in general, is clearly a mature writing system, already bearing the essential characteristics of the later Chinese script which evolved from it. Unfortunately for linguistic purposes, the content of the inscriptions is limited to

matters which arose in the context of divination; there are no known examples of rhymed poetry, or even of narrative in the usual sense. While the majority of commonly-occurring characters can be read and understood, we have little to go on at present in reconstructing their phonology. It is for this reason that we define Old Chinese, intended to be the earliest stage of phonology recoverable from Chinese evidence, as the language of a somewhat later date.[252]

From the middle and late Shāng period we also have inscriptions on ceremonial bronze vessels used in ancestral sacrifices. The earliest inscriptions are quite short, typically recording little more than the name of the family or individual associated with the vessel. By late Shāng, somewhat longer inscriptions begin to appear, but none are longer than about fifty characters.

While the practice of oracle-bone divination died out soon after the conquest of the Shāng by the Zhōu (eleventh century B.C.), the practice of producing inscribed bronze vessels continued and flourished under the Zhōu. Vessels were typically cast in commemoration of some honor bestowed upon a member of one's family (such as being rewarded by the Zhōu king for meritorious service), and were used thereafter in the family's ancestral sacrifices. A typical inscription might include the date (sometimes including the day, month, phase of the moon, and year of the Zhōu king's reign), a description of the event being commemorated, and a record of the king's gifts. As time passed, these descriptions became more and more elaborate, sometimes including descriptions of the award ceremony, records of what was said by the parties present, and so forth. Since the exchange of property was recorded, the vessels doubtless functioned as a kind of legal document of ownership as well as a narrative of significant events. The longest inscriptions are around five hundred characters, and are similar in style and content to portions of the *Shūjīng* [Book of Documents]. There are also passages reminiscent of parts of the *Shījīng*, including passages which rhyme.

Clearly, early Zhōu bronze vessels are of great value for historical phonology; they are primary sources, without the usual problems of textual transmission, and they can often be dated and placed rather precisely. A number of authors have investigated rhymed passages in such vessels.[253] Unfortunately, the total corpus of rhymes on bronze inscriptions is still quite small compared to the *Shījīng*, and the rhyme groups which occur most frequently are those whose reconstruction is least controversial.[254] Since rhymed passages in bronze inscriptions are often embedded within

otherwise unrhymed texts, in many cases it is also difficult to identify intended rhymes with certainty.

Written materials from the Warring States period (475–221 B.C.) give the impression of greater diversity in script styles than materials from earlier times. This could simply reflect limitations in our samples of earlier writing, but this impression of diversity agrees with the traditional view of this period as one of political and cultural decentralization. Strong moves towards unification and standardization accompanied the Qín conquest in 221 B.C., when the script of the state of Qín was established as the standard throughout China. Later Chinese writing is essentially descended from the script established at this time. The traditional view of this process is described in Xǔ Shèn's postface to the *Shuōwén jiězì*:

> Afterwards [i.e. after the time of Confucius] the feudal lords strove for power, and were not ruled by the king. They despised the rites and music as harmful to themselves, and abandoned traditional institutions, dividing themselves into seven states. Agricultural land was surveyed in acres of different sizes; vehicles and roads used axles of different lengths; rules and decrees followed different legal principles; garments and hats were of different cuts; spoken language varied in sound, and written language varied in shape. When the emperor Qín Shǐhuáng first combined world into one, the minister Lǐ Sī 李斯 proposed to unify them [i.e. the various scripts], discarding all those which were inconsistent with [the script of] Qín. [Lǐ] Sī composed the *Cāng Jié piān* 倉頡篇; the Director of the Central Livery Office [*zhōngchēfǔlìng* 中車府令] Zhào Gāo 趙高 composed the *Yuán lì piān* 爰歷篇; the Grand Astrologer [*taìshǐlìng* 大史令] Húmǔ Jìng 胡毋敬 composed the *Bó xué piān* 博學篇.[255] They started from the "large seal" script [*dà zhuàn* 大篆] of the Scribe Zhòu [Shǐ Zhòu 史籀],[256] modifying and simplifying it; this is what is called the "small seal" script [*xiǎo zhuàn* 小篆]. At this time, Qín burned up the classical writings, wiped out the old institutions, sent out officials and soldiers, and mobilized border garrisons and corvée labor; official prisons, taxes, and obligations abounded. At that time the clerical script [*lìshū* 隸書] first appeared, to make writing easier and more concise. As a result, the old script [*gǔwén* 古文] died out. (Dīng Fúbǎo 1928–1932 [1976]: 6729, my translation).

The *lìshū* or clerical script which began to develop in Qín times continued its development in the Hàn dynasty; from it developed, in late Hàn and early Wèi, the *kǎishū* 楷書 'standard script' which remained the standard until

the adoption of simplified characters in recent years, and remains in use today.

The *Shuōwén jiězì* of Xǔ Shèn 許慎 (A.D. 58–147) is basically a dictionary of the *xiǎo zhuàn* or (small) seal script of Qín, written at a time when this script was already archaic. The *Shuōwén* groups characters under 540 *bùshǒu* 部首 (significs or "radicals"), and analyzes their structure. It also includes some characters described as *Zhòu wén* 籀文 'the script of Zhòu' or *gǔwén* 古文 'old script'. This last term probably refers to characters in use before the Qín standardization of the script; compared to the characters found in early Zhōu bronze inscriptions and oracle bones, however, they may actually be rather late.

9.2. *Xiéshēng* characters and their interpretation

It has been traditional in reconstructing Old Chinese phonology to use the script of the classics, and of the *Shuōwén jiězì,* as evidence about Old Chinese—in effect, using the script of Hàn (or at the earliest, Qín) to reconstruct the pronunciation of early Zhōu. When genuine Zhōu forms are not available, this may be the best we can do. But the discussion in the previous section should have made it clear that this procedure is anachronistic, for we know that the script of early Zhōu, as we find it in bronze inscriptions, was often quite different from the *kǎishū* of the present classical texts. Even before the flourishing of Chinese paleography in the present century, traditional Chinese scholars were aware that these differences existed, and called attention to cases where older characters had fallen out of use and been replaced by others.[257] Such changes have usually been regarded as purely graphic simplifications, however; their phonological implications have been widely overlooked (as noted by Barnard 1978).

A more precise model of Old Chinese phonology and of the changes which transformed it shows that many changes in the script reflected phonological changes. In reconstructing Old Chinese, therefore, we must use *xiéshēng* characters with care and due attention to their evolution; wherever possible, we should use *xiéshēng* characters contemporary with the linguistic stage we are reconstructing. At the same time, if changes in the script reflect changes in phonology, then the script of early Chinese documents is a largely untapped reservoir of information about phonological variation and change during and after the Old Chinese period. Further research may make it possible to associate features of script with particular time periods or

geographical areas, which in turn may make it possible to date and place early documents from phonological evidence.

Xiéshēng characters can be used in reconstructing pronunciation because, like rhymes, they are based on a relationship of phonetic similarity. In order to use this evidence, we must make assumptions about the phonetic relationship among characters in the same *xiéshēng* series, just as we must make assumptions about rhyme in order to use rhymes as evidence (see discussion in Chapter 3).

In terms of our analysis of the Old Chinese syllable, most *xiéshēng* characters seem to follow the following principle of phonetic similarity:

> Principle of *xiéshēng* similarity: In order to be written with the same phonetic element, words must normally have identical main vowels and codas, and their initial consonants must have the same position of articulation. (Additionally, nasal and obstruent initials are generally kept separate.) Otherwise, pre-initial, medial, and post-coda elements, and the manner of articulation of the initial, may differ.

This statement can serve as a general guide for using *xiéshēng* characters as evidence. For example, we reconstruct a velar initial in

(815) 支 *zhī* < *tsye* < **kje* 'branch'

because this character is phonetic in

(816) 技 *jì* < *gjeX* (III) < **grje?* 'ability, talent'.

Our assumptions require us to reconstruct a velar in 支 *zhī* if we reconstruct a velar in 技 *jì*. On the other hand, we freely reconstruct medial **-r-*, a voiced initial, and the *shǎngshēng* post-coda **?* in 技 *jì*, but not in 支 *zhī*.

The statement above is, however, only an approximate summary of the habits of many scribes over many centuries, who must have differed in the strictness of the standards of *xiéshēng* similarity they applied. Though identity of the main vowel usually seems to be required, we sometimes find *xiéshēng* contacts between **i* and **e*, or between **u* and **o*. Thus

(817) 戌 *xū* < *swit* < **smjit* 'cyclical character (11th earthly branch)',

with the vowel **i*, is probably the phonetic in the **e* word

(818) 威 *xuē* < *xjwiet* (IV) < **hmjet* 'destroy',

which in turn is phonetic in the more common (and doubtless related) form

(819) 滅 *miè* < *mjiet* (IV) < **mjet* 'destroy'.

(Both 戚 *xuè* < *xjwiet* and 滅 *miè* < *mjiet* must be reconstructed with **e* because of their Middle Chinese division-IV *chóngniǔ* finals.)

Moreover, the principle of *xiéshēng* similarity stated above must be qualified in two ways. First, the phonetic similarity referred to can be inferred only for the time and place at which the *xiéshēng* character was actually created. A *xiéshēng* character which first appears, say, in the late Warring States period is evidence about late Warring States phonology, not about Old Chinese phonology. Second, the standards for *xiéshēng* similarity were probably relaxed somewhat as sound changes disturbed the relations of similarity among *xiéshēng* characters already in use. A vowel change, for example, could bring it about that a character already in use had a different main vowel from its phonetic element. By analogy, the same differences were probably tolerated in newly created characters.

Consider the first point first. Through sound changes, originally dissimilar words may have become similar enough to be written with the same phonetic element. At the same time, words originally written with the same phonetic element may have become so dissimilar that later generations did not understand their *xiéshēng* relationship. This probably created a pressure for such characters to be replaced with phonologically more transparent ones. Since Hàn times, at least down to the implementation of simplified characters, these pressures for change have been rather successfully resisted; but from early Zhōu through Hàn the writing system was probably more fluid. I will illustrate this with examples of the effects on the script of two sound changes.

The first is the change ****-ps* > *-ts***, mentioned in section 8.2.2.1, which took place quite early—early enough to affect *Shījīng* rhyming. The original **-ps* is recoverable in such words partly because *xiéshēng* characters based on the original similarity of **-p* and **-ps* still survive, as in

(820) 內 *nèi* < *nwojH* < **nuts* < **nups* 'inside' (Karlgren **nwəb*, Li **nəbh*),

which is phonetic in

(821) 納 *nà* < *nop* < **nup* 'send in, bring in' (Karlgren **nəp*, Li **nəp*).

What is not generally recognized is that this sound change led in many cases to the creation of new *xiéshēng* characters with phonetics in **-t* or **-ts* rather than **-p*. On the basis of these late characters, some words which originally had labial codas have been anachronistically reconstructed with final dentals. Here are three examples:

1. The character

(822) 廢 *fèi* < *pjojH* 'abandon'

has the phonetic

(823) 發 *fā* < *pjot* < **pjat* 'send forth'.

On the basis of the *xiéshēng* character 廢, *fèi* 'abandon' has generally been reconstructed with a final dental (Karlgren **pi̯wăd,* Li **pjadh*). But in bronze inscriptions, this word is written with the character 灋, which is an old form of

(824) 法 *fǎ* < *pjop* < **pjap* 'law, model'.

For example, the phrase *wú fèi zhèn mìng* 無廢朕命 'do not abandon my charge' occurs in the *Shījīng* (Ode 261.1), with the modern character 廢 *fèi*. But an almost identical phrase "勿灋朕令" occurs repeatedly in various bronze inscriptions, with 灋 instead of 廢 *fèi* (Zhōu Fǎgāo et al. 1974a, item 1297). The use of 灋 **pjap* as a loan graph for *fèi* shows that we should reconstruct 廢 *fèi* < *pjojH* < **pjats* < **pjaps,* not **pjats,* for Old Chinese times. However, once **pjaps* became **pjats* by the change ***-ps* > *-ts**, 灋 **pjap* would have seemed less suitable as a loan character for **pjats,* and 發 *fā* < **pjat* became a suitable phonetic. The reconstruction with a dental coda is correct for the period after the change ***-ps* > *-ts***, when the character 廢 was created, but it is not correct for the Old Chinese period.

2. The character

(825) 萃 [*cuì*][258] < *dzwijH* 'gather, collect'

is written with the phonetic

(826) 卒 *zú* < *tswot* < **tsut* 'soldier', also read *zú* < *tswit* < **tsjut* 'finish'.

It has therefore generally been reconstructed with a dental coda: Karlgren reconstructed **dz'i̯wəd.* But 萃 *cuì* is probably just the **s*-suffixed form of the synonymous word

(827) 集 ~ 輯 *jí* < *dzip* < **dzjup* 'gather, collect'

which is often used in early commentaries as a gloss for 萃 *cuì* (Wáng Lì 1982: 594–96). The phonological and semantic similarity strongly suggests that we should reconstruct 萃 [*cuì*] < *dzwijH* < **dzjuts* < **dzjups*.[259] The character 萃, whose phonetic originally represented syllables with the coda **-t*, reflects the phonology of Chinese after the change ***-ps* > *-ts***, and cannot be taken as representative of Old Chinese phonology.

3. The character

(828) 暨 *jì* < *gijH* (III) 'arrive, attain; together with, and'

is written with the phonetic

(829) 既 *jì* < *kjɨjH* < **kjɨts* 'finish, complete'

which is usually reconstructed with a dental coda.[260]

On this basis, 暨 *jì* has usually been reconstructed with a dental coda also: Karlgren reconstructed **g'i̯ɛd*. But I suspect this is an **s*-suffix form of the synonymous form

(830) 及 *jí* < *gip* (III) < **g(r)jɨp* 'come to, reach; and, when'.

Thus we should reconstruct 既 *jì* < *gijH* < **grjɨts* < **grjɨps*. Again, the reconstruction with a final dental is not wrong for the time when the *xiéshēng* character 暨 *jì* was created, but it reflects the phonology of that time, not the phonology of Old Chinese.

The second change I would like to use as an example is the **denasalization** of initial voiceless nasals:

**hm-* > *x(w)-*
**hn-* > *th-*
**hng-* > *x-*
**hng*^{w}- > *xw-*

Let us consider first the change **hm-* > *x(w)-*. We are able to reconstruct **hm-* because some characters which were pronounced with initial *x-* in Middle Chinese still have *xiéshēng* contacts with initial *m-*, as in

(831) 黑 *hēi* < *xok* < **hmɨk* 'black',

which is phonetic in (and probably also related to)

(832) 墨 *mò* < *mok* < **mɨk* 'india ink'.

After the change **hm-* > *x(w)-*, the original similarity of **m-* and **hm-* in such words was replaced by the more distant relationship of **m-* and **x-*, so that there would have been a pressure for more rational phonetic elements. A character like 墨 *mò* for "ink" probably survived such pressures in part because the phonetic 黑 *hēi* 'black' functioned as a semantic element also. (We can explain the survival of 納 *nà* 'send in, bring in', with phonetic 內 *nèi* 'inside', the same way.) But in other cases, the pressure to replace old *xiéshēng* characters with more transparent ones won out. For example, the word

(833) 賄 [*huì*] < *xwojX* 'to present, assign; valuables, dowry'

has in its present form the phonetic

(834) 有 *yǒu* < *hjuwX* < **wjɨʔ* 'to have, to hold'.

In modern or even Middle Chinese pronunciation, this *xiéshēng* relationship is not very transparent either, but these words belonged to the same rhyme group as late as the Eastern Hàn period (Luó & Zhōu 1958: 175). Based on this *xiéshēng* relationship, we would reasonably reconstruct 賄 as **hwɨʔ*. Note that 有 **wjɨʔ* and 賄 **hwɨʔ* differ only in the medial (**-j-* versus zero) and the manner of articulation of the initial (voiced **w-* versus voiceless **hw-*), so they fit the principle of *xiéshēng* similarity stated above. And this is essentially how 賄 *huì* has been reconstructed in the past, allowing for differences in reconstruction systems: Karlgren reconstructed **χwəg* (1957, item 995z), and Li Fang-kuei **hwəgx* (1971 [1980]: 38).

But according to Zhèng Xuán's notes to the *Yí lǐ* 儀禮 (cited in Dīng Fúbǎo 1928–1932 [1976]: 2743), the *gǔwén* [old script] version of the text consistently wrote 賄 [*huì*] < *xwojX* with the loan character

(835) 悔 *huǐ* < *xwojX* < **hmɨʔ*, usual meaning 'regret, repent',

which is reconstructed with **hm-* because of its phonetic

(836) 每 *měi* < *mwojX* < **mɨʔ* 'every'.

If the "old script" version cited by Zhèng Xuán was sufficiently old to reflect the distinction between **hm-* and **hw-*, then these forms suggest that in Old Chinese, 賄 *huì* may have been not **hwɨʔ* but **hmɨʔ* (Schuessler 1987: 257). The reconstruction **hwɨʔ* is probably correct for the time when the character 賄 was created, after **hm-* had merged with **hw-*, but it is anachronistic to base an Old Chinese reconstruction on the modern character.

2. Another example reflecting the same change is the character

(837) 聞 *wén* < *mjun* < **mjun* 'to hear'.

This character consists of 耳 *ěr* 'ear' plus the phonetic element

(838) 門 *mén* < *mwon* < **mɨn* 'gate, door'.

Notice that I reconstruct 門 **mɨn* and 聞 **mjun* with different main vowels; this is done on the basis of *Shījīng* rhyming (see section 10.1.5). Thus this pair apparently violates the principle of *xiéshēng* similarity which was stated above.

But 聞 is probably a relatively late character. The *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 5356) mentions a *gǔwén* character 睯 for 聞, consisting of 耳 *ěr* 'ear' plus the phonetic

(839) 昏 *hūn* < *xwon* < **hmun* 'dark, benighted, stupid'.

In fact, the character 聞 is not known before the Warring States period; instead, bronze inscriptions show either characters similar to 睯 or a pictogram of a person kneeling next to a large ear (see Zhōu Fǎgāo et al. 1974a, item 1509; Gāo Míng 1980: 136). This pictogram is also found in oracle bones:[261]



In Old Chinese, 昏 **hmun* would have been acceptable as a phonetic to write **mjun* 'hear'; but it may have been considered less suitable after the change of **hm-* to *x-*. Moreover, by the time of this change, the changes **rounding diphthongization** and ***w*-neutralization** had probably also occurred, so that 門 **m(w)in* < **min* 'gate' was now a suitable phonetic for **mj(w)in* < **mjun* 'hear', and a new phonetic compound 聞 was formed. Duàn Yùcái's principle "same phonetic, same rhyme group" holds good, but in this case it applies not to Old Chinese but to a somewhat later period.

The practice of writing the element 昏 *hūn* with 民 *mín* on top instead of 氏 *shì* was probably also a response to late sound changes, including the change **hm-* > *x-*. In words like

(840) 緡 *mín* < *min* (III) < **mrjun* 'string, line',

the original **mrjun* had probably become **mrjwin* (**rounding diphthongization**) > **mrj(w)in* (***w*-neutralization**) > **mrjin* (***r*-color**), so that

(841) 民 *mín* < *mjin* (IV) < **mjin* 'people'

was felt to be a better phonetic for 緡 *mín* than was 昏 *hūn*. The scribes of the time would not have known that 民 *mín* < **mjin* and 緡 *mín* < **mrjun* had had different main vowels in Old Chinese.

The second qualification of the principle of *xiéshēng* similarity is that requirements for similarity were probably weakened as sound changes affected the pronunciations of characters already in use. Although there was some pressure to replace older, less transparent *xiéshēng* characters with

more rational ones, the weight of tradition often counteracted this pressure, so that the writing system accumulated more and more "imperfect" *xiéshēng* connections. When newer *xiéshēng* characters were created, the analogy of older *xiéshēng* characters still in use probably influenced the standards for *xiéshēng* similarity. For example, although in early times *xiéshēng* characters and their phonetic elements usually had identical main vowels, vowel changes sometimes disrupted this identity. The following words originally had the same main vowel:

(842) 殘 *cán* < *dzan* < **dzan* 'to hurt'

(843) 踐 *jiàn* < *dzjenX* < **dzjan?* 'tread, trample'

(The latter rhymes as **-an* in Odes 158.2A and 165.3A.) But by late Hàn, at least, **acute fronting** (and possibly ***a*-raising**) had changed the vowel of 踐 *jiàn* to **e,* so that **a* and **e* now occurred in the same phonetic series. Such cases may have provided a precedent for allowing alternations between **a* and **e* in subsequently created *xiéshēng* characters. A possible example of this is

(844) 霰 *xiàn* < *senH* < **s(k)ens* 'sleet'.

I reconstruct **-en* here because of the Middle Chinese division-IV final *-en*; 霰 *xiàn* also rhymes as **-ens* in Ode 217.3B. But the phonetic in the current character is

(845) 散 *sǎn* < *sanX* < **san?* 'scattered', also read *sàn* < *sanH* < **san(?)s* 'to disperse',

which must be reconstructed with **-an*. Thus we apparently have **-an* and **-en* in the same phonetic series, something that probably would not have been allowed in Old Chinese times. But the character 霰 may be of late origin; the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 5184) records an alternate character 覓, with phonetic

(846) 見 *jiàn* < *kenH* < **kens* 'to see',

which is to be reconstructed with **e*. The character 覓 is probably of earlier origin than 霰. If "sleet" was originally **skens,* as this character implies, the phonetic compound 覓 may have been abandoned after the simplification of the cluster **sk-* > **s-*, which would have made 見 **kens* seem unsuitable as a phonetic for **sens*; and the existence of **a*/*e* alternations in existing *xiéshēng* series would have made 散 **san?* an acceptable phonetic.

As these observations show, *xiéshēng* connections, while providing valuable evidence when used carefully, cannot be used mechanically and uncriti-

cally. The *xiéshēng* relationships described in the *Shuōwén jiězì* still reflect Old Chinese phonology in many cases, for tradition kept many early characters in use; but some of the characters are of late origin, and reflect Old Chinese phonology only through the mirror of later sound changes.

9.3. The text of the *Shījīng*

The textual history of the *Shījīng* is extremely complex, and a detailed account of it is beyond the scope of this study. This section deals briefly with the present form of the *Shījīng*, and with its origin and transmission, focusing on those topics which are most relevant to the use of the *Shījīng* as phonological evidence.

9.3.1. The present form of the *Shījīng*

The *Shījīng* as we have it today consists of 305 poems ranging in length from eighteen characters (Ode 268) to 492 characters (Ode 300; see Wáng Lì 1980b: 41). The book as a whole is divided into the following major sections:[262]

1. The *Guó fēng* 國風 'airs of the states', comprising 160 poems (Odes 1–160). These are generally regarded as folk songs collected from disparate geographic areas of the Zhōu kingdom.

2. The *Xiǎo yǎ* 小雅 'lesser *Yǎ*' odes, comprising seventy-four poems (Odes 161–234). The significance of the term *Yǎ* (MC *ngæʔ*) is debated; it is widely taken to be a loan character for *Xià* 夏 (MC *hæX* < **graʔ*), assumed to be a geographical term referring to the district under direct royal control in Western Zhōu times. These poems are generally assumed to be a product of the royal Zhōu court. In content and style, however, there is some overlap between the *Guó fēng* and the *Xiǎo Yǎ* sections.

3. The *Dà yǎ* 大雅 'greater *Yǎ*' odes, comprising thirty-one poems (Odes 235–65). These are regarded as dynastic hymns originating in Western Zhōu times, some of them recording legends about early Zhōu history.

4. The *Zhōu sòng* 周頌 'Zhōu hymns of praise', comprising thirty-one poems (Odes 266–96). This section, also apparently dating from Western Zhōu, includes relatively brief hymns in praise of Heaven and the Zhōu ancestors. Several of these hymns are unrhymed.

5. The *Lǔ sòng* 魯頌 'Lǔ hymns of praise', comprising four poems (Odes 297–300). Although called *sòng* 'hymns of praise' like the previous section, these poems resemble the poems of the *Guó fēng* and *Yǎ* sections rather than those of the *Zhōu sòng*. They are agreed to be rather late, originating in the state of Lǔ (roughly, the southern part of modern Shāndōng) in the seventh century B.C.

6. The *Shāng sòng* 商頌 'Shāng hymns of praise', comprising five poems (Odes 301–5). These too are rather late, representing not the Shāng dynasty which was conquered by the Zhōu, but the later state of Sòng 宋, whose ruling house was descended from the rulers of Shāng. These poems probably date from the seventh century B.C.

As the above description suggests, the poems of the *Shījīng* represent a variety of times and places. They are also heterogeneous in form and style. In the *Guó fēng* section, we find anonymous lyrical love songs, wedding hymns, laments for husbands gone to war. The *Xiǎo yǎ* has such poems too, but there we also find poems of political content referring to contemporary historical events and naming names (including, in some cases, the name of the poet). Differences in content are also reflected in form. One typical form in the *Guó fēng* consists of two or three stanzas which are almost identical repetitions of each other, except for the words which rhyme.[263] In contrast with this tight structure, the political poems of the *Xiǎo yǎ* often consist of more loosely-connected eight-line stanzas.[264] Nevertheless, except for some of the poems in the *Zhōu sòng* section, all the poems rhyme, and almost all are divided into stanzas.

Ancient Chinese sources record a number of traditions about the origin of the *Shījīng*. According to the *Hàn shū Yìwén zhì* 漢書藝文志,[265] in early times there was a government official who collected songs as a kind of public opinion poll, and the *Shījīng* was gathered in this way:

> The *Documents* [i.e. the *Shàngshū* 尚書 or *Shūjīng* 書經] say: "Poetry [詩 *shī* < **stjɨ*] speaks [言 *yán*] of aspirations [志 *zhì* < **tjɨs*];[266] songs [歌 *gē*] chant the words." Thus a sorrowful or joyful heart is moved, and emits the sound of singing and chanting. Reciting the words is called "poetry" [詩 *shī*], and chanting the sounds is called "singing" [歌 *gē*].[267] In ancient times there was an official who collected poetry [采詩 *cǎi shī*]; by this means, the ruler surveyed customs and habits, learned of his accomplishments and failures, and examined and corrected himself. Confucius chose from all the poetry of Zhōu

周, going back to Yīn 殷 [i.e. Shāng 商] and forward to Lǔ 魯, 305 poems in all.

The fact that [this collection] survived the Qín intact is because it was sung from memory, not preserved only on bamboo and silk. When the Hàn 漢 arose, Shēn 申 of Lǔ made glosses for the Shī, and commentaries were made by Yuán Gù 轅固 of Qí 齊 and Hán Shēng 韓生 of Yān 燕. In some cases they followed [stories from] the *Chūnqiū* 春秋, and adopted various interpretations; but they all mistook the original meaning. Though they did not get it right, the school of Lǔ came closest. These three schools were each assigned to educational officials [學官 *xué guān*]. There was also the learning of Máo, which claimed to be descended from Zǐ Xià 子夏 [a disciple of Confucius]; this school was favored by King Xiàn 獻 of Héjiān 河間, but was not officially established.

The four Hàn schools of *Shījīng* study mentioned here are conventionally called the Lǔ *Shī*, the Qí *Shī*, the Hán *Shī*, and the Máo *Shī*. Each school evidently had not only its own version of the text, but also its own accompanying tradition of interpretation. The Lǔ, Qí, and Hán schools, collectively called the "three schools of the *Shī* [*sānjiā Shī* 三家詩]", were dominant for most of the Hàn period, but the Máo school eventually won out: the present-day version of the *Shījīng* is the Máo *Shī*. The other versions are extant only in fragments, though the Hán *Shī* survived to the Táng dynasty, and is frequently quoted in the *Jīngdiǎn shìwén*. The other versions are known only from quotations in other ancient texts, and from a few stone inscriptions. The Máo school's traditions of interpretation are preserved in the *Máo Shī gǔ xùn zhuàn* 毛詩詁訓傳, which includes glosses on difficult words and passages. The late Hàn commentator Zhèng Xuán 鄭玄 (127–200) wrote further commentary, sometimes disagreeing with the Máo interpretation.

In addition to these traditionally known versions of the *Shījīng*, fragments of a previously unknown version of the *Shījīng* were recently found in a Hàn tomb at Shuānggǔduī 雙古堆, Fùyáng 阜陽 county, Ānhuī province (see Ānhuī Shěng Wénwù Gōngzuò Duì et al. 1978; Wénwù Jú Gǔ Wénxiàn Yánjiūshì et al. 1984; Hú Píngshēng & Hán Zìqiáng 1984).

For our understanding of the present state of the *Shījīng* text, the comment that the *Shījīng* "survived the Qín complete ... because it was sung from memory, not preserved only on bamboo and silk" is of particular importance. This refers to the well-known "burning of the books" by the emperor Qín Shǐhuáng.[268] Whatever the actual nature of the Qín conflagration, the

transmission of many classical texts was definitely interrupted, and scholars of Hàn times were preoccupied with the problem of reconstructing the classical texts which had been lost. From historical fact, and from the present state of the *Shījīng* text, we can draw the following conclusions:

1. The *Shījīng* text was transmitted from earlier times in both oral and written form: it was not only "preserved on bamboo and silk", but also memorized and recited by students under the direction of their teachers. Perhaps the written versions of the text served chiefly as aids to memorization; the primary form of the text was not any written version, but the version one learned from one's teacher. One possible reason for the oral emphasis is that skill in quoting the *Shījīng* when speaking in public was an important aspect of rhetorical skill.

2. Those who learned and transmitted the *Shījīng* learned and transmitted also traditions about the meanings of difficult words and passages, but there were many passages that, though faithfully memorized and passed on, were poorly understood. Otherwise, there would have been no need for the copious glosses provided by the Hàn schools, and their interpretations would not be so divergent. In Hàn times, the *Shījīng* was already an ancient and very difficult book.

9.3.2. "Pronunciation errors" in the *Shījīng*

If we compare the Máo *Shī* with surviving fragments of other versions of the text, we find interesting confirmation of the oral nature of the transmission of the text, for a number of the differences can be attributed to slight variations in pronunciation of an only partly understood text. Ogawa (1960 [1977]) cites a number of interesting differences between the Máo text and surviving fragments of the so-called Xīpíng stone classics (*Xīpíng shíjīng* 熹平石經), carved and set up in Luòyáng in A.D. 175 (the fourth year of the Xīpíng reign period):[269]

1. In Ode 35.3, the Máo version has the line

   我躬不閱
   wǒ gōng bú yuè
   'My person is not liked'.

(I take 閱 *yuè* here to be equivalent to the homophonous 悅 *yuè* 'happy, liked'.) The stone classics version has

我今不閱
wǒ jīn bú yuè
'I am now not liked'.

That is, the stone classics version has

(847) 今 *jīn* < *kim* < **k(r)jɨlum* < **k(r)jɨm* 'now'[270]

where the Máo version has

(848) 躬 *gōng* < *kjuwng* < **k(r)jung* 'person, body'.

Karlgren prefers the reading with 今 *jīn* (Karlgren 1942–1946 [1964], gloss 97), but Ogawa argues that 今 *jīn* results from the assimilation of the final **-ng* of 躬 *gōng* to the initial **p-* of 不 *bù* < **pjɨ* (1960 [1977]: 13–14).

2. In Ode 197.2, the Máo version has the line

假寐永歎
jiǎ mèi yǒng tàn
'I can only steal a moment's sleep, and long I am sighing'

The expression 假寐 *jiǎ mèi* is taken to mean "borrow sleep"; Karlgren cites the statement of the Eastern Hàn commentator Wáng Yì 王逸 that this means "to sleep without removing cap and sash" (Karlgren 1942–1946 [1964], gloss 594).[271] But in the Xīpíng stone classics, the first two characters are

監寐
jiān mèi.

(See Ogawa 1960 [1977]: 15–16.) Leaving aside the somewhat vexing question of what this might mean (監 *jiān* usually means "supervise"), let us examine the reconstructed pronunciations of these two words. The Máo version is

假寐 *jiǎ mèi* < *kæX mjijH* < **kra? mjits*,

while the stone classic version is

監寐 *jiān mèi* < *kæm mjijH* < **kram mjits*.

Assuming that the Máo version is the better one (since it at least makes sense), it appears that the stone classic version has assimilated the final glottal stop of 假 **kra?* to the initial **m-* of the following syllable—a natural substitution in oral recitation, especially if the meaning of the text, being obscure, did not interfere with the natural tendencies of the mouth.[272]

It is hard to imagine variants like these arising in a text through copying errors; the character 今 *jīn* does not, and probably did not, resemble the character 躬 *gōng*. Rather, these variants must have arisen through oral transmission of the text: a student imperfectly imitates his teacher's pronunciation (perhaps influenced by his own dialect) and passes the error on to his own students. If the student understands what the text means, his understanding will act as a constraint on changes in pronunciation; such changes are most likely to occur in poorly understood passages, where pronunciation is unconstrained by any knowledge of the meaning of the text (just as American children often come up with novel versions of the Pledge of Allegiance). Zhèng Xuán called attention to many errors of this kind, calling them 聲之誤 *shēng zhī wù* 'pronunciation errors'.[273]

As for the written text, all the versions of the *Shī* have large numbers of so-called 假借字 *jiǎjiè zì* 'loan characters'. The term "loan character" is sometimes applied to the conventional use of the character for one word to write another word of identical or similar pronunciation (such as 來 *lái* 'kind of wheat' for 來 *lái* 'to come'); but in the classical texts there are many so-called loan characters which probably arose because some scribe did not know or understand the word he was writing; he simply chose a character to match the sound of a recited or memorized text. For example, in Ode 41.3, the Máo version has the line

偕手同車
xié shǒu tóng jū
'I will hold your hand and go with you in your carriage'.

The last character is

(849) 車 *jū* < *kjo* < **k(r)ja* 'vehicle'.

But the Fùyáng *Shī* (Hú Píngshēng & Hán Zìqiáng 1988: 6, fragment S045) has instead the character

(850) 居 *jū* < *kjo* < **k(r)ja* 'reside',

so that the line would mean "hold hands and live together". Whichever is the better reading, a scribe at some point substituted one character pronounced **k(r)ja* for another, because they were homonyms.

Like *xiéshēng* characters, substitutions of this kind reflect the phonology of the time and place of their origin, not necessarily the phonology of Old Chinese. A text variant which illustrates this point is the following line from Ode 249.1:

假樂君子
jiǎ lè jūn zǐ
'Greatly happy be the lord'.

The first word is

(851) 假 *jiǎ* < *kæX* < **kraʔ* 'great',

a word belonging to the traditional 魚 *Yú* rhyme group (my *-*a*). But where this line is quoted in the *Zhōng yōng* 中庸, instead of 假 *jiǎ* < **kraʔ* we have

(852) 嘉 *jiā* < *kæ* < **kraj* 'good, fine, excellent',

a word of the traditional 歌 Gē rhyme group. These syllables were quite distinct in Old Chinese; the confusion between them reflects the Hàn-time merger of syllables like **Kra* with syllables like **Kraj*, which had happened by the Eastern Hàn period (Luó & Zhōu 1958: 13–14). It is not clear which reading is the original one, but in either case, this example illustrates how Hàn phonology could affect the text of the *Shījīng*.

9.3.3. "Pronunciation errors" affecting rhyme words

Since we wish to use the *Shījīng* rhymes as evidence on Old Chinese phonology, we should be aware that late text changes of this kind can sometimes obscure the original rhyme pattern. I will close this chapter with two examples of this.

9.3.3.1. 蒹 jiān *'lotus/orchid' in Odes 95.1 and 145.2*

The character 蒹 *jiān* occurs in Odes 95.1 and 145.2. In both cases it is a rhyme word, but in Ode 145.2 it rhymes with words which, according to the front-vowel hypothesis, must be reconstructed with *-*en*; while in Ode 95.1 it rhymes with a word which cannot be reconstructed with *-*en*. Consider first Ode 145.2, which reads as follows (translation from Karlgren 1974: 92):

彼澤之陂	*bǐ zé zhī bēi*	
有蒲與蒹	*yǒu pú yǔ JIĀN*	蒹 **kren*
有美一人	*yǒu měi yì rén*	
碩大且卷	*shuò dà qiě QUÁN*	卷 **g*^{w}*rjen*

寤寐無爲　　*wù mèi wú wéi*
中心悁悁　　*zhōng xīn yuān YUĀN*　悁 **ʔʷjen*

By the shore of that marsh
there are sedges and LOTUS FRUITS;
there is a certain beautiful person,
grandly large and HANDSOME;
waking and sleeping, I know not what to do,
in the core of my heart I am GRIEVED.

The rhyme words are as follows:

蒨 *jiān* < *kɛn* ~ *kæn* 'lotus' (or 'orchid')
卷 *quán* < *gjwen* (III) 'handsome'
悁 *yuān* < *ʔjwien* (IV) 'grieved'

There is disagreement about both the meaning and the pronunciation of 蒨 *jiān* here. The Máo commentary glosses it as 蘭 *lán* < *lan* 'orchid'; but Zhèng Xuán says that the character 蒨 *jiān* "ought to be" 蓮 *lián* < *len* 'lotus fruit'. As the translation above shows, Karlgren (1942–1946 [1964], gloss 352) followed Zhèng Xuán's interpretation, which is well-supported by the fact that both the other two stanzas mention the lotus plant in the corresponding place (荷 *hé* < *ha* 'lotus' in stanza 1, 菡萏 *hàndàn* < *homX-domX* 'lotus flower' in stanza 3). As for the pronunciation, the *Guǎngyùn* gives the pronunciation *kɛn*. This fits well with Zhèng Xuán's interpretation, for *kɛn* regularly represents OC **kren*. So, following Zhèng Xuán, we can reconstruct

(853) 蒨 *jiān* < *kɛn* < **kren* 'lotus fruit',

which must be from the same root as the modern form

(854) 蓮 *lián* < *len* < **g-ren* 'lotus fruit'.[274]

Both MC *len* and (assuming it is regular) *kɛn* must reflect OC **-en*, according to my reconstruction. We reconstruct a "disappearing **g-*" in 連 because of this connection with 蒨 **kren*.[275]

Zhèng Xuán's interpretation is also in good phonological agreement with my reconstruction of the other rhyme words in this stanza. The word 悁 *yuān* must be reconstructed with **-en* because it has the division-IV *chóngniǔ* final *-jwien*:

(855) 悁 *yuān* < *ʔjwien* (IV) < **ʔʷjen* 'grieved'.

The word 卷 *quán* 'handsome' is also to be reconstructed with **-en*:

(856) 卷 *quán* < *gjwen* (III) < **gʷrjen* 'handsome'

MC *gjwen* could also reflect **g^{w}rjan* or **grjon,* but this word, written as 鼘, rhymes as **-en* also in 103.2A.[276]

Now let us turn to Ode 95.1 (translation from Karlgren 1974: 61):

溱與洧	*Zhēn yǔ Wěi*	
方渙渙兮	*fāng huàn* HUÀN *xī*	渙 **hwans*
士與女	*shì yǔ nǚ*	
方秉蕑兮	*fāng bǐng* JIĀN *xī*	蕑 **kran*

The [Zhēn] and the Wěi (streams)
are just now AMPLY-FLOWING;
knights and girls
are just holding [JIĀN] plants in their hands.

Here Máo glosses 蕑 *jiān* just as in Ode 145.2—with the word

(857) 蘭 *lán* < *lan* < **g-ran* 'orchid'.

(In this word, the disappearing **g-* is reconstructed because of velar-initial words elsewhere in this *xiéshēng* series, such as 諫 *jiàn* < *kænH* < **kranʔ(s)* 'remonstrate'.) The *Jīngdiǎn Shìwén* here assigns 蕑 *jiān* the *fǎnqiè* spelling 古顏反, i.e. *k(uX)* + *ng(æn)* = *kæn,* which would regularly reflect Old Chinese **kran.*[277] In this case, the Máo interpretation is not questioned by Zhèng Xuán, and is probably correct; this rhyme sequence is a regular rhyme in **-an.* Middle Chinese *kæn,* if regular, would reflect OC **kran.* The other rhyme word

(858) 渙 *huàn* < *xwanH* 'amply-flowing'

could reflect either **hwans* or **xons,* but the same character rhymes as **-an* in Ode 287 (although with a different meaning), and in any case it cannot reflect **-en,* since it has a division-I final.[278]

Upon inspection, then, the interpretation of 蕑 *jiān* as 'lotus' **g-ren* in Ode 145.2 and 'orchid' **g-ran* in Ode 95.1 fits well with my reconstruction system, which requires that we reconstruct **-en* in Ode 145.2 and **-an* in Ode 95.1. How, then, did these two originally different words come to be written with the same character? Quite possibly the confusion is simply graphic in this case: 蕑 *jiān* in Ode 95.1 could be a copying error for 蘭 *lán.* But it is also true that syllables like **Kran* and **Kren* must have merged rather early in some dialects. Yán Zhītuī, one of the *Qièyùn* authors, criticizes Guō Pú (276–324) for saying that 諫 *jiàn* < *kænH* < **kranʔ(s)* was pronounced like 間 *jiān* < *kɛn* < **kren,* and elsewhere mentions confusion of *hɛp* and *hæp* as a northern dialect feature (Zhōu Zǔmó 1943 [1966]: 413, 417). Perhaps **Kran* and **Kren* had merged even earlier

than Guō Pú's time in some dialects; if so, this could explain why Máo took 蕑 *jiān* to mean "orchid" in both Ode 95.1 and Ode 145.2.[279]

9.3.3.2. 反 fǎn *'revert' and* 變 biàn *'change' in Ode 106.3*

The second example of a textual change affecting rhyme words involves Ode 106.3. In the Máo *Shī*, this stanza reads as follows:

猗嗟孌兮	*yī jiē LUÁN xī*	孌 **b-rjon?*
清揚婉兮	*qīng yáng WǍN xī*	婉 **?jon?*
舞則選兮	*wǔ zé XUǍN xī*	選 **sjon(?)s*
射則貫兮	*shè zé GUÀN xī*	貫 **kons*
四矢反兮	*sì shǐ FǍN xī*	反 **pjan?*
以禦亂兮	*yǐ yù LUÀN xī*	亂 **C-rons*

Lo! How HANDSOME,
the clear forehead how BEAUTIFUL;
when dancing he is in COUNTING;
when shooting he PIERCES (the target);
his four arrows (REVERT:) come (one after the other)
so as to prevent (DISORDER:) violation of the rules.

(The translation is adapted from Karlgren 1974.) In his *Glosses on the Book of odes* (1942–1946 [1964], gloss 268), Karlgren notes that the Hán *Shī* has 變 *biàn* 'change' for 反 *fǎn* 'revert' in the next to the last line. If we follow the reading 反 *fǎn* of Máo and Zhèng Xuán, we get an interpretation like "The four arrows (revert =) come (one after the other) to the same place"; if we follow the reading 變 *biàn* of the Hán *Shī*, we get "The four arrows (change =) succeed one another". Karlgren concludes that it is "undecidable which version best repr[esents] the orig[inal] Shī".

However, the rounded-vowel hypothesis leads us to prefer the Hán version's 變 *biàn* < **prjons* over the Máo version's 反 *fǎn* < **pjan?* on phonological grounds, for only the former makes a good rhyme: 變 *biàn* is to be reconstructed with **-on*, and 反 *fǎn* with **-an*; but all the other rhyme words in the stanza are to be reconstructed with **-on*.

To show this, let us first examine the reconstructions of the other rhyme words in this stanza.

1. The following two words must be reconstructed with **-on* because of the *-w-* in their Middle Chinese readings:

(859) 孌 [*luán*] < *ljwenX* < **b-rjon?* 'handsome'

(860) 亂 *luàn* < *lwanH* < **C-rons* 'disorder'

2. The word

(861) 婉 [*wǎn*] < *ʔjwonX* < **ʔjonʔ* 'beautiful'

rhymes as **-on* also in Ode 94.1A, and internally in Odes 102.3A and 151.4C.

3. The word

(862) 選 *xuǎn* < *sjwenX* < **sjonʔ* usually: 'choose', but here read *sjwenH* < **sjon(ʔ)s* 'count', probably related to 算 *suàn* < *swanX* ~ *swanH* < **sons* 'count'

rhymes as **-on* in Ode 26.3.

4. Finally, the word

(863) 貫 *guàn* < *kwanH* < **kons* 'pierce'

rhymes as **-on* in Ode 199.7.

It is possible that the sequence should be split into a three-word *shǎng-shēng* sequence and a three-word *qùshēng* sequence; this question is largely irrelevant to the present one.

To return to the disputed word: The phonetic of 變 *biàn* indicates that it is also to be reconstructed with **-on*:

(864) 變 *biàn* < *pjenH* < **prjons* 'to change'

The phonetic in this character (found also in 孌 [*luán*] < **b-rjonʔ* above) is

(865) 絲 *luán* < *lwan* < **b-ron* 'harness bells'.

Words written with this phonetic rhyme consistently as **-on* in the *Shījīng*: 孌 *luán* < *ljwenX* < **b-rjonʔ* 'beautiful' in Odes 42.2A, 102.3A, 151.4C, and here; 臠 *luán* < *lwan* < **b-ron* 'emaciated' in Ode 147.1A; and 蠻 *mán* < *mæn* < **mron* 'Southern barbarian' in Ode 261.6A.

Though the phonetic compound 變 does not occur in bronze inscriptions, as far as I know, it does occur in the Zhànguó 戰國 inscription Zǔ Chǔ Wén 詛楚文, dating from the late fourth century B.C. (Xú Zhōngshū 1980: 123; Gāo Míng 1980: 82). In fact, it is likely that 變 *biàn* < **prjons* 'change' is cognate to

(866) 亂 *luàn* < *lwanH* < **C-rons* 'disorder'.

The word 反 *fǎn*, on the other hand, rhymes elsewhere as **-an*,[280] and is to be reconstructed

(867) 反 *fǎn* < *pjonX* < **pjan?* 'reverse; revert'.

With the rounded-vowel hypothesis, it is no longer "undecidable which version best repr[esents] the orig[inal] Shī", in Karlgren's words: the Hán *Shī* reading 變 *biàn* makes the sequence a regular *-*on* sequence, while the Máo *Shī* reading 反 *fǎn* makes an irregular rhyme mixing *-*on* and *-*an*. How could such a reading have arisen? By Hàn times, 變 **prjons* had probably become **prjwans* (**rounding diphthongization**) > **prjans* (***w*-neutralization**). Thus the distinction between *-*on* and *-*an* had been lost, and 反 *fǎn* < **pjan?* 'revert' may have seemed as good a rhyme as 變 *biàn*, and may have been substituted through an error in oral transmission. Moreover, the meaning of the line was too unclear to prevent such a substitution.

9.3.3.3. Conclusion

Examples such as those just given show that the present *Shījīng* text cannot be treated as a simple Zhōu-dynasty text; we must be prepared to find contamination from later scripts and phonological systems. In the words of the late Qīng scholar Yú Yuè 俞樾,

> Holding a book transmitted and printed today and treating it as the true version of the ancients is like hearing people say that bamboo shoots are good to eat, and going home and cooking one's bed mat.[281]

Chapter 10

New rhyme categories for Old Chinese

In this chapter, the Old Chinese reconstruction system outlined in Chapters 5 through 8 is described in greater detail by showing how it applies to each of the traditional rhyme groups. Where the present system conflicts with the traditional rhyme groups, the evidence for revising the traditional groups is summarized. It will be convenient to group the traditional categories according to their codas: section 10.1 examines categories with acute codas; section 10.2 examines categories with zero, velar, or labiovelar codas; and section 10.3 examines categories with labial codas. Section 10.4 summarizes the results.

For each of the traditional rhyme groups, I will first list the Middle Chinese finals assigned to each group according to the traditional analysis, and discuss how the hypotheses of my reconstruction system apply to the group. For example, if division-I and division-IV finals contrast in the same group, then according to the front-vowel hypothesis, they must be reconstructed with different main vowels; and if they had different main vowels, there may be a rhyming distinction between them which was not recognized in the traditional analysis. Similarly, if *kāikŏu* finals (without MC *-w-*) and *hékŏu* finals (with MC *-w-*) contrast, and if the *-w-* cannot be attributed to a labialized initial *K^w-, then according to the rounded-vowel hypothesis, they must be reconstructed with different main vowels; and if they had different main vowels, there may be a rhyming distinction between them which was not recognized in the traditional analysis.

For groups where such additional rhyming distinctions are predicted, the next step is to test statistically whether the predicted rhyming distinctions actually exist. This is done by using the procedures developed in Chapter 3. The basic procedure is to test the rhyming of words whose vowels can be reconstructed on the basis of their Middle Chinese pronunciation alone; I call such words "phonologically unambiguous". For example, within the traditional 元 Yuán group, there are some words whose vowels can only be reconstructed with *-*en* in my system, and others which cannot be reconstructed with *-*en*. We wish to test this reconstruction by determining whether the words which must be reconstructed with *-*en* do or do not rhyme regularly with the words which cannot be reconstructed with *-*en*. If the *-*en* words and the non-*-*en* words rhyme with each other significantly

less often than would be expected by chance, then the rhyming distinction between them is confirmed—for phonologically unambiguous words.

The reason for limiting the statistical tests to phonologically unambiguous words is to avoid the circularity of assigning words to categories according to the rhyme evidence, and then using the rhyme evidence to "prove" the correctness of the categories. In a particular sample of rhymes, two groups of words might show few or no rhyme contacts purely by chance, not because of any phonological distinction between the two groups. If we tested our hypotheses by using words reconstructed purely on the basis of their rhyme behavior, without other supporting evidence, we would risk setting up spurious rhyme distinctions in such cases.[282]

If the predicted distinction is confirmed for phonologically unambiguous words, the next step is to reconstruct as best we can the phonologically ambiguous words—those which cannot be reconstructed from their Middle Chinese pronunciation alone. It is at this stage—after the statistical tests have been done—that we use rhyme evidence to choose among possible reconstructions: if a word which could be reconstructed with either **-en* or **-an* rhymes consistently and repeatedly with unambiguous **-en* words, then we reconstruct it with **-en* also. Similarly, phonologically ambiguous words can often be reconstructed on the basis of *xiéshēng* evidence, provided that the *xiéshēng* characters involved are sufficiently old. If the phonologically ambiguous words can be reconstructed in a more or less consistent way, this gives us additional confidence that the reconstruction is an adequate one. At this point, we get little help from statistics; the overall adequacy of a reconstruction depends on so many considerations that it would be difficult to test them statistically.

In order to save space, I will not discuss the phonologically ambiguous words exhaustively. However, for traditional groups which I claim should be divided, I include a list of the rhyme sequences assigned to each category, and a list of those rhyme sequences which appear irregular, with occasional notes on cases where a textual problem or a character substitution seems to be involved. (Not all such irregularities can be accounted for, of course; there is simply too much we do not understand about the text.) Similarly, although I include reconstructions of all the *Shījīng* rhyme words in Appendix C, many of these reconstructions, especially those of rare or phonologically unusual words, are underdetermined by the available evidence, and many of the reconstructed forms include parenthesized elements or a choice of elements.

Where my reconstruction is consistent with the traditional analysis (as in the reconstruction of the traditional 東 Dōng group, which corresponds exactly to my **-ong*), I omit discussion of the group's *Shījīng* rhymes unless there is some special point to be made. However, a full list of the rhyme sequences of the *Shījīng* is found in Appendix B, and the rhyme occurrences of each word are listed in Appendix C.

At the risk of removing the element of suspense, I will summarize here the results of this chapter's analyses. The predictions of the rounded-vowel hypothesis and the front-vowel hypothesis are generally confirmed. The evidence is clearest in the more frequently used rhyme groups such as 元 Yuán or 文 Wén. In the less frequently used rhyme groups, there is sometimes too little data for statistical analysis to be conclusive. To take an extreme example, words of the traditional 盍 Hé group, which I reconstruct with **-ap, *-op,* and **-ep,* are used in only five *Shījīng* rhyme sequences (34.1A, 60.2A, 167.4C, 260.7A, and 304.7A), and all the words involved are probably to be reconstructed with **-ap*. Obviously, if **-op* and **-ep* are not used as rhymes in the *Shījīng,* the *Shījīng* rhymes by themselves offer no support for reconstructing these finals. Rather, these reconstructions rest on other evidence and assumptions, including one assumption which is crucial: that all the rhyme groups belong to a single phonological system and draw on the same set of phonological elements. Even if we found that what I reconstruct as **-ap* and **-ep* rhymed freely with each other, we should be reluctant to change the reconstruction of the latter to **-iap,* with Karlgren's "strong vocalic" medial **-i-*, unless there was support for this **-i-* in other rhyme groups also. Although we examine each rhyme group separately, their reconstructions cannot be regarded as mutually independent; our assumption must be that they are manifestations of a single phonological system, and the analysis of one rhyme group must depend in some ways on the analysis of the others.

In revising the traditional analysis of Old Chinese rhyming, I will name rhyme categories by simply giving the reconstruction of their main vowel and coda: thus I divide the traditional 元 Yuán group into three groups which I call **-an, *-on,* and **-en*. Just as the traditional rhyme groups include words with different tones, so my **-an* category should be understood to include words in **-an, *-an?,* and **-ans*. I also include *rùshēng*-related *qùshēng* words in the corresponding *rùshēng* group; for example, I treat *rùshēng* words in **-ik* and *qùshēng* words in **-iks* as parts of a single group, for which I use the label "**-ik(s)*". It is sometimes difficult to

distinguish final **-ks* from final **-s*, however, so some words may be incorrectly placed.[283]

10.1. Syllables with acute codas

The reconstruction of finals with the coda **-n* has already been discussed in some detail in Chapter 7; and finals with the other acute codas **-t* and **-j* are largely parallel. It remains to summarize the reconstructions and test them against the rhyme evidence. I will begin with the 元 Yuán group and the parallel groups 月 Yuè, 祭 Jì, and 歌 Gē, then move on to the 真 Zhēn and 文 Wén groups and the groups parallel to them.

10.1.1. The traditional 元 Yuán group

The Middle Chinese finals included in the traditional 元 Yuán group are listed in Table 10.1. This and other similar tables in this chapter list finals by division (I, II, III, or IV; see section 2.4), giving my Middle Chinese transcription, Karlgren's Ancient Chinese reconstruction, and the *Qièyùn* rhyme of each final traditionally included in the group, along with any necessary comments. (Karlgren's Ancient Chinese is included for readers who wish to consult this chapter without first assimilating my Middle Chinese transcription system, described in Chapter 2.) The "comments" column indicates whether the finals are restricted to certain initials. The comment "(in part)" identifies Middle Chinese finals which are also found in rhyme groups other than the one under discussion.

Table 10.1. Middle Chinese finals of the traditional 元 Yuán group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-(w)an*	*-(u)ân*	寒 Hán (Han)	
II	*-(w)æn*	*-(w)an*	刪 Shān (Sræn)	
	-ɛn	*-ăn*	山 Shān (Srɛn)	(in part)
III	*-j(w)on*	*-i̯(w)ɒn*	元 Yuán (Ngjwon)	grave only
	-j(w)(i)en	*-i̯(w)ăn*	仙 Xiān (Sjen)	
IV	*-(w)en*	*-i(w)en*	先 Xiān (Sen)	(in part)

As we saw in Chapter 7, *kāikǒu* and *hékǒu* finals contrast after acute initials in this group, so according to the rounded-vowel hypothesis, we must reconstruct both **-an* and **-on*:

(868) 單 *dān* < *tan* < **tan* 'single, unit'

(869) 端 *duān* < *twan* < **ton* 'tip, end'

The division-I final *-an* and the division-IV final *-en* also contrast:

(870) 干 *gān* < *kan* < **kan* 'shield'

(871) 肩 *jiān* < *ken* < **ken* 'shoulder'

This means that, according to the front-vowel hypothesis, we must also reconstruct **-en* in this group, contrasting with **-an*.

The proposed reconstructions of finals with Old Chinese **-an*, **-en*, and **-on* are summarized in the tables of the following sections, along with the corresponding finals in the systems of Karlgren (1954), Li Fang-kuei (1971 [1980]), and Pulleyblank (1977–1978) for comparison.[284]

10.1.1.1. The reconstruction of the *-an *group*

In syllables with nonlabialized initials, **-an* developed as shown in Table 10.2 below.[285]

Table 10.2. Development of **-an* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-an*	all	*-an*	**-ân*	**-an*	**-án*
**-ran*	all	*-æn*	**-an*	**-ran*	**-ˊán*
**-jan*	grave	*-jon*	**-i̯ăn*	**-jan*	**-àn*
	acute	*-jen*	**-i̯an*	**-jan*	**-àn*
**-rjan*	grave	*-jen* (III)	**-i̯an*	**-jian*	**-ˊàn*
	acute	*-jen*	**-i̯an*	**-rjan*	**-ˊàn*

In syllables with initial **TSr-*, we have a special development due to the change ***TSrj- > TSr-*** (section 7.2.3): **TSrjan* > **TSrjen* > *TSrɛn*, as in

(872) 産 [*chǎn*] < *srɛnX* < *srjenX* < **sngrjan?* 'breed, bear',

whose phonetic is

(873) 彦 *yàn* < *ngjenH* (III) < **ngrjans* 'adorned, talented, fine'.

The fact that MC *-ɛn* can reflect **-rjan* as well as **-ren* (see below) is one reason why the original distinction between **-an* and **-en* has been overlooked in previous analyses.

Syllables with labialized initials are parallel, but have *hékǒu* finals in Middle Chinese, as shown in Table 10.3.

Table 10.3. Development of **-an* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}an*	*Kwan*	**Kwân*	**Kwan*	**K^{w}án*
**K^{w}ran*	*Kwæn*	**Kwan*	**Kwran*	**K^{w}rán*
**K^{w}jan*	*Kjwon*	**Kịwăn*	**Kwjan*	**K^{w}àn*
**K^{w}rjan*	*Kjwen* (III)	**Kịwan*	**Kwjian*	**K^{w}ràn*

Additional examples of **-an*

(874) 安 *ān* < *ʔan* < **ʔan* 'peace'

(875) 寬 *kuān* < *khwan* < **k^{w}han* 'vast, generous'

(876) 顏 *yán* < *ngæn* < **ngran* 'face, countenance'

(877) 鴈 *yàn* < *ngænH* < **ngrans* 'wild goose'

(878) 言 *yán* < *ngjon* < **ngjan* 'speak, word'

(879) 反 *fǎn* < *pjonX* < **pjanʔ* 'reverse'

(880) 諼 *xuān* < *xjwon* < **hwjan* 'forget'

(881) 原 *yuán* < *ngjwon* < **ng^{w}jan* 'plain, highland'

(882) 虔 *qián* < *gjen* (III) < **grjan* 'cut, kill'

(883) 愆 *qiān* < *khjen* (III) < **khrjan* 'exceed, err, fail'

(884) 媛 *yuàn* < *hjwenH* (III) < **wrjans* 'a beauty'

(885) 廛 *chán* < *drjen* < **drjan* 'farmyard'

(886) 山 *shān* < *srɛn* < **srjan* 'mountain'

(887) 衍 *yǎn* < *yenX* < **ranʔ* 'overflowing, abundant'

10.1.1.2. The reconstruction of the *-en *group*

After nonlabialized initials, **-en* developed as shown in Table 10.4.[286] In syllables with initial **TSr-*, we probably have **TSrjen* > *TSrɛn* by ***TSrj-*** > ***TSr-***, as above.

Syllables with labialized initials are largely parallel, but have *hékǒu* finals in Middle Chinese, as shown in Table 10.5.

Table 10.4. Development of **-en* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-en*	all	*-en*	**-ian*	**-ian*	**-^{j}án*
**-ren*	all	*-ɛn*	**-ăn*	**-rian*	**-^{rj}án*
**-jen*	grave	*-jien* (IV)	**-i̯an*	**-jian*	**-^{j}àn*
	acute	*-jen*	**-i̯an*	**-jan*	**-(j)àn*
**-rjen*	grave	*-jen* (III)	**-i̯an*	**-jian*	**-^{r}(j)àn*
	acute	*-jen*	**-i̯an*	**-rjan*	**-^{r}(j)àn*

Table 10.5. Development of **-en* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}en*	*Kwen*	**Kiwan*	**Kwian*	**K^{w}ján*
**K^{w}ren*	*Kwæn*	**Kwan*	**Kwran*	**K^{w}rján*
**K^{w}jen*	*Kjwien* (IV)	**Ki̯wan*	**Kwjian*	**K^{w}jàn*
**K^{w}rjen*	*Kjwen* (III)	**Ki̯wan*	**Kwjian*	**K^{w}r(j)àn*

By analogy to the development MC *-ɛn* < **-ren* in *kāikǒu* syllables, we would expect to find MC *Kwɛn* < **K^{w}ren*; but in fact, we find *Kwæn* instead, as in

(888) 環 *huán* < *hwæn* < **wren* 'ring',

which rhymes as **-en* (Ode 103.2A). (The phonetic 睘 generally indicates **-en* or **-eng*; see section 10.1.1.6 below.) The development **K^{w}ren* > *Kwæn* is probably related to the more general confusion of **-ran* and **-ren* in some dialects. This confusion is another reason it has been difficult to disentangle OC **-en* from **-an* and **-on*.

Additional examples of **-en*

(889) 肩 *jiān* < *ken* < **ken* 'shoulder'

(890) 見 *jiàn* < *kenH* < **kens* 'to see'

(891) 間 *jiān* < *kɛn* < **kren* 'between'

(892) 閑 *xián* < *hɛn* < **ɦikren* '(interstice in time:) leisure'

(893) 儇 *xuān* < *xjwien* (IV) < **hwjen* 'nimble, smart'

(894) 還 *xuán* < *zjwen* < **ɦiswjen* 'agile'

10.1.1.3. The reconstruction of the *-on *group*

Syllables with OC **-on* developed as shown in Table 10.6.

Table 10.6. Development of **-on* after nonlabial initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-on*	all	*-wan*	**-wân*	**-(u)an*	**-^{w}án*
**-ron*	all	*-wæn*	**-wan*	**-r(u)an*	**-^{rw}án*
**-jon*	grave	*-jwon*	**-i̯wăn*	**-j(u)an*	**-^{w}àn*
	acute	*-jwen*	**-i̯wan*	**-juan*	**-^{w}àn*
**-rjon*	grave	*-jwen* (III)	**-i̯wan*	**-jian*	**-^{rw}àn*
	acute	*-jwen*	**-i̯wan*	**-rjuan*	**-^{rw}àn*

In syllables with labial initials, the *-w-* of the finals in Table 10.6 is lost, or at least becomes nondistinctive, through ***w-neutralization**.

Examples of **-on*

(895) 鍛 *duàn* < *twanH* < **tons* 'hammer'

(896) 冠 *guān* < *kwan* < **kon* 'cap'

(897) 關 *guān* < *kwæn* < **kron* 'barrier, frontier gate'

(898) 壎 [*xūn*] < *xjwon* < **xjon* 'ocarina'

(899) 願 *yuàn* < *ngjwonH* < **ngjons* 'long for, wish'

(900) 苑 [*yuàn*] < *ʔjwonX* < **ʔjonʔ* 'resent'

(901) 選 *xuǎn* < *sjwenX* < **sjon?* 'count'

(902) 孌 [*luán*] < *ljwenX* < **b-rjon?* 'beautiful, handsome'

(903) 卷 *juǎn* < *kjwenX* (III) < **krjon?* 'roll'

(904) 變 *biàn* < *pjenH* (III) < **prjons* 'change'

(905) 轉 *zhuǎn* < *trjwenX* < **trjon?* 'turn around'

10.1.1.4. The rhyming of *-an, *-en, *and* *-on

As the tables above show, it is sometimes possible to determine from Middle Chinese readings alone whether a word should be reconstructed with **-an, *-en,* or *-on*. For example, within the 元 Yuán group, according to my reconstruction, the division-IV finals *-en* and *-wen* and the division-IV *chóngniǔ* finals *-jien* and *-jwien* can reflect only **-en,* never **-an* or **-on*; on the other hand, a syllable like ***Kjon*** can reflect only ***Kjan.* Thus these syllables are phonologically unambiguous. In other cases, a given syllable can be reconstructed in more than one way. For example, MC *tsyen* could represent either **tjan* or **tjen* (which merged by **acute fronting**); MC *kjwon* could represent either **kjon* or **k^{w}jan* (which merged by **rounding diphthongization**). Syllables like this are "phonologically ambiguous". In some cases, we can eliminate one reconstruction for a syllable, even though we cannot decide between the other two on Middle Chinese evidence alone. For example, MC *kjwon* might be reconstructed with either **-an* (**k^{w}jan*) or **-on* (**kjon*), but it cannot be reconstructed with **-en*.

To test the predictions of this reconstruction of the 元 Yuán group, I will first test whether there is a rhyming distinction between words which must be reconstructed with **-en* and those which cannot be reconstructed with **-en*; then I will do the same for **-on*. The actual step-by-step calculations are omitted, but follow the methods set forth in Chapter 3.

The rhyming of *-en

According to the reconstruction proposed above, we may identify phonologically unambiguous cases of **-en* and non-**-en* words according to the following criteria. Among words of the 元 Yuán group,

1. MC *-en, -wen, -jien,* and *-jwien* must reflect **-en*.

2. MC *-an, -wan, -jon,* and *-jwon* must reflect **-an* or **-on,* and thus are non-**-en.*
3. MC *-wæn* and *-jwen* after acute initials (except for *TS-, TSr-,* and *y-*[287]) must reflect **-on* and are thus non-**-en.*

All other syllables are phonologically ambiguous.[288]

For statistical purposes, then, we will examine only the syllables which are phonologically unambiguous by these criteria. Thus a four-word rhyme sequence consisting of two unambiguous syllables and two ambiguous syllables will count for statistical purposes as a sequence of length two; sequences which consist of one unambiguous syllable and one or more ambiguous syllables will not count at all. We will also consider rhymes of different tone categories separately, since the frequency of different types of finals differs from tone to tone (see section 3.2).

To test the significance of any rhyming separation between phonologically unambiguous **-en* words and non-**-en* words, we must first estimate the relative frequencies of such words as rhymes. The occurrences of unambiguous **-en* and non-**-en* syllables in *Shījīng* rhymes are tabulated by tone category in Table 10.7.[289] For each tone category, I use these occurrences to estimate **P**[**-en*], the relative probability that an unambiguous **-en* word will be chosen as a rhyme word, and **P**[non-**-en*], the relative probability that an unambiguous non-**-en* word will be chosen. (Since we are considering only unambiguous words, **P**[**-en*] + **P**[non-**-en*] = 1.) Procedures for estimating the accuracy of these estimates of **P**[**-en*] and **P**[non-**-en*] were discussed in section 3.2.5; to avoid obstructing the flow of the argument, I will relegate this issue to parentheses and footnotes.

Table 10.7. Rhyme occurrences of unambiguous **-en* and non-**-en* words

	píng	*shǎng*	*qù*
**-en* tokens	3	0	6
non-**-en* tokens	73	35	45
total tokens	76	35	51
P[**-en*]	0.0395	0	0.118
P[non-**-en*]	0.9605	1.000	0.882

(By the binomial method of section 3.2.5.1, the 0.94 confidence interval for **P**[**-en*] in *píngshēng* extends from 0.013 to 0.092; the 0.95 confidence interval for **P**[**-en*] in *qùshēng* is from 0.039 to 0.196.)

We will now examine the rhyme sequences involving unambiguous words to see whether they exhibit a significant separation between **-en* words and non-**-en* words. These sequences are tabulated in Table 10.8 by tone and length of sequence.[290]

Table 10.8. Rhyme sequences involving unambiguous **-en* and non-**-en* words

tone	sequence length	total sequences	**-en*	non-**-en*	mixed
píng	2	13	1	12	0
	3	7	0	7	0
	4	1	0	1	0
shǎng	2	9	0	9	0
	5	1	0	1	0
qù	2	8	1	7	0
	3	3	1	2	0
	5	1	0	0	1

Note that there is only one sequence in the sample where unambiguous **-en* and non-**-en* words are mixed (it is Ode 58.6A). Note also that in three parts of the sample (two-word *píngshēng* sequences, two-word *qù-shēng* sequences, and three-word *qùshēng* sequences), not only are all the rhymes unmixed, but there is one unmixed sequence from the less frequent **-en* group. This means that we can apply the more precise method described in section 3.2.6.

The methods of Chapter 3 may be used to compute a combined result for all parts of the sample: the probability that such a great degree of separation between unambiguous **-en* and non-**-en* words would be found by chance is

$$\mathbf{P} = 0.000002.$$

(This figure does not exceed 0.000008 for any values of **P**[**-en*] within the confidence intervals established above.) Since this is much smaller than our criterion value of $\mathbf{P} = 0.05$, this result strongly supports the front-vowel hypothesis for this group. Let us now turn to the rhyming distinction between **-on* and non-**-on* words.

The rhyming of *-*on*

In this section we test the prediction, based on the rounded-vowel hypothesis, that the words I reconstruct with *-*on* rhyme separately from those I reconstruct with *-*an* or *-*en*.

Within the 元 Yuán group, OC *-*on* words can be unambiguously distinguished from non-*-*on* words by the following criteria:

1. All acute-initial syllables with ***hékǒu*** finals must be *-*on* (except words with initials *TS-*, *TSr-*, or *y-*).
2. All *kāikǒu* syllables must be non-*-*on*, except for syllables with labial initials (where *-w-* may have been lost through ***w*-neutralization**).
3. Syllables with the finals *-en*, *-jien*, *-wen*, and *-jwien* must be *-*en* and thus are non-*-*on*.

The rhyme occurrences of unambiguous *-*on* and non-*-*on* words are tabulated in Table 10.9.[291]

Table 10.9. Rhyme occurrences of unambiguous *-*on* and non-*-*on* words

	píng	*shǎng*	*qù*
*-*on* tokens	3	5	3
non-*-*on* tokens	77	13	47
total tokens	80	18	50
P[*-*on*]	0.0375	0.278	0.060
P[non-*-*on*]	0.9625	0.722	0.940

The *Shījīng* rhyme sequences involving unambiguous *-*on* and non-*-*on* words are tabulated in Table 10.10 by tone group and length of sequence.[292]

As the data in Table 10.10 show, there are no sequences at all which mix unambiguous *-*on* words with unambiguous non-*-*on* words. Moreover, in the two-word sequences of both *píngshēng* and *qùshēng*, there are unmixed rhymes involving the less frequent *-*on* words, which makes it possible to use the formula of section 3.2.6. Combining the calculations for all parts of the sample, we get a probability of

$$\mathbf{P} = 0.000076$$

that so great a degree of separation between *-*on* and non-*-*on* would occur by chance. (This value does not exceed 0.00012 anywhere within the confi-

Table 10.10. Rhyme sequences involving unambiguous **-on* and non-**-on* words

tone	sequence length	total sequences	**-on*	non-**-on*	mixed
píng	2	14	1	13	0
	3	4	0	4	0
	4	2	0	2	0
	5	1	0	1	0
	6	1	0	1	0
shǎng	2	2	0	2	0
qù	2	9	1	8	0
	3	4	0	4	0
	4	1	0	1	0

dence intervals established above for **P**[**-on*].) Since this is less than our criterion value of 0.05, we must reject the null hypothesis that unambiguous **-on* words and unambiguous non-**-on* words rhyme freely with each other.

These calculations confirm that in phonologically unambiguous syllables, **-an, *-en,* and **-on* are distinguished in rhyming. We now turn to the reconstruction of ambiguous syllables.

Phonologically ambiguous words

The next stage of our analysis is to determine whether phonologically ambiguous syllables can be assigned to **-an, *-on,* or **-en* in a manner consistent with both their rhyming behavior and the *xiéshēng* evidence. In general, the answer is yes, although there are some irregularities.

Some words can be reconstructed through *xiéshēng* connections with unambiguous words. For example,

(906) 旃 *zhān* < *tsyen* '(particle)'

could represent either **tjan* or **tjen* (since these merged by **acute fronting**), but its phonetic is an unambiguous **-an* word:

(907) 丹 *dān* < *tan* < **tan* 'cinnabar'

The word 旃 *zhān* also rhymes with **-an* words in Ode 125.1B–3B. Thus we can reasonably reconstruct it as **tjan* rather than **tjen.*

Similarly, the Middle Chinese pronunciation of

(908) 踐 *jiàn* < *dzjenX* 'tread, trample'

could represent either **dzjan?* or **dzjen?,* but in the same *xiéshēng* series we have the unambiguous **-an* word

(909) 殘 *cán* < *dzan* 'hurt'.

This leads us to reconstruct **-an* also in 踐 *jiàn*; and this also consistent with the *Shījīng* rhymes, since 踐 *jiàn* rhymes with **-an* in Odes 158.2A and 165.3A. Thus we may reasonably reconstruct 踐 *jiǎn* as **dzjan?* rather than **dzjen?*.

In some cases, the implications of a modern *xiéshēng* character are unclear, but earlier character forms help to decide the matter. For example,

(910) 然 *rán* < *nyen* 'be like it; burn'

could represent either **njan* or **njen,* and the modern graph is no help in deciding between them; according to the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 4454), the phonetic is 肰 *rán* < *nyen* 'dog meat', which is also phonologically ambiguous (Dīng Fúbǎo 1928–1932 [1976]: 4454, 1811). But in earlier script, the phonetic element is the unambiguous **-an* word

(911) 難 *nán* < *nan* < **nan* 'difficult',

(see Zhōu Fǎgāo et al. 1974a, item 1324), which decides in favor of the reconstruction 然 **njan(?)*.[293] This also fits the rhyme evidence, for 然 *rán* rhymes consistently as **-an* (Odes 125.1B–3B, 223.2A, 254.1A).

As we saw in Chapter 9, some *xiéshēng* characters have probably been influenced by the very sound changes (especially **acute fronting** and/or ***r*-color**) which made certain Middle Chinese syllables phonologically ambiguous; for this reason, the *xiéshēng* connections of such characters are no longer a reliable guide to their Old Chinese pronunciation. Where words reconstructed with different vowels are written with the same phonetic element, we often find that the characters involved are of late origin. Generally, the older the *xiéshēng* characters, the better they fit our reconstruction.

When *xiéshēng* and rhyme evidence is plentiful and consistent, we can reconstruct phonologically ambiguous words with confidence; on the other hand, words which rhyme only once or twice, and which have equivocal *xiéshēng* connections, are reconstructed with less certainty. We encounter some irregular rhymes, but not more than are found between the traditional rhyme groups; and some of the apparent rhyme irregularities can be attributed to late changes in the *Shījīng* text.

In order to show that the three-way distinction of **-an, *-on,* and **-en* can be extended consistently to phonologically ambiguous syllables, I list the regular rhyme sequences of each group below. (The full listing of each

sequence may be found in Appendix B.) This is followed by notes on problems involving text and script, and a discussion of irregular rhyme sequences.

10.1.1.5. Rhyme sequences in *-an, *-en, *and* *-on

The following rhyme sequences involve words in **-an* but not **-en* or **-on*: 34.3A, 39.3A, 39.4A, 47.3A, 54.2A, 55.1B–2B, 56.1A, 69.1A, 76.3A, 78.3B, 80.3A, 82.1A, 86.1A, 89.1A, 95.1A, 112.1A, 124.3A, 125.1B–3B, 127.3A, 137.2A, 139.3A, 153.1A–3A, 158.2A, 164.3A, 165.3A, 169.3B, 171.2A, 177.5A, 184.1B–2B, 189.1A, 197.8A, 200.4A, 203.3A, 209.4A, 215.3A, 219.1A, 220.3A, 223.1A, 223.2A, 228.1A, 229.1A, 231.2B, 241.5A, 241.6C, 241.8A, 244.4A, 250.2A, 250.3A, 250.5B, 250.6C, 253.5A, 254.1A, 254.2A, 254.7A, 254.8D, 256.7A, 256.12B, 259.1B, 259.7A, 262.4A, 263.5A, 274.1B, 287.1B, and 305.6A.

The following sequences involve **-en* words but not **-an* or **-on* words: 43.1A, 97.1A, 103.2A, 111.1A, 145.2A, 217.3B, and 298.3A.

The following sequences involve **-on* words but not **-an* or **-en* words: 26.3B, 42.2A, 94.1A, 102.3A, 102.3B, 106.3A, 106.3B, 128.3A, 147.1A, 151.4C, 199.7A, 201.3A, 250.6A, and 261.6A.

Four rhyme sequences seem to show irregular rhyming among **-an, *-en,* and **-on*; they are 58.2A, 58.6A, 75.1B–3B, and 253.5B. These are discussed in section 10.1.7 below.

10.1.1.6. Additional notes

I include here comments on words which show irregular rhymes and *xié-shēng* connections (at least in their modern forms), and comments on the *Shījīng* text which are relevant to the interpretation of the rhyme evidence.

The 官 *guān* series

The phonetic 官 probably originally represented **K^{w}an,* but in characters of late origin it can also represent **Kon.* Such characters probably originated after **rounding diphthongization.**

1. 管 *guǎn* < *kwanX* rhymes as **kon?* in the meaning "flute" or "tube" (Ode 42.2A), but as **k^{w}an?* in the meaning "exhausted" (Ode 254.1A, also

written 疳 in Ode 169.3B). Note that **kon?* 'flute, tube' is also written 筦 (Dīng Fúbǎo 1928–1932 [1976]: 1928), where the phonetic element 完 implies **-on* (see section 7.1.1.2). Perhaps the character 筦 is older than 管 with this meaning.[294]

2. 館 [*guǎn*] < *kwanH* 'lodging house; to lodge' rhymes with **-an* in Ode 75.1B–3B, but as **-on* in Ode 250.6A. Since Ode 250 is clearly earlier in date than Ode 75, I take the rhyme in Ode 250 to be regular, and reconstruct 館 **kons*. Note also that this word is written in bronze inscriptions as 簋, with the phonetic

(912) 宛 [*wǎn*] < *ʔjwonX* < **ʔjon?*,

which normally implies **-on*.[295] This would indicate that it is the sequence in Ode 75.1B–3B which is irregular.

3. Note also that in the following example, a word with a labiovelar initial (**K*^{w}-) is irregularly used as phonetic in a word with a velar initial (**K*-):

(913) 菅 *jiān* < *kæn* < **kran* 'a kind of rush'

The phonetics 袁 and 睘

Judging by the *Shījīng* rhymes (see Appendix C), the phonetic 袁 represents **-an* in these two words:

(914) 遠 *yuǎn* < *hjwonX* < **wjan?* 'distant'

(915) 園 *yuán* < *hjwon* < **wjan* 'garden'

But characters with the phonetic 睘, which the *Shuōwén* says includes 袁 as a phonetic (Dīng Fúbǎo 1928–1932 [1976]: 1423), have **-en* or **-eng*:

(916) 環 *huán* < *hwæn* < **wren* 'ring' (Ode 103.2A)

(917) 還 *xuán* < *zjwen* < **fiswjen* 'agile' (Odes 97.1A, 111.1A).

(918) 睘 *qióng* < *gjwieng* < **g*^{w}*jeng* 'alone and helpless' (Ode 119.2A; also written 惸 in 192.3, 192.13, and 煢, a variant reading in Odes 119 and 192).

I have no explanation for this at present, but I suspect that the *Shuōwén* is in error. Perhaps original 袁 (indicating **-an*) and 睘 (indicating **-en*) have somehow become confused. The use of 睘 for both **-en* and **-eng* reflects a dialect confusion of **-en* and **-eng* which may be rather late; perhaps the graph 煢 (with a regular **-eng* phonetic) is older.

Another piece of evidence for a front vowel in the 睘 series is that the Mǎwángduī versions of *Lǎozǐ* (chapter 26) have

(919) 環官 *huánguān* < *hwæn-kwan* < **wren-k*^{w}*an*

where the current version has

(920) 榮觀 *rónggu*à*n* < *hjwæng-kwanH* < **wrjeng-k*^{w}*ans* (< **wrjeng-kons*?),

which is usually interpreted as "imperial palace" (see Zhōu Zǔmó 1984: 88). The clear front vowel in 榮 *róng* < **wrjeng* supports the reconstruction of **e* in 環 *huán* < **wren*. Probably the two versions of the text reflect a confusion of **-n* and **-ng* because of the preceding front vowel **e*, or assimilation to the following **k*^{w}-, or both.

Phonetics 原 and 元

The word

(921) 原 *yuán* < *ngjwon* < **ng*^{w}*jan* 'plain, highland'

rhymes repeatedly and consistently as **-an*, but

(922) 願 *yuà*n < *ngjwonH* < **ngjons* 'to long for, wish',

which contains 原 *yuán* as phonetic element, rhymes as **-ons* (Ode 94.1A, and also three times in the *Yìjīng*).[296] The graph 願 may be late; on the Warring States vessel Zhōngshān Wáng Fāng Dǐng 中山王方鼎 and other related vessels, this word is written as



where the phonetic is the regular **-on* word

(923) 元 *yuán* < *ngjwon* < **Nkjon* 'head, principal'.

(See Gāo Míng 1980: 157.)

Phonetics 間 and 閑

Probably, 間 originally represented **Kren* (which would regularly become MC *Kɛn*), and 閑 represented **Kran* (which would regularly become MC *Kæn*), but syllables of these types merged early in some dialects, and the two phonetics are widely confused. The confusion may be partly graphic as well. The word 間 *jiān* itself rhymes as **-en*:

(924) 閒 ~ 間 *jiān* < *kɛn* < **kren* 'between', middle' (Odes 97.1A, 111.1A).

The expression

(925) 閑閑 *xiánxián* < *hɛn-hɛn* 'slowly, leisurely',

which rhymes as **-en* in Ode 111.1A, seems to be a reduplicated form of

(926) 閒 ~ 閑 *xián* < *hɛn* < **fikren* '(interstice in time:) leisure',

which is presumably related to 間 *jiān* < **kren* 'between' (see Karlgren 1942–1946 [1964], gloss 844). But the character 閑 *xián* rhymes as **-an* when it means "to restrain, train" (**gran* or **fikran*; Odes 127.3A and 177.5A) and in the reduplicated expression 閑閑 *xiánxián* 'huge' (Odes 241.8A, 305.6A). This last is probably cognate to

(927) 簡簡 *jiǎnjiǎn* < *kɛnX-kɛnX* < **kran?-kran?* 'great'

which also rhymes as **-an* (Ode 274.1B) in spite of its phonetic.

It was pointed out in Chapter 9 that the character 蕑 *jiān* < *kɛn* ~ *kæn* is used to write

(928) 蘭 *lán* < *lan* < **g-ran* 'orchid'

in Ode 95.1, where it rhymes as **-an,* but it is used for

(929) 蓮 *lien* < *len* < **g-ren* 'lotus fruit'

in Ode 145.2A, where it rhymes as **-en* (see Karlgren 1942–1946 [1964], gloss 352).[297] The character 蓮 *lián* < *len* < **g-ren* is of late origin; its phonetic

(930) 連 *lián* < *ljen* < **C-rjan* 'go one after another'

rhymes as **-an,* not **-en,* as does

(931) 漣 *lián* < *ljen* < **C-rjan* 'be dripping continuously'.

The use of 連 **C-rjan* as phonetic for **g-ren* 'lotus fruit' in the modern script reflects the fronting of **a* in **C-rjan* through **acute fronting** (or perhaps ***r*-color**, which may be a related process).

The phonetic 卷

The character 卷 has **-on* in its usual meaning and reading:

(932) 卷 *juǎn* < *kjwenX* < **krjon?* 'to roll' (rhymes as **-on* in Ode 26.3B).

But it rhymes as **-en* in the reading

(933) 卷 ~ 鬈 *quán* < *gjwen* (III) < **g^{w}rjen* 'handsome' (Odes 103.2A and 145.2A).

This word may be related to

(934) 儇 *xuān* < *xjwien* (IV) < **hwjen* 'nimble, smart'.

The confusion of **Krjon* with **K^{w}rjen* results from **rounding diphthongization** and ***r*-color**. I conjecture that the use of 卷 to write *quán* < **g^{w}rjen* 'handsome' may date from the period after these sound changes; earlier, the word may have been written some other way, perhaps with the phonetic 睘.

Miscellaneous individual words

1. The word

(935) 泉 *quán* < *dzjwen* < **Sg^{w}jan* 'source, spring'

is a *hékǒu* word with an acute initial, but it rhymes consistently as **-an*, as pointed out by Jaxontov (1960b: 106, 1970: 57), suggesting that the *hékǒu* *-w-* here reflects an initial cluster which included a labiovelar.

2. The word

(936) 鮮 *xiǎn* < *sjenX* < **sjen?* 'rare, few'

rhymes with **-ej* in Ode 43.1A, probably indicating that it is **-en,* with dialect confusion of final **-n* and **-j* (see section 8.1.1).

3. The word

(937) 展 *zhǎn* < *trjenX* < **trjen?* 'roll over, unfold'

seems to have **-en*; note the apparent **e/o* binome

(938) 輾轉 *zhǎnzhuǎn* < *trjenX-trjwenX* < **trjen?-trjon?* 'toss and turn'.

But in its only *Shījīng* rhyme (Ode 47.3A), 展 *zhǎn* rhymes as **-an*. However, it is here a loan for

(939) 襢 *zhàn* < *trjenX – trjenH* < **trjan(?)s* 'bare, undecorated (robe)'

with the unambiguous **-an* phonetic

(940) 亶 *dǎn* < *tanX* < **tan?* 'sincerity, truth'.

(See Xiàng Xī 1986: 625–26.) The substitution of 展 **trjen?* for 襢 **trjan(?)s* probably occurred after the original **a* had been fronted by **acute fronting** or ***r*-color**.

4. The word

(941) 霰 *xiàn* < *senH* < **s(k)ens* 'sleet'

is unambiguously **-en* because of its MC final *-en,* and it rhymes as **-en* (Ode 217.3B). The phonetic in the modern character, however, must be reconstructed with **-an*:

(942) 散 *sǎn* < *sanX* < **san?* 'dispersed', also read *sàn* < *sanH* < **san(?)s* 'to disperse'.

However, as pointed out in Chapter 9, the modern character 霰 probably postdates the change **acute fronting**, which created many precedents for allowing **-en* and **-an* in the same *xiéshēng* series. The *Shuōwén* preserves a character 覓 whose phonetic is the unambiguous **-en* word

(943) 見 *jiàn* < *kenH* < **kens* 'see', also read *xiàn* < *henH* < **fikens* 'appear' (= 現).

5. The character

(944) 宴 *yàn* < *?enH* < **?ens* 'feast'

has **-en,* in spite of its graphic resemblance to these words in **-an*:

(945) 安 *ān* < *?an* < **?an* 'peaceful'

(946) 晏 *yàn* < *?ænH* < **?rans* 'peaceful, mild'

The word 宴 *yàn* rhymes with **-en* in Ode 217.3B, and in 298.3A (where it is written with the homophonous character 燕). It also rhymes irregularly with **-an* in Ode 58.6A. According to the *Shuōwén,* 安 *ān* < **?an* is phonetic in 晏 *yàn* < **?rans* but not in 宴 *yàn* < **?ens*. (The *Shuōwén* does,

however, use 安 *ān* as a sound gloss for 宴 *yàn* < **ʔens*; see Dīng Fúbǎo 1928–1932 [1976]: 3230.)

6. The original phonetic of

(947) 關 *guān* < *kwæn* < **kron* 'barrier'

is said to be

(948) 丱 *guàn* < *kwænH* < **krons* 'hair tuft',

which itself is said to be an old form of

(949) 卵 *luǎn* < *lwanX* < **C-ronʔ* 'egg'.[298]

These connections support the reconstruction of **-on* in 關 *guān*. Note also the following probable **e/o* binome found in Ode 218:

(950) 間關 *jīanguān* < *kɛn-kwæn* < **kren-kron* 'sound of a chariot's linchpin'

See Karlgren (1942–1946 [1964]: 148) for some other interpretations of this expression.

7. The expression

(951) 繾綣 *qiǎnquǎn* < *khjienX-khjwonX* < **khjenʔ-khjonʔ* 'to cling to, adhere to (?)' (meaning uncertain)

rhymes with **-an* in Ode 253.5B, but probably we should nevertheless reconstruct it as **khjenʔ-khjonʔ* and consider this rhyme irregular, for 繾綣 *qiǎnquǎn* has all the marks of an **e/o* binome. This interpretation is also consistent with the fact that the phonetic 卷 *juǎn* < **krjonʔ* 'to roll' generally appears to indicate rounded **-on*.

Ode 102.3B

Ode 102.3B appears to mix **-on* and **-en*, but the word in **-en* (見 *jiàn*) was probably not originally intended as a rhyme. In the present version, the stanza reads

婉兮孌兮	*WǍN xī LUÁN xī*	婉 **ʔjonʔ*, 孌 **b-rjonʔ*
總角丱兮	*zǒng jiǎo GUÀN xī*	丱 **krons*
未幾見兮	*wèi jǐ jiàn xī*	(見 **kens*)
突而弁兮	*tū ér BIÀN xī*	弁 **brjons*

How BEAUTIFUL, how HANDSOME!
The CHILDHOOD HAIR-TUFTS in two tied horns!
When you see him after a while,
all of a sudden he will be wearing the CAP OF MANHOOD.

(The translation is from Karlgren 1974: 67.) The word 見 *jiàn* in the third line has often been taken to be a rhyme; if so, this sequence would mix **-en* and **-on*. But the *Jīngdiǎn shìwén* preserves also a version of the text in which the third line above reads

未幾見之
wèi jǐ jiàn zhī

with 之 *zhī* instead of 兮 *xī* at the end of the line. This suggests that the line did not originally rhyme (as is common with the third line of a stanza); it was probably taken to be an intended rhyme after the vowels of

(952) 丱 *guàn* < *kwænH* < **krons* 'hair tuft'

and

(953) 弁 *biàn* < *bjenH* (III) < **brjons* 'cap'

had become front by ***r*-color**; then 之 *zhī* was changed to 兮 *xī* to match the rhyming lines.

Ode 106.3B

The word

(954) 反 *fǎn* < *pjonX* < **pjan?* 'turn around'

rhymes consistently as **-an*, except in Ode 106.3B, where it rhymes as **-ons*. However, as pointed out in Chapter 9, the Hán *Shī*, instead of 反 *fǎn*, has

(955) 變 *biàn* < *pjenH* < **prjons* 'to change',

and with this reading, the sequence is a regular **-on* sequence. The substitution of 反 *fǎn* presumably occurred after **rounding diphthongization**.

10.1.1.7. Irregular rhyme contacts among *-an, *-en, *and* *-on

There remain four rhyme sequences in the *Shījīng* which seem to show irregular rhyming among *-*an,* *-*on,* and *-*en.* They are Odes 58.2A, 58.6A, 75.1B–3B, and 253.5B. In Ode 58.2A, the expression

(956) 復關 *fùguān* < *pjuwk-kwæn* < **pjuk-kron* (meaning unclear)

rhymes with *-*an.* There are various explanations of what this expression might mean; some regard it as a place name, others as a personal name. This is the only case where 關 *guān* rhymes in the *Shījīng,* and we could simply reconstruct it as **k*^{w}*ran* rather than **kron* on the basis of this rhyme; but the weight of other evidence seems to favor the reconstruction **kron* (at least if 關 *guān* has its usual meaning here). As we saw above, Duàn Yùcái argued that the phonetic of 關 *guān* was ultimately 卵 *luǎn* < *lwanX* < **C-ron?*.

Ode 58.6A appears to mix *-*an,* *-*on,* and *-*en.* Odes 75.1B–3B and 253.5B appear to mix *-*an* and *-*on.* It is curious that two of the irregular sequences occur in the same poem, Ode 58 (*Wèi fēng* 衛風: *Méng* 氓). This poem is unusual from a literary point of view because of its long personal narrative, and is probably rather late. At any rate, both Odes 58 and 75 are probably from Eastern Zhōu (Gāo Hēng 1980: 7–8; Qū Wànlǐ 1983a: 133). The same cannot be said of Ode 253, which is probably from the Western Zhōu period.

In the whole *Shījīng,* then, *-*an* and *-*on* rhyme with each other perhaps four times, and only one rhyme sequence (Ode 58.6A) mixes *-*an,* *-*en,* and *-*on.*

10.1.2. The traditional 月 Yuè and 祭 Jì groups

The Middle Chinese finals included in the traditional 月 Yuè group are listed in Table 10.11; those of the traditional 祭 Jì group, which are largely parallel, are listed in Table 10.12.

In the version of the traditional analysis described in Chapter 4, *rùshēng* groups and non-*rùshēng* groups are given distinct labels, so the *rùshēng* 月 Yuè group is considered distinct from the 祭 Jì group, which includes *qùshēng* words only. Thus 月 Yuè includes *rùshēng* words like

(957) 脫 *tuō* < *thwat* < **hlot* 'to take off, let loose',

Table 10.11. Middle Chinese finals of the traditional 月 Yuè group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-(w)at*	*-(u)ât*	末 Mò (Mat)	
II	*-(w)æt*	*-(w)at*	鎋 Xiá (Hæt)	
	-(w)ɛt	*-(w)ăt*	黠 Xiá (Hɛt)	(in part)
III	*-j(w)ot*	*-i̯(w)ɒt*	月 Yuè (Ngjwot)	grave only
	-j(w)(i)et	*-i̯(w)ăt*	薛 Xuē (Sjet)	
IV	*-(w)et*	*-i(w)et*	屑 Xiè (Set)	(in part)

Table 10.12. Middle Chinese finals of the traditional 祭 Jì group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-(w)ajH*	*-(w)âi*	泰 Tài (ThajH)	no corresponding *píng* or *shăng* rhymes
II	*-(w)æjH*	*-(w)ai-*	夬 Guài (KwæjH)	no corresponding *píng* or *shăng* rhymes
	-(w)ɛjH	*-(w)ăi-*	怪 Guài (KwɛjH)	(in part) *qùshēng* of 皆 Jiē (Kɛj)
III	*-j(w)ɔjH*	*-i̯(w)ɒi-*	廢 Fèi (PjojH)	no corresponding *píng* or *shăng* rhymes; grave only
	-j(w)(i)ejH	*-i̯(w)ăi-*	祭 Jì (TsjejH)	no corresponding *píng* or *shăng* rhymes
IV	*-(w)ejH*	*-i(w)ei-*	霽 Jì (TsejH)	(in part) *qùshēng* of 齊 Qí (Dzej)

while the *qùshēng* reading of the same character (probably another form of the same root) is assigned to the 祭 Jì group:

(958) 脫 *tuì* < *thwajH* < **hlots* 'easy, leisurely'.

In my reconstruction, these differ only in the post-coda **-s*; their phonological relationship is analogous to the relationship between the *píngshēng* and *qùshēng* readings of

(959) 思 *sī* ~ *sì* < *si(H)* < **sɨi(s)* 'to think; thought' (originally perhaps verbal **sɨi*, nominal **sɨis*),

which are assigned to a single traditional group (之 Zhī). Since my proposed groups include words with different post-codas, I will treat **-at* and **-ats* as part of a single group which I will call **-at(s)*; similarly, there is an **-et(s)* group and a **-ot(s)* group. In the new system of rhyme categories proposed here, then, the three groups **-at(s)*, **-et(s)*, and **-ot(s)* replace the two groups 月 Yuè and 祭 Jì of the traditional analysis. However, **-t* and **-ts* are generally distinguished in rhyming, so in doing statistical analysis, I will separate *rùshēng *-at* from *qùshēng *-ats*, just as, in non-*rùshēng* groups like 元 Yuán, I separate *píngshēng *-an*, *shǎngshēng *-an?*, and *qùshēng *-ans* for statistical purposes.

Since both the 月 Yuè group and the 祭 Jì group show contrasts between *kāikǒu* and *hékǒu* finals after acute initials (e.g. *Tat* ≠ *Twat*, *TajH* ≠ *TwajH*), and between division-I and division-IV finals (e.g. *-at* ≠ *-et*, *-ajH* ≠ *-ejH*), we must set up a three-way contrast, as in the 元 Yuán group: **-at* ≠ **-et* ≠ **-ot* and **-ats* ≠ **-ets* ≠ **-ots*. The reconstructions are summarized in the following sections.

10.1.2.1. The reconstruction of the *-at(s) *group*

Finals in **-at* (*rùshēng*)

Syllables in **-at* with nonlabialized initials developed as shown in Table 10.13; the developments after labialized initials, which are parallel, are shown in Table 10.14.[299]

Table 10.13. Development of **-at* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-at*	all	*-at*	**-ât*	**-at*	**-át*
**-rat*	all	*-æt*	**-wat*	**-rat*	**-ʳát*
**-jat*	grave	*-jot*	**-i̯ăt*	**-jat*	**-àt*
	acute	*-jet*	**-i̯at*	**-jat*	**-àt*
**-rjat*	grave	*-jet* (III)	**-i̯at*	**-jiat*	**-ʳàt*
	acute	*-jet*	**-i̯at*	**-rjat*	**-ʳàt*

Table 10.14. Development of **-at* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}at*	*Kwat*	**Kwât*	**Kwat*	**K^{w}át*
**K^{w}rat*	*Kwæt*	**Kwat*	**Kwrat*	**K^{w}rát*
**K^{w}jat*	*Kjwot*	**Kɨwăt*	**Kwjat*	**K^{w}àt*
**K^{w}rjat*	*Kjwet* (III)	**Kɨwat*	**Kwjiat*	**K^{w}ràt*

In syllables with initial **TSr-*, we probably have **TSrjat* > **TSrjet* > *TSrɛt* by the change ***TSrj-* > *TSr-***, as in

(960) 殺 *shā* < *srɛt* (< **srjet*) < **srjat* 'to kill', also read *shài* < *srɛjH* (< **srjets*) < **srjats* 'diminish, reduce'.

Finals in **-ats* (*qùshēng*)

The finals in **-ats* are quite parallel to the finals in **-at* listed above. The developments after nonlabialized initials are shown in Table 10.15. (We may assume **TSrjats* > *TSrjejH* > *TSrɛjH* by ***TSrj-* > *TSr-***.) The parallel developments after labialized initials are shown in Table 10.16.

Table 10.15. Development of **-ats* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ats*	all	*-ajH*	**-âd*	**-adh*	**-áts*
**-rats*	all	*-æjH*	**-ad*	**-radh*	**-^{r}áts*
**-jats*	grave	*-jojH*	**-ɨăd*	**-jadh*	**-àts*
	acute	*-jejH*	**-ɨad*	**-jadh*	**-àts*
**-rjats*	grave	*-jejH* (III)	**-ɨad*	**-jiadh*	**-^{r}àts*
	acute	*-jejH*	**-ɨad*	**-rjadh*	**-^{r}àts*

Table 10.16. Development of **-ats* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}ats*	*KwajH*	**Kwâd*	**Kwadh*	**K^{w}áts*
**K^{w}rats*	*KwæjH*	**Kwad*	**Kwradh*	**K^{w}ráts*
**K^{w}jats*	*KjwojH*	**Kɨwăd*	**Kwjadh*	**K^{w}àts*
**K^{w}rjats*	*KjwejH* (III)	**Kɨwad*	**Kwjiadh*	**K^{w}àts*

Additional examples of **-at(s)*

(961) 怛 *dá* < *tat* < **tat* 'be grieving'

(962) 渴 *kě* < *khat* < **khat* 'thirsty'

(963) 活 *huó* < *hwat* < **g*^{w}*at* 'life; keep alive'

(964) 秣 *mò* < *mat* < **mat* 'to feed grain to horses'

(965) 轄 *xiá* < *hæt* < **grat* 'linch-pin'

(966) 發 *fā* < *pjot* < **pjat* 'to go forth'

(967) 竭 *jié* < *gjot* < **gjat* (or **fikhjat*?) 'to dry up'

(968) 傑 *jié* < *gjet* (III) < **grjat* 'of surpassing quality'

(969) 烈 *liè* < *ljet* < **C-rjat* 'to blaze'

(970) 月 *yuè* < *ngjwot* < **ng*^{w}*jat* (or **Nwjat*?) 'moon; month'

(971) 越 *yuè* < *hjwot* < **wjat* 'go beyond, transgress'

(972) 艾 *ài* < *ngajH* < **ngats* 'white-haired, aged'

(973) 害 *hài* < *hajH* < **fikat(s)* '(suffer) harm'

(974) 大 *dà* ~ *dài* < *dajH* < **lats* 'big'

(975) 外 *wài* < *ngwajH* < **ng*^{w}*ats* 'outside'

(976) 敗 *bài* < *bæjH* < **fiprats* 'be defeated'

(977) 蠆 *chài* < *trhæjH* < **hrjats* 'scorpion'

(978) 邁 *mài* < *mæjH* < **mrats* 'walk, move along'

(979) 逝 *shì* < *dzyejH* < **djats* 'to go, pass'

(980) 世 *shì* < *syejH* < **hljats* < **hljaps* 'generation, age'

(981) 歲 *suì* < *sjwejH* < **swjat(s)* 'year; Jupiter'

(982) 衛 *wèi* < *hjwejH* (III) < **wrjats* 'to defend; guard'

(983) 晢 [*zhé*] < *tsyejH* < **tjats* 'shining'

10.1.2.2. The reconstruction of the *-et(s) *group*

Finals in *-*et* (*rùshēng*)

Syllables in *-*et* with nonlabialized initials developed as shown in Table 10.17. (Probably we should assume **TSrjet* > *TSrɛt* by ***TSrj-* > *TSr-***, as with **TSrjat*.) The parallel developments after labialized initials are shown in Table 10.18. Note that I assume **K^{w}ret* > *Kwæt* rather than the *Kwɛt* which would be expected; this is parallel to **K^{w}ren* > *Kwæn* above, and **K^{w}rets* > *KwæjH*, mentioned below.

Table 10.17. Development of *-*et* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
*-*et*	all	*-et*	*-*iat*	*-*iat*	*-*j*á*t*
*-*ret*	all	*-ɛt*	*-*ăt*	*-*riat*	*-*rj*á*t*
*-*jet*	grave	*-jiet* (IV)	*-*i̯at*	*-*jiat*	*-*j*à*t*
	acute	*-jet*	*-*i̯at*	*-*jat*	*-*(j)à*t
*-*rjet*	grave	*-jet* (III)	*-*i̯at*	*-*jiat*	*-*r(j)à*t
	acute	*-jet*	*-*i̯at*	*-*rjat*	*-*r(j)à*t

Table 10.18. Development of *-*et* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
*K^{w}et	*Kwet*	*Kiwat*	*Kwiat*	*K^{w}já*t*
*K^{w}ret	*Kwæt*	*Kwat*	*Kwrat*	*K^{w}rá*t*
*K^{w}jet	*Kjwiet* (IV)	*Ki̯wat*	*Kwjiat*	*K^{w}jà*t*
*K^{w}rjet	*Kjwet* (III)	*Ki̯wat*	*Kwjiat*	*K^{w}r(j)à*t*

Finals in *-*ets* (*qùshēng*)

The finals in *-*ets* are parallel to those in *-*et*. After nonlabialized initials, *-*ets* developed as shown in Table 10.19. (I also assume **TSrjets* > *TSrɛjH* by ***TSrj-* > *TSr-***.) The parallel developments after labialized initials are shown in Table 10.20.

Table 10.19. Development of **-ets* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ets*	all	*-ejH*	**-iad*	**-iadh*	**^{j}áts*
**-rets*	all	*-ɛjH*	**-ăd*	**-riadh*	**-^{rj}áts*
**-jets*	grave	*-jiejH* (IV)	**-i̯ad*	**-jiadh*	**^{j}àts*
	acute	*-jejH*	**-i̯ad*	**-jadh*	**-(^{j})àts*
**-rjets*	grave	*-jejH* (III)	**-i̯ad*	**-jiadh*	**-^{r}(^{j})àts*
	acute	*-jejH*	**-i̯ad*	**-rjadh*	**-^{r}(^{j})àts*

Table 10.20. Development of **-ets* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}ets*	*KwejH*	**Kiwad*	**Kwiadh*	**K^{w}játs*
**K^{w}rets*	*KwæjH*	**Kwad*	**Kwradh*	**K^{w}ráts*
**K^{w}jets*	*Kjwiejh* (IV)	**Ki̯wad*	**Kwjiadh*	**K^{w}jàts*
**K^{w}rjets*	*Kjwejh* (III)	**Ki̯wad*	**Kwjiadh*	**K^{w}r(j)àts*

Just as OC **K^{w}ren* becomes MC *Kwæn*, and **K^{w}ret* becomes *Kwæt*, rather than the *Kwɛn* and *Kwɛt* that might be expected, so OC **K^{w}rets* becomes MC *KwæjH*, not *KwɛjH*; an example is

(984) 快 *kuài* < *khwæjH* < **k^{w}hrets* 'cheerful',

with phonetic

(985) 夬 *jué* < *kwet* < **k^{w}et* 'archer's thimble'.

Additional examples of **-et(s)*

(986) 噦 *huì* < *xwejH* < **hwets* 'small, tiny'

(987) 瘵 *zhài* < *tsrɛjH* < **tsr(j)ets* 'to suffer, hurt'

(988) 滅 *miè* < *mjiet* (IV) < **mjet* 'extinguish, destroy'

(989) 威 *xuè* < *xjwiet* (IV) < **hmjet* 'extinguish, destroy'

(990) 熱 *rè* < *nyet* < **ngjet* 'hot'

(991) 徹 *chè* < *trhjet* < **thrjet* 'to understand, penetrate' (also read *drjet* < **fithrjet*).

10.1.2.3. The reconstruction of the *-ot(s) *group*

Finals in *-*ot* (*rùshēng*)

The development of *-*ot* after nonlabial initials is summarized in Table 10.21 below.

Table 10.21. Development of *-*ot* after nonlabial initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
*-*ot*	all	*-wat*	*-*wât*	*-*(u)at*	*-^{w}*át*
*-*rot*	all	*-wɛt*	*-*wat*	*-*r(u)at*	*-^{rw}*át*
*-*jot*	grave	*-jwot*	*-*i̯wăt*	*-*j(u)at*	*-^{w}*àt*
	acute	*-jwet*	*-*i̯wat*	*-*juat*	*-^{w}*àt*
*-*rjot*	grave	*-jwet* (III)	*-*i̯wat*	*-*jiat*	*-^{rw}*àt*
	acute	*-jwet*	*-*i̯wat*	*-*rjuat*	*-^{rw}*àt*

Syllables with labial initials **P-* are parallel, except that in such syllables medial *-w-* is lost or becomes nondistinctive through ***w-neutralization**.

It appears that *-wɛt* (or, after labials, *-ɛt*) is the regular reflex of *-*rot*, as in

(992) 拔 *bá* < *bɛt* < **brot* 'pull out'.

The character 拔 occurs as a rhyme in parallel passages in Odes 237.8C and 241.3A, where it rhymes with words in *-*ots*.[300] Note that this development *-*rot* > *-wɛt* is not parallel to the development of finals in *-*n*, for *-*ron* seems to become MC *-(w)æn*, not *-(w)ɛn*, as in

(993) 蠻 *mán* < *mæn* < **mron* 'Southern barbarian'.

Finals in *-*ots* (*qùshēng*)

The development of *-*ots* after nonlabial initials is summarized in Table 10.22; it is parallel to that of *-*ot*.

As with the *-*ot* finals, syllables with initial **P-* are parallel, but *-w-* is lost or becomes nondistinctive through ***w-neutralization**. Here, too, it appears that the regular reflex of *-*rots* is not *-wæjH* but *-wɛjH* (or after **P-* initials, *-ɛjH*); for example, the word

(994) 拜 *bài* < *pɛjH* < **prots* 'bend'

Table 10.22. Development of **-ots* after nonlabial initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ots*	all	*-wajH*	**-wâd*	**-(u)adh*	**-^{w}áts*
**-rots*	all	*-wɛjH*	**-wad*	**-r(u)adh*	**-^{rw}áts*
**-jots*	grave	*-jwojH*	**-i̯wâd*	**-j(u)adh*	**-^{w}àts*
	acute	*-jwejH*	**-i̯wad*	**-juadh*	**-^{w}àts*
**-rjots*	grave	*-jwejH* (III)	**-i̯wad*	**-jiadh*	**-^{rw}àts*
	acute	*-jwejH*	**-i̯wad*	**-rjuadh*	**-^{rw}àts*

rhymes as **-ots* in Ode 16.3A (though it may here be a loan for some form of the root in 拔 *bá* < **brots* 'pull out').

Additional examples of **-ot(s)*

(995) 捋 *luō* < *lwat* < **C-rot* 'gather, pluck'

(996) 掇 *duō* < *twat* < **tot* 'to pick, gather'

(997) 髮 *fà* < *pjot* < **pjot* 'hair'

(998) 蕨 *jué* < *kjwot* < **kjot* 'fern'

(999) 說 *shuō* < *sywet* < **hljot* 'explain, excuse' 3240

(1000) 說 *yuè* < *ywet* < **ljot* 'delight in, pleased'

(1001) 雪 *xuě* < *sjwet* < **sjot* 'snow'

(1002) 惙 [*chuò*] < *trjwet* < **trjot* 'grieved'

(1003) 兌 *duì* < *dwajH* < **lots* 'open a passage through, clear'

(1004) 吠 *fèi* < *bjojH* < **bjots* 'to bark'

(1005) 喙 *huì* < *xjwojH* < **xjots* 'to pant'

(1006) 帨 *shuì* < *sywejH* < **hljots* 'scarf'

10.1.2.4. The rhyming of *-at(s), *-et(s), *and* *-ot(s)

For words which can be reconstructed unambiguously, there is sufficient evidence to support the existence of a three-way distinction among **-at(s)*, **-et(s)*, and **-ot(s)*. There is also a tendency for **-et(s)* to rhyme with **-it(s)* and for **-ot(s)* to rhyme with **-ut(s)*; this fact also tends to support

the three-way distinction proposed here. However, phonologically ambiguous words in these groups are often difficult to reconstruct with confidence. This is because of the small size of the sample and because of textual difficulties: a number of the rhyme words are written differently in different versions of the text, and their interpretations are often doubtful. The discussion below will touch on some of these problems.

The rhyming of **-et(s)*

We may assign syllables of the 月 Yuè group to **-et* and non-**-et* groups by the following criteria:

1. MC *-et, -wet, -jiet,* and *-jwiet* can reflect only **-et*.
2. MC *-at, -wat, -jot,* and *-jwot* can reflect only **-at* or **-ot,* and are thus non-**-et*.
3. After most acute initials, MC *-jwet* and *-wɛt* unambiguously reflect **-ot,* and thus must be non-**-et*; but the *-w-* of syllables like *TSjwet* or *TSrwɛt* could be due to a cluster of metathesizing **S-* with a labialized initial K^w-, and such syllables must be considered ambiguous.

The criteria for **-ets* and non-**-ets* are parallel:

1. MC *-ejH, -wejH, -jiejH,* and *-jwiejH* can reflect only **-ets*.
2. MC *-ajH, -wajH, -jojH,* and *-jwojH* can reflect only **-ats* or **-ots,* and are thus non-**-ets*.
3. After most acute initials, MC *-jwejH* and *-wɛjH* unambiguously reflect **-ots,* and thus must be non-**-ets*; but syllables with initial *TS(r)-* will be considered ambiguous.

Recall (from section 8.2.2.1) that since OC **-ps* merged early with **-ts,* it is impossible to distinguish original **-ps* from **-ts* on the basis of Middle Chinese alone, and in fact **-ps* rhymes with **-ts* in the *Shījīng,* at least some of the time. This means that **-ps* and **-ts* can be distinguished only on the basis of graphic and etymological connections between **-ps* and **-p.* It will do no harm in this section to include the **-ps* words among the **-ts* words; this just means that the rhymes we are analyzing are somewhat later than Old Chinese as defined in Chapter 1. If the rhymes of this stage confirm the front-vowel and rounded-vowel hypotheses, then these hypotheses are

probably also valid for the stage before the change ***-ps* > **-ts***. I will discuss the distinction **-ps* ≠ **-ts* further in section 10.3.

Let us analyze the rhyme occurrences of **-et* and non-**-et* words first, and then turn to words in **-ets*, which present special problems. There are five rhyme occurrences of unambiguous **-et* words and sixty-six occurrences of unambiguous non-**-et* words in the *Shījīng*, a total of seventy-one in all; thus we make the following estimates:

$$\mathbf{P}[*\text{-}et] = 5/71 = 0.070$$
$$\mathbf{P}[\text{non } *\text{-}et] = 66/71 = 0.930$$

(The 0.95 confidence interval for $\mathbf{P}[*\text{-}et]$, calculated by the binomial method, extends from 1/71 = 0.014 to 9/71 = 0.127.) The rhyme sequences which involve unambiguous **-et* and non-**-et* words are tabulated in Table 10.23.[301]

Table 10.23. Rhyme sequences involving unambiguous **-et* and non-**-et* words

sequence length	total sequences	**-et*	non-**-et*	mixed
2	16	1	15	0
3	4	0	4	0
5	1	0	0	1
6	1	0	0	1

Note that the two-word sequences in Table 10.23 include no mixed sequences, and one unmixed sequence in the less common group **-et*, so the special method of section 3.2.6 is applicable. There are four unmixed four-word sequences, which are fully consistent with the front-vowel hypothesis but add little statistical weight, since they are all from the more common non-**-et* words. Finally, there are two mixed sequences of lengths five and six respectively; both are in Ode 304 (304.2A and 304.6A), and in both cases, the only **-et* word is

(1007) 截 *jié* < *dzet* < **dzet* 'restrain, govern',

which rhymes nowhere else in the *Shījīng*. I have no explanation for these mixed sequences at present, but it should be noted that Ode 304 (*Shāng sòng* 商頌: *Cháng fā* 長發) is probably among the latest in the *Shījīng*; Qū Wànlǐ (1983a: 616) dates it to the time of Duke Xiāng 襄 of Sòng 宋, i.e. 650–637 B.C. At any rate, these rhymes mean that both $\mathbf{P}_5$ and $\mathbf{P}_6$ are equal to one.

Applying the method of section 3.2.6, we arrive at the following **P** value for the *rùshēng* sequences tabulated in Table 10.23:

$$\mathbf{P} = 0.0056$$

(This value does not exceed 0.0069 for any value of **P**[*-*et*] in the 0.95 confidence interval.) This is a significant result, since it is well below the criterion level of 0.05.

I will not attempt a statistical analysis of unambiguous *-*ets* words, because it is difficult to identify such words with certainty; most could also be reconstructed as *-*its*. (MC -*ejH* and -*wejH*, for example, can reflect either *-*ets* or *-*its*, which merged by **hi > mid**.) I think *-*ets* is probably the best reconstruction in

(1008) 戾 *lì* < *lejH* < **C-rets* 'evil',

but others have generally assigned this word to the 脂 Zhī or 質 Zhì groups, implying a reconstruction *-*its* in my system. One reason for the uncertainty is that 戾 *lì* rhymes with both *-*et(s)* and *-*it(s)* words in the *Shījīng*. (For example, it rhymes with 滅 *miè* < *mjiet* (IV) < **mjet* 'destroy' in 194.2A, but with 疾 *jí* < *dzit* < **dzjit* 'sickness' in 256.1B.) In fact, rhyme and *xiéshēng* contacts between *-*et(s)* and *-*it(s)* are rather common. Generally, when doing statistical analysis, I omit rhymes such as these, which involve more than one traditional rhyme category (e.g., rhymes of *-*et(s)* with *-*it(s)*) or more than one tone category (e.g., rhymes of *qùshēng* *-*ets* with *rùshēng* *-*et*).

However, patterns of irregularity can be useful evidence in themselves. It is most revealing that the words of the traditional 月 Yuè and 祭 Jì groups which rhyme with words in *-*it(s)* are precisely those which I reconstruct with *-*et(s)*, not those in *-*at(s)* or *-*ot(s)*. This suggests a confusion between *-*et(s)* and *-*it(s)* in certain early dialects, or in *xiéshēng* practice, or both, and is indirect evidence that *-*et(s)* was a separate category from *-*at(s)* and *-*ot(s)*. (There is a parallel tendency for *-*ot(s)* to be confused with *-*ut(s)*, as we will see below.) Irregular rhymes with *-*it(s)* are one way of identifying or confirming likely cases of *-*et(s)*.

To summarize: our tests have confirmed a significant rhyming distinction between unambiguous *-*et* and non-*-*et* words. The data are too few for a statistical test of unambiguous *-*ets* and non-*-*ets* words; however, there are good reasons to believe in this distinction also.

The rhyming of **-ot(s)*

We can identify **-ot* and non-**-ot* words by the following criteria:

1. Acute-initial *hékǒu* syllables in the traditional 月 Yuè group are unambiguously **-ot* except for those with *TS-* or *TSr-* initials, whose rounding could originate in a cluster of the form **SK^{w}(r)-*.
2. All *kāikǒu* syllables are non-**-ot*, except for syllables with labial initials (where *-w-* may have been lost through ***w-neutralization**).
3. Syllables with the finals *-et, -wet, -jiet,* or *-jwiet* are unambiguously **-et* and thus must be non-**-ot*.

The criteria for **-ots* and non-**-ots* words are parallel in part:

1. Acute-initial *hékǒu* syllables in the traditional 祭 Jì group are unambiguously **-ots*, except those with *TS-* and *TSr-* initials, as above.
2. *Kāikǒu* syllables are non-**-ots*, except for syllables with labial initials.

Strictly speaking, syllables with the finals *-ejH, -wejH, -jiejH,* and *-jwiejH* from the 祭 Jì group should be unambiguously **-ets* and thus non-**-ots*. But in fact, there are no *Shījīng* rhyme words in *-jiejH* or *-jwiejH*, and it is unclear which words in *-ejH* and *-wejH* should be assigned to the 祭 Jì group; some might reflect **-its* instead of **-ets*. In any case, no words in *-(w)ejH* rhyme with unambiguous **-ots* words, and for statistical purposes it will do no harm to exclude these doubtful words from the non-**-ots* group.

The occurrences of unambiguous **-ot(s)* and non-**-ot(s)* words, so defined, are summarized in Table 10.24.

Table 10.24. Rhyme occurrences of unambiguous **-ot(s)* and non-**-ot(s)* words

	rù (**-ot*)	*qù* (**-ots*)
**-ot(s)* tokens	9	9
non-**-ot(s)* tokens	48	45
total tokens	57	54
P[**-ot(s)*]	0.158	0.167
P[non **-ot(s)*]	0.842	0.833

(The 0.95 confidence interval for **P**[**-ot*] in *rùshēng* extends from 0.070 to 0.246; the 0.95 confidence interval for **P**[**-ots*] in *qùshēng* extends from 0.074 to 0.259.)

The *Shījīng* rhyme sequences which involve unambiguous **-ot(s)* and non-**-ot(s)* words are tabulated in Table 10.25 by tone group and length of sequence.[302]

Table 10.25. Rhyme sequences involving unambiguous **-ot(s)* and non-**-ot(s)* words

tone	sequence length	total sequences	**-ot(s)*	non-**-ot(s)*	mixed
rù (**-ot*)	2	12	3	9	0
	3	2	0	2	0
	6	1	0	1	0
qù (**-ots*)	2	11	2	9	0
	3	1	0	1	0
	4	1	0	1	0

Note that there are no rhymes at all which mix unambiguous **-ot(s)* and non-**-ot(s)* words; moreover, the two-word sequences in both *rùshēng* and *qùshēng* include unmixed sequences from the less common **-ot(s)* group. If we use the method of section 3.2.6, the combined result for the whole sample summarized in Table 10.25 is[303]

P = 0.000104.

(This figure does not exceed 0.00034 for any values of **P**[**-ot*] and **P**[**-ots*] in the confidence intervals given above.) Once again we have a significant result, since **P** is well below the 0.05 level. The separation of **-ot(s)* and non-**-ot(s)* among phonologically unambiguous words is thus clearly established, supporting the rounded-vowel hypothesis.

10.1.2.5. Rhyme sequences in *-at(s), *-et(s), *and* *-ot(s)

The following *Shījīng* rhyme sequences involve **-at* or **-ats*: 16.1A, 16.2A, 31.5A (with **-ot(s)*?), 34.1B, 39.3B, 44.2A, 57.4A, 62.1A, 63.2A, 66.2A, 72.1A, 72.3A, 91.3A,, 99.2A, 102.2B, 111.2A, 114.2B, 137.3A, 140.2A (with **-ot(s)*?), 149.1A, 154.1B, 167.2C, 182.2A, 192.8A (with **-et(s)*?), 195.5B, 202.5A, 203.7B, 204.3A, 216.3A, 218.1A, 224.2B (with **-et(s)*?), 225.4A, 229.5A, 245.2A, 245.7C, 252.7A, 252.8A, 253.4A, 254.2B, 255.8A, 256.6A, 260.3B, 264.1B (with **-et(s)*?), 265.6A, 287.1B (with **-an*), 290.1E, 299.1B (with **-ot(s)*?), 300.5C, 304.2A (with **-et(s)*), and 304.6A (with **-et(s), *-ot(s)*?).

Of these sequences, 304.2A and 304.6A were mentioned above as apparently genuine cases of **-at(s)* rhyming with **-et(s)*, involving the word 截 *jié* < *dzet* 'restrain, govern'. Ode 299.1B is probably a genuine example of **-at(s)* rhyming with **-ot(s)*. The other apparent irregularities, which may result from late character substitutions, are discussed below.

The following *Shījīng* rhyme sequences involve **-et* or **-ets*: 192.8A (with **-it(s)*, **-at(s)*?), 193.8C (with **-it(s)*), 194.2A, 197.4A (with **-it(s)*), 220.1C (with **-it(s)*), 222.2B (with **-it(s)*), 224.2B (with **-at(s)*?), 241.2B (with **-ejs*?), 257.5A (with **-it(s)*), 264.1B (with **-it(s)*, **-at(s)*?), 304.2A (with **-at*), 304.6A (with **-at*).

As noted above, the rhymes of **-at(s)* with **-et(s)* in 304.2A and 304.6A may be genuine. The other apparent contacts of **-et(s)* with **-at(s)* will be discussed in the notes below. The rhymes between **-et(s)* and **-it(s)*, while irregular, do not conflict with the front-vowel hypothesis; indeed, they support it.

The following *Shījīng* rhyme sequences involve **-ot* or **-ots*: 8.2A, 14.2A, 16.3A, 23.3A, 31.4A, 31.5A (with **-at(s)*?), 58.3D, 140.2A (with **-at(s)*?), 150.3A, 151.1A (with **-ut(s)*), 151.4A (with **-ut(s)*), 168.2B (with **-ut(s)*), 225.2A, 237.8C, 241.3A, 245.4C (with **-ut(s)*), 264.2B, 299.1B (with **-at(s)*?), and 304.6A (with **-et(s)*, **-at(s)*?).

Note the tendency for **-ot(s)* to rhyme with **-ut(s)*, parallel to the tendency for **-et(s)* to rhyme with **-it(s)*. The remaining apparent irregularities are discussed in the notes below.

10.1.2.6. Additional notes

The phonetic element 列

The word

(1009) 烈 *liè* < *ljet* < **C-rjat* 'brilliant, illustrious'

is phonologically ambiguous; MC *ljet* could represent either **C-rjat* or **C-rjet*. But 烈 *liè* rhymes repeatedly and consistently as **-at* (see Appendix C), and in bronze inscriptions it is written with the phonetic

(1010) 剌 *là* < *lat* < **C-rat*.

The original meaning of the graph 剌 itself is uncertain (see Zhōu Fǎgāo et al. 1974a, item 803).

On the other hand, the word

(1011) 例 *lì* < *ljejH* < **C-rjets?* 'a kind of tree',

which has 列 as phonetic, seems to have a front vowel in 241.2B, where it rhymes with

(1012) 翳 *yì* < *ʔejH* < **ʔe/ijs* 'cover',

probably a loan for

(1013) 殪 *yì* < *ʔejH* < **ʔits* 'dead trees'

which is the reading of the Hán *Shī* (Karlgren 1942–1946 [1964], gloss 822). Both 翳 and 殪 must be reconstructed with a front vowel because of their Middle Chinese reading *ʔejH*, but the passage is obscure.

厲 *lì* and 戾 *lì*

These words are difficult to interpret and sometimes confused with each other, but the **-ats*/**-ets* distinction can perhaps help to unravel their meanings.

The character 厲 *lì* < *ljejH* rhymes as **-ats* in some cases and **-ets* in others. It rhymes as **-ats* in the basic meaning

(1014) 厲 *lì* < *ljejH* < **C-rjats* 'to drag or trail something along and have it scraped or wetted' (Schuessler 1987: 374–75)

(see Odes 34.1B, 63.2A, 225.4A). In Ode 264.1B, however, it rhymes with **-et(s)* and **-it(s)*:

惠 *huì* < *hwejH* < **wets* 'kind'
厲 *lì* < *ljejH* < ? 'evil'
瘵 *zhài* < *tsrɛjH* < **tsr(j)ets* 'suffer'
疾 *jí* < *dzit* < **dzjit* 'injure'
屆 *jiè* < *kɛjH* < **krets* 'limit, moderation'

Here, however, 厲 *lì* is usually glossed as "cruelty, evil"; it occurs in this line:

降此大厲
jiàng cǐ dà Lì
'(Heaven) sends down this great EVIL'.

In this meaning, it is probably a loan for the **-ets* word

(1015) 戾 *lì* < *lejH* < **C-rets* 'evil'.

In fact, in Ode 191.5, the same line occurs in a similar passage, also rhyming with **-ets* and **-its*, with the character 戾 *lì* instead of 厲 *lì*:

降此大戾
jiàng cǐ dà LÌ

Finally, the word 厲 *lì* also rhymes as **-ats* in Ode 253.4A, in the line

以謹醜厲
yǐ jǐn chǒu LÌ
'and so make the evil and WICKED ONES careful'

It is clear from parallel passages in the other stanzas that the expression 醜厲 *chǒu lì* must refer in some way to evil people, but the exact meaning is much disputed. According to our reconstruction, however, it should not be a loan for 戾 *lì *C-rets* 'evil', since 厲 *lì* here rhymes as **-ats*, not **-ets*. I conjecture that perhaps 厲 *lì* stands for

(1016) 蠆 *chài* < *trhæjH* < **C-hrjats* 'scorpion',

which would regularly rhyme as **-ats* (as in Ode 225.4A). The phrase 醜厲 *chǒu lì* would then mean "evil scorpions" or perhaps "many scorpions".

The phonetic 祭 *jì*

Generally, the phonetic 祭 *jì* indicates **-ets*, and I reconstruct **-ets* in

(1017) 瘵 *zhài* < *tsrɛjH* < **tsr(j)ets* 'to suffer, hurt',

which rhymes as **-ets* in 264.1B (see above). But the same character rhymes as **-ats* in 224.2B. The context is the sentence

上帝甚蹈　　*shàng dì shèn dào*
無自瘵焉　　*wú zì ZHÀI yān*

Karlgren (1974: 178) translates this as follows:

God on high is very changeable,
do not HURT yourself on him.

This follows the interpretation of Máo, who glossed 瘵 *zhài* as "suffer [bìng 病]". However, if we take the phonetic 祭 to represent **-et(s)*, this would require us to assume that **-ets* rhymes with **-ats*; the rhyme words are

偈 *qì* < *khjejH* < **khrjats*
瘵 *zhài* < *tsrɛjH* < ?
邁 *mài* < *mæjH* < **mrats*

The interpretation of Zhèng Xuán is preferable from a phonological point of view: he glossed 瘵 *zhài* here as

(1018) 接 *jiē* < *tsjep* < **tsjap* 'connect, come in contact'.

As Duàn Yùcái pointed out (Dīng Fúbǎo 1928–1932 [1976]: 6516), this means that Zhèng Xuán took 瘵 *zhài* here as a loan for

(1019) 際 *jì* < *tsjejH* < **tsjats* < **tsjaps* 'conjunction, connection'.

In spite of its presumably late phonetic 祭 *jì*, 際 *jì* must be the **s*-suffixed form of 接 *jiē* < **tsjap* 'connect'. By the time of the *Shījīng*, 際 **tsjaps* would have become **tsjats* by ***-ps* > *-ts**, and would make a good **-ats* rhyme, as it does here. Neither 接 *jiē* nor 際 *jì* rhyme otherwise in the *Shījīng*, but the reconstruction with **-ap* (rather than **-ep*) is supported by rhymes in other texts.[304]

With Zhèng Xuán's interpretation, the line would mean

> God on high is very changeable,
> do not COME IN CONTACT with him.

This makes a good semantic parallel with the parallel passage in the first stanza:

上帝甚蹈	*shàng dì shèn dào*
無自暱焉	*wú zì Nì yān*

> God on high is very changeable,
> do not BRING YOURSELF TOO NEAR him.

Karlgren preferred Máo's interpretation because it does not require altering the traditional text, and because he judged the parallelism between the stanzas to be "sufficiently good" (Karlgren 1942–1946 [1964], gloss 725), but Zhèng Xuán's interpretation seems better both phonologically and semantically.

Again, while 祭 *jì* < *tsjejH* < **tsjets* normally indicates **-et(s)*, we have **-at(s)* in

(1020) 蔡 *cài* < *tshajH* < **srats* 'steppe (?); name of a state'.

But 蔡 is a late character; in bronze inscriptions, this word is written as



(Zhōu Fǎgāo et al. 1974a, item 0398), which is listed in the *Shuōwén* as a *gǔwén* form for

(1021) 殺 *shā* < *srɛt* < *srjet* < **srjat* 'kill'.

The phonetic 埶 *yì*

Words with the phonetic 埶 *yì* seem to be consistently **-et(s)*. The word 埶 *yì* itself is

(1022) 埶 ~ 藝 *yì* < *ngjiejH* (IV) < **ngJets* 'to sow, plant, cultivate',

which by semantic extension became

(1023) 藝 *yì* < *ngjiejH* (IV) < **ngJets* 'art; method, rule'.

The capital **J* here indicates that the expected palatalization of velars before **j* plus front vowel fails to occur. The front vowel is confirmed, however, by the palatalizations in these two words in the same *xiéshēng* series:

(1024) 勢 *shì* < *syejH* < **hngjets* 'force, influence'

(1025) 熱 *rè* < *nyet* < **ngjet* 'hot'

The latter also rhymes with **-it(s)* in Ode 257.5A.

The phonetic 市 *fú*

The phonetic 市 generally represents finals with a rounded vowel, as in

(1026) 芾 *fú* < *pjut* < **pjut* 'knee covers'.

The Middle Chinese final of this word implies **-jut* (or **-jɨt*); it rhymes in Ode 151.1A with **-ot(s)*. Another case of **-ot(s)* or **-ut(s)* with this phonetic is

(1027) 旆旆 [*pèipèi*] < *bajH-bajH* < **bots-bots* 'streamer, flutter',

which rhymes as **-ut(s)* in 168.2B and 245.4C, though its Middle Chinese pronunciation implies **-ots* (or **-ats*).

However, what must be the same word rhymes as **-at(s)* in Ode 299.1B, written as

(1028) 茇茇 [*pèipèi*] < *bajH-bajH* < **bots-bots* 'streamer, flutter'.

Here the phonetic would indicate **-at(s)*, and the other rhyme words seem to be **-at(s)*, but the meaning is clearly "to flutter", so it should probably be understood as a case of **-ot(s)* rhyming with **-at(s)*. (Of course it is not impossible that there may have been two variants, **bots-bots* and **bats-bats*, both meaning "to flutter".) Note that Ode 299 is from the *Lǔ sòng* section, and is among the latest poems in the *Shījīng*; Qū Wànlǐ dates it after the thirteenth year of the reign of Duke Xī 僖 of Lǔ, who reigned 659–627 B.C. (Qū Wànlǐ 1983a: 605–7).[305]

The character 旆 also rhymes in Ode 304.6A with a long sequence of **-at(s)* words (plus the single **-et* word 截 *jié* < *dzet* < **dzet* 'restrain, govern'):

旆 [*pèi*] < *bajH* < **bots* 'set out' (see below)
鉞 *yuè* < *hjwot* < **wjat* 'axe'
烈 *liè* < *ljet* < **C-rjat* 'blazing'
曷 *hé* < *hat* < **fikat* 'harm'
蘖 [*niè*] < *ngat* < **ngat* 'new shoots'
達 *dá* < *dat* < **lat* 'prosper'
截 *jié* < *dzet* < **dzet* 'restrain'
伐 *fá* < *bjot* < **bjat* 'attack'
桀 *jié* < *gjet* (III) < **grjat* '(personal name)'

Here it is widely agreed that 旆 *pèi* is a loan word for

(1029) 發 *fā* < *pjot* < **pjat* 'to set out',

which is the reading of the Hán *Shī* and the Lǔ *Shī* (Karlgren 1942–1946 [1964], gloss 1198). This removes the apparent irregularity, for 發 *fā* rhymes repeatedly and consistently as **-at* (see 99.2A, 149.1A, 154.1B, 202.5A, 204.3A, and 260.3B). (Note, however, that this sequence still irregularly shows **-et* rhyming with **-at*.)

Finally, in Ode 140.2A, the word

(1030) 肺肺 *pèipèi* < *phajH-phajH* < **phots-phots*? 'luxuriant' (also read *fèi* < *phjojH* < **phjots* < **phjops* (?) 'lung')

appears to rhyme with **-at(s)*. This could well be another form of "flutter", and its phonetic element implies **-ot(s)*, so it is probably best taken to be an irregular rhyme.

Comparative evidence suggests that some of the words in this series originally had a coda **-p*. For example, Bodman (1980: 115) cites

(1031) 肺 *fèi* < *phjojH* < **phjots* < **phjops* 'lung', Chepang *pop*,

and Proto-Yao **plAp 7* 'overgrown', Lepcha *a-plóp* 'weed', which could be related to the various expressions for "flutter", "luxuriant", etc. A labial coda might explain the inconsistent behavior of words in this series, rhyming sometimes as **-ots* and sometimes as **-ats*, for it is likely that early dialects differed in their treatment of rounded vowels before labial codas. In some dialects, the vowel of syllables like **Pops* may have dissimilated early on to **Paps*, later becoming **Pats*, while in other dialects the rounded vowel may have remained, giving **Pops* > **Pots*. A good number of comparisons also suggest the developments **-op* > **-ot* and **-up* > **-ut* as well; for example, Bodman compares 市 *fú* < *pjut* < **pjut* (< **pjup*?) 'knee covers' with Tibetan *phub* 'shield' (1980: 116).

闊 *kuò* in Ode 31

Ode 31 includes two occurrences of the character 闊 *kuò*, one of which rhymes with **-ot* and one with **-at*; but I suspect that the original text has been obscured under the influence of late sound changes. In stanza 4, the rhyming lines are

死生契闊　　*sǐ shēng QIÈKUÒ*
與子成說　　*yǔ zǐ chéng SHUŌ*

which Karlgren (1974: 19) translates as

> In death and life (we are) SEPARATED AND FAR APART;
> with you I made an AGREEMENT.

Here 說 *shuō* is an unambiguous **-ot* word:

(1032) 說 *shuō* < *sywet* < **hljot* 'explain, speak, agreement'.

The expression 契闊 *qìèkuò* appears to be an **e/o* binome:

(1033) 契闊 *qìèkuò* < *khet-khwat* < **khet-khot* 'separated' (?)

This fits well with the other rhyme word 說 *shuō* < **hljot*.

Though the phonology of 契闊 *qìèkuò* seems clear, there is considerable doubt about the meaning of this binome. The Máo commentary takes it to mean "toiling, distressed"; the Hán *Shī* interpreted it as "bound together", but Karlgren follows Zhū Xī's interpretation "separated"—the opposite of the Hán *Shī* interpretation. I suspect, however, that the Hán *Shī*'s interpretation "bound together" may be correct. Compare the phonologically and semantically similar **e/o* binome

(1034) 繾綣 *qiǎnquǎn* < *khjienX-khjwonX* < **khjen?-khjon?* 'adhere to, clinging'

which occurs in Ode 253.5 (though its meaning too is far from certain; see Karlgren 1942–1946 [1964], gloss 919). An interpretation "in death and life bound together" seems to make better sense in context, too; stanza 4 evidently depicts a soldier's wife recalling their marriage vows (e.g. it includes the phrase 偕老 *xié lǎo* 'to grow old together' which is typical in such contexts, as in Odes 47.1, 58.6, and 82.2).

In stanza 5, the rhyming lines are

于嗟闊兮　　*xūjiē KUÒ xī*
不我活兮　　*bù wǒ HUÓ xī*

which Karlgren translates as

Oh, how FAR AWAY,
you do not (keep me ALIVE =) support me.

The other rhyme word in this sequence,

(1035) 活 *huó* < *hwat* < **g^{w}at* 'live',

rhymes as **-at* in Ode 290.1E, and this *xiéshēng* series generally seems to represent **K^{w}at* rather than **Kot*. If 闊 *kuò* here is the same word as in stanza 4, then this rhyme seems to mix **-at* and **-ot*. But I suspect that this sequence was originally regular, and that 闊 **k^{w}hat* 'distant' in stanza 5 is unrelated to 契闊 **khet-khot* 'bound together' in stanza 4. After **rounding diphthongization**—and after the meaning of both expressions became obscure—the same character came to be used for both *khwat* < **khot* and *khwat* < **k^{w}hat*.

The phonetic 世 *shì*

The word

(1036) 世 *shì* < *syejH* < **hljats* < **hljaps* 'leaf, generation'

originally had final **-p*, for this character is interchangeable in the early script with

(1037) 葉 *yè* < *yep* < **ljap* 'leaf'.

On the basis of their Middle Chinese readings, both words could be reconstructed with either **-ap(s)* or **-ep(s)*, but it is probably better to reconstruct **-ap(s)*; 世 *shì* rhymes with **-at(s)* in 255.8A, and the rhymes of 葉 *yè* are probably best interpreted as **-ap* (34.1A, 60.2A, 304.7A). Compare also Tibeto-Burman **lap* 'leaf' (Benedict 1972: 70). It is true that the 世 *shì* series also includes division-IV words in **-ep*, as in

(1038) 蝴蝶 *húdié* < *hu-dep* < **ga-lep* 'butterfly',

but these characters may be of late origin; or perhaps the usual *xiéshēng* conventions were relaxed for words with rather infrequent rhymes. I tentatively reconstruct **-ets* (< **-eps*?) in

(1039) 勩 *yì* < *yejH* < **ljets* < **ljeps*? 'toil, fatigue'

which rhymes with **-et(s)* in 194.2A, though the text here is unclear (Karlgren 1942–1946 [1964], gloss 566).

When 世 *shì* is used as a phonetic for words in final **-t*, it is probably a late substitution for 曳, reflecting the change ***-ps* > *-ts***, as in

(1040) 泄 ~ 洩 *xiè* < *sjet* < **sljat* 'leak'.

OC *-at(s), *-et(s), and *-ot(s) in *Lǎozǐ*

It is interesting that the distinctions among **-at(s)*, **-et(s)*, and **-ot(s)* seem to be maintained quite regularly in the rhymes of *Lǎozǐ*. The rhymes of the *Lǎozǐ* from the traditional 月 Yuè and 祭 Jì groups are reproduced below (based on lists in Zhū Qiānzhī 1984: 319). There are four rhymes in **-at(s)*, found in Chapters 25, 35, 39, and 73:

Chapter 25:

大 *dà* < *daH* ~ *dajH* < **lats*
逝 *shì* < *dzyejH* < **djats*

Chapter 35:

害 *hài* < *hajH* < **ɦkat(s)*
太 *tài* < *thajH* < **hlats*

Chapter 39:

裂 *liè* < *ljet* < **C-rjat*
發 *fā* < *pjot* < **pjat*
歇 *xiē* < *xjot* < **xjat*
竭 *jié* < *gjot* < **gjat*
[滅 *miè* < *mjiet* (IV) < **mjet*]
蹶 *jué* < *kjwot* < **k*^{w}*jat*

According to the proposed reconstruction, the word 滅 *miè* < **mjet* does not make a good rhyme here. But the line in which it occurs is evidently a late insertion; this line does not appear in either of the Mǎwángduī versions, and is missing in other early versions also (Zhū Qiānzhī 1984: 157; Mǎwángduī Hàn Mù Bóshū Zhěnglǐ Xiǎozǔ 1976: 13). Note that the proposed reconstruction suggests that the line is suspicious, even without this evidence. This illustrates how phonology can illuminate textual history and vice versa.

Chapter 73:

殺 *shā* < *srɛt* < **srjat*
活 *huó* < *hwat* < **g*^{w}*at*
害 *hài* < *hajH* < **fikat(s)*

Zhū Qiānzhī (1984: 262), following Jiāng Yǒugào, also lists a rhyme sequence 散 *sàn* < *sanH* < **san(?)s*, 亂 *luàn* < **C-rons*, 末 *mò* < *mat* < **mat* in Chapter 64, but I suspect that no rhyme was intended in this passage.

Lǎozǐ rhymes in **-et(s)* occur in Chapters 45, 58, and 79:

Chapter 45:

缺 *quē* < *khwet* ~ *khjwiet* < **k*^{w}*h(j)et*
敝 *bì* < *bjiejH* (IV) < **bjets*

Chapter 58:

察 *chá* < *tsrhɛt* < **tshrjet*
缺 *quē* < *khwet* ~ *khjwiet* < **k*^{w}*h(j)et*

Chapter 79:

契 *qì* < *khejH* < **khets*
徹 *chè* < *trhjet* < **thrjet*

Note that 契 *qì* < *khejH* is unambiguously **-ets*. 徹 *chè* < *trhjet* rhymes with **-it* in the *Shījīng* (Ode 193.8C), a typical example of contact between **-et(s)* and **-it(s)*.

Lǎozǐ shows one rhyme sequence in **-ot*, in Chapter 54:

拔 *bá* < *bɛt* < **brot*
脫 *tuō* < *thwat* < **hlot*
輟 [*chuò*] < *trjwet* < **trjot*

The separate rhyming of **-at(s)*, **-et(s)*, and **-ot(s)* in *Lǎozǐ* is striking confirmation of the existence of these phonological distinctions.

10.1.3. The traditional 歌 Gē group

The Middle Chinese finals included in the traditional 歌 Gē group are listed in Table 10.26.

In this group we must reconstruct a contrast between **-aj* and **-oj* in order to account for *kāikǒu-hékǒu* contrasts after acute initials:

(1041) 侈 *chǐ* < *tsyheX* < **thjaj?* 'great, large'

(1042) 吹 *chuī* < *tsyhwe* < **thjoj* 'to blow'

The reasons for reconstructing a coda **-j* in this group were discussed in Chapter 8 (section 8.1.1.2).

Table 10.26. Middle Chinese finals of the traditional 歌 Gē group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-(w)a*	*-(u)â*	歌 Gē (Ka)	
II	*-(w)æ*	*-(w)a*	麻 Má (Mæ)	(in part)
III	*-j(w)e*	*-(w)iẹ*	支 Zhī (Tsye)	(in part)
	-jæ	*-ja*	麻 Má (Mæ)	(in part)

Although parallel in some ways to the 元 Yuán, 月 Yuè, and 祭 Jì groups, the 歌 Gē group also shows some significant differences. One such difference is the absence of labiodentalizing finals in this group. The groups previously discussed included the Middle Chinese finals *-jon*, *-jot*, and *-jojH* which caused a preceding labial initial to become labiodental (e.g. 發 **pjat* > *pjot* > *fā*); but there are no such finals in the 歌 Gē group, and no syllables from this group developed labiodental initials in Middle Chinese. Another difference is the marginal contrast between the division-III finals *-je* and *-jæ*, which finds no parallel in the groups previously discussed.

As usually defined, this group has division-I finals but no division-IV finals, but there is some evidence that there was originally a contrast between **-aj* and **-ej*. I will return to this question after summarizing the reconstructions of finals with **-aj* and **-oj*.

10.1.3.1. The reconstruction of the *-aj *group*

After nonlabialized initials, finals in **-aj* developed as shown in Table 10.27 below.

Table 10.27. Development of **-aj* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-aj*	all	*-a*	**-â(r)*	**-ar*	**-ál*
**-raj*	all	*-æ*	**-a*	**-ra*	**-ʳál*
**-jaj*	grave	*-je* (III)	**-ia*, **-i̯ar*	**-j(i)ar*	**-àl*
	acute	*-je*	**-ia*, **-i̯ar*	**-jiar*	**-àl*
**-jAj*	acute	*-jæ*	**-i̯a*	**-jar*	**-à:l* (?)
**-rjaj*	grave	*-je* (III)	**-ia*, **-i̯ar*	**-j(i)ar*	**-(ʳ)àl*
	acute	*-je*	**-ia*	**-rj(i)ar* (?)	**-(ʳ)àl*

Karlgren attempted to distinguish between an **-âr* group, which showed contacts with both **-ân* and **-ər*, and an **-â* group, which showed no such contacts. We could incorporate this idea in our system by reconstructing **-ar* or **-al* in addition to **-aj*, but I prefer to assume that contacts between **-an* and **-aj* reflect a denasalization process in certain dialects (especially eastern ones); this idea was discussed in section 8.1.1.2. Karlgren's coda **-r* generally corresponds to **-j* in the present system.

The existence of the two division-III finals *-jæ* and *-je* in this group is an unsolved problem. I will write **-jaj* > *-je* and **-jAj* > *-jæ*, but this is simply a notational device; I suspect that the forms in *-jæ* originate in dialect mixture or special stress conditions, or both. There are only a few words in *-jæ* in this group, including the interjection

(1043) 嗟 *jiē* < *tsjæ* < **tsjAj* 'alas'

and the particle

(1044) 也 *yě* < *yæX* < **ljAj* '(grammatical particle)',

plus the word

(1045) 蛇 *shé* < *zyæ* < **LjAj* 'snake' (also read *yí* < *ye* < **ljaj* 'compliant, complacent').

The following example shows alternation of *-je* and *-jæ*:

(1046) 哆 *chě* ~ *chǐ* < *tsyhæX* ~ *tsyheX* < **thjA/aj?* 'large' (Karlgren 1942–1946 [1964], gloss 617)

Note that the finals **-jaj* and **-rjaj* merged after grave initials. This means that **-jaj* and **-rjaj* can no longer be distinguished in this environment; I will write **-(r)jaj* to indicate this. This merger is consistent with a long-term general tendency found also in the **-an* and **-at(s)* groups: by Late Middle Chinese, MC *Kjon* < **Kjan* and MC *Kjen* (III) < **Krjan* had also merged (both being placed in division III of the rhyme tables). But in the **-an* and **-at(s)* groups, **labiodentalization** preceded this merger, so that *Pjon* < **Pjan* did not merge with *Pjen* (III) < **Prjan*. Evidently the vowel of the final **-jaj* was fronted at an early date; I call this change ***-aj* monophthongization**, since it probably involved a change **-aj* > **-æ* (see Appendix A). As a result of this change, syllables like original **Pjaj* no longer had a back vowel, and no longer met the conditions for labiodentalization. (Syllables like **Pjoj* would already have merged with **Pjaj* by **rounding diphthongization** and ***w*-neutralization**: **Pjoj* > **Pjwaj* > **Pjaj*.)

Syllables with labialized initials, which are largely parallel, developed as shown in Table 10.28.

Table 10.28. Development of **-aj* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K*^{w}*aj*	*Kwa*	**Kwâ(r)*	**Kwar*	**K*^{w}*ál*
**K*^{w}*raj*	*Kwæ*	**Kwa(r)*	**Kwrar*	**K*^{w}*rál*
**K*^{w}*(r)jaj*	*Kjwe* (III)	**Kwia*, **Kịwăr*	**Kwj(i)ar*	**K*^{w}*(r)àl*

Additional examples of **-aj*

(1047) 歌 *gē* < *ka* < **kaj* 'sing'

(1048) 過 *guò* < *kwa(H)* < **k*^{w}*aj(s)* 'transgress; transgression'

(1049) 波 *bō* < *pa* < **paj* 'wave'

(1050) 多 *duō* < *ta* < **taj* 'many'

(1051) 加 *jiā* < *kæ* < **kraj* 'add'

(1052) 化 *huà* < *xwæH* < **hng*^{w}*raj(s)* 'transform'

(1053) 麻 *má* < *mæ* < **mraj* 'hemp'

(1054) 差 *chā ~ chāi ~ cī* < *tsrhæ ~ tsrhɛi ~ tsrhje* < **tshr(j)aj* 'difference; choose; uneven'

The Middle Chinese reading *tsrhɛi* is probably from *tsrhje* < **tshrjaj* by ***TSrj- > TSr-***.

(1055) 奇 *qí* < *gje* (III) < **g(r)jaj* 'strange'

(1056) 為 *wéi* < *hjwe* (III) < **w(r)jaj* 'do, be'

(1057) 皮 *pí* < *bje* (III) < **b(r)jaj* 'skin'

(1058) 移 *yí* < *ye* < **ljaj* 'transfer'

10.1.3.2. The reconstruction of the *-oj *group*

As noted above, we must reconstruct **-oj* as well as **-aj* in order to account for contrasts between *kāikǒu* and *hékǒu* finals after acute initials. I reconstruct the finals in **-oj* as shown in Table 10.29.

Table 10.29. Development of **-oj* after nonlabial initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-oj*	all	*-wa*	**-wâ(r)*	**-(u)ar*, **-ər*	**-^{w}ál*
**-roj*	all	*-wæ*	**-wa*	**-r(u)ar*	**-^{rw}ál*
**-joj*	grave	*-jwe* (III)	**-wia*, **-i̯wăr*	**-j(i)ar*, **-jər*	**-^{w}àl*
	acute	*-jwe*	**-wia*, **-i̯wăr*, **-i̯war*	**-juar*, **-jər*	**-^{w}àl*
**-rjoj*	grave	*-jwe* (III)	**-wia*, **-i̯wăr*	**-j(i)ar*, **-jər*	**-^{rw}àl*
	acute	*-jwe*	**-ia*, **-i̯wăr*	**-rjuar*, **-rjər*	**-^{rw}àl*

Syllables with labial initials are parallel, except that *-w-* is lost or becomes nondistinctive through ****w*-neutralization**.

Following Dǒng Tónghé (1944 [1948]: 106), Li reconstructed **-ər* in some words which are traditionally assigned to the 微 Wēi group, even though they have Middle Chinese finals *-(w)a* or *-j(w)e* which ordinarily indicate the 歌 Gē group. Some of these cases seem to be words in **-oj* which show

contacts with the 微 Wēi-group final **-uj* (parallel to the contacts between **-ot(s)* and **-ut(s)* mentioned above):

(1059) 蓑 *suō* < *swa* < **swaj* < **soj* (Li's **sər*[306]) 'raincoat made of rushes'

The *Guǎngyùn* gives also the reading *swoj*, implying a variant pronunciation **suj*.

Similarly, there is confusion between **-oj* and **-uj* in characters with the phonetic 妥:

(1060) 妥 *tuǒ* < *thwaX* < **hnoj?* 'tranquil, at ease'

(1061) 綏 *suí* < *swij* < **snjuj* 'to pacify, comfort'

These last two examples surely represent the same root, and thus probably had the same main vowel originally, but **-oj* and **-uj* are now difficult to distinguish in the classical reading tradition, and it is difficult to decide between them. In the same *xiéshēng* series we also have

(1062) 餒 *něi* < *nwojX* < **nuj?* 'hungry, starve'.

It is also likely that original **-aj* and **-ɨj* merged in some dialects, in at least some environments. For example, we find a doublet for "ant":

(1063) 蟻 *yǐ* < *ngjeX* (III) < **ng(r)jaj?* 'ant'

(1064) 蚔 *yǐ* < *ngjɨjX* < **ngjɨj?* 'ant' (in *Chǔcí* 楚辭; see Karlgren 1957, item 548i).

Another doublet is the following pair:

(1065) 燬 *huǐ* < *xjweX* (III) < **hm(r)jaj?* (?) 'destroy'

(1066) 煨 *huǐ* < *xjwɨjX* < **hmjɨj?* 'destroy'.

Ode 10.3 has 燬 *huǐ* rhyming with **-ɨj*, though some versions of the text have the character 煨 instead (according to the *Jīngdǐan shìwén*, quoted in Xiàng Xī 1986: 178). In this case the original root probably had **-ɨj*, not **-aj*; the word **hm(r)jaj?* ~ **hmjɨj?* 'destroy' is probably cognate to

(1067) 火 *huǒ* < *xwaX* < **hmaj?* < **hmɨj?* 'fire',

which is originally a **-ɨj* word (see section 10.1.8.2). Given this development, we would expect to find confusions between **-waj* < **-oj* and **-wɨj* < **-uj* also, which could explain some of the apparent contacts between **-oj* and **-uj*. It is curious that these examples of contacts between **-aj* and **-ɨj* are all *shǎngshēng* words.

Note that contacts of this kind between **-oj* and **-uj* and between **-aj* and **-ij*—that is, between the traditional 歌 Gē and 微 Wēi groups—support the hypothesis that the same coda (my **-j*) is involved in both groups. Other reconstructions sometimes reconstruct these groups with different codas; for example, Li's system has **-d* in 微 Wēi, but **-r* in 歌 Gē.

Additional examples of **-oj*

(1068) 和 *hé* < *hwa* < **g*^{w}*aj* < **goj* 'harmonious'

(1069) 坐 *zuò* < *dzwax* < **dzoj*ʔ 'sit'

(1070) 隨 *suí* < *zjwe* < **zljoj* 'follow'

10.1.3.3. The reconstruction of the *-ej *group*

The pattern of the largely parallel 元 Yuán, 月 Yuè, and 祭 Jì groups suggests that we should find **-ej* along with **-aj* and **-oj* in the 歌 Gē group. If such a final existed, then according to the sound changes we have assumed, we would expect it to develop as follows:

1. **-ej* should remain unchanged, becoming MC *-ej*, merging with original **-ij* (which lowered to *-ej* by **hi > mid**) and **-e* (which became *-ej* by ***j*-insertion**; see section 10.2.7).
2. **-rej* would probably become MC *-ɛj*, like **-rej* from original **-rij* (by **hi > mid**), or MC *-ɛi*, like original **-re*.
3. **-jej* after acute initials would probably become MC *-je*, merging with original **-je* and **-jaj*. With grave initials we would expect a division-IV *chóngniǔ* final *-jie*, since we have **-j-* followed by a front vowel.
4. **-rjej* should be like **-jej*, except that it will cause retroflexion of acute initials, and should become the division-III *chóngniǔ* final *-je* after grave initials.

The result is that the reflexes we would predict for **-ej* are virtually indistinguishable from those of **-e*. One clue to possible cases of **-ej*, however, is the common alternation of **-j* with **-n*. It was pointed out in Chapter 8 that this alternation might reflect a process of final denasalization in some early dialects, especially the eastern dialects in and near modern Shāndōng. An

example is the rhyme sequence 137.2A (*Chénfēng* 陳風: *Dōng mén zhī fén* 東門之枌):

差 *chā* < *tsrhɛi* < **tshrjaj* 'choose'
原 *yuán* < *ngjwon* < **ng*^{w}*jan* 'plain'
麻 *má* < *mæ* < **mraj* 'hemp'
娑 *pósuō* < *ba-sa* < **baj-saj* 'dance'

We also have the testimony of early commentators that speakers in this geographical area pronounced 殷 *yīn* < **ʔjin* like 衣 *yī* < **ʔjij* (see section 8.1.1.2 for details). By analogy to these cases, we would expect to find contacts between **-en* and **-ej* which might be a clue to identifying instances of **-ej*. The rhyme sequence 43.1A (*Bèi fēng* 邶風: *Xīn tái* 新臺) is probably an example of this:

泚 *cǐ* < *tshjeX* < **tshjejʔ* 'bright, shining'
瀰 *mǐ* < *mjieX* (IV) < **mjejʔ* 'filling'
鮮 *xiǎn* < *sjenX* < **sjenʔ* 'rare, special'

The state of Bèi 邶 was in present-day northern Hénán, just west of Shāndōng, so this poem's confusion of **-j* and **-n* is consistent with the general geographical pattern of this phenomenon. The second stanza of the same ode shows confusion of **-ij* and **-in*.[307]

On the basis of their Middle Chinese finals, 泚 *cǐ* < *tshjeX* and 瀰 *mǐ* < *mjieX* (IV) look like words of the 支 Zhī group (our **-e*); 瀰 *mǐ* < *mjieX* must be reconstructed with a front main vowel, at least, because of its division-IV *chóngniǔ* final. But the fact that they rhyme here with the 元 Yuán-group word 鮮 *xiǎn* < *sjenX* makes them good candidates for reconstruction with **-ej* rather than **-e*.

There are other words besides 泚 *cǐ* where the phonetic element

(1071) 此 *cǐ* < *tshjeX* < **tshjejʔ* 'this'

seems likely to represent **-ej*. Another example is

(1072) 胔 *zì* < *dzjeH* < **dzjejs* 'carcass',

written 柴 in Ode 179.5, where it rhymes irregularly with **-ij* (on the text, see Xiàng Xī 1986: 666). Rhyming between **-ij* and **-ej* would be parallel to the occasional rhymes between **-it(s)* and **-et(s)*.

Another likely case of **-ej* is the following word, which Karlgren included in his **-âr* group:

(1073) 臡 MC *nej* ~ *na* < **nej* ~ *naj* 'pickled meat with bones in it' (Karlgren 1957, item 1521).

MC *na* must represent OC **naj*, and MC *nej* could represent earlier **nej*. According to the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 1798), this word is an alternate form of

(1074) 腤 *ér* < *nye* < **njej* 'pickled meat with bones in it'.

In general, then, I reconstruct **-ej* in words which have reflexes like **-e*, but show rhyme or *xiéshēng* contacts with words of the 元 Yuán group. The only cases of such among *Shījīng* rhyme words are 泚 **tshjej?*, 瀰 **mjej?*, and 柴 (= 𪊹) **dzjejs* above.[308]

10.1.3.4. The rhyming of *-aj, *-ej, *and* *-oj

I know of no actual examples of rhymes mixing **-aj* and **-ej*, but since cases of **-ej* are rare and difficult to identify with certainty, we cannot expect to find sufficient data to establish this rhyming distinction statistically. Similarly, there are few good examples of **-oj*; a number of probable cases of **-oj* rhyme with **-uj*, and could be reconstructed with **-uj* instead. This makes it difficult to test the **-aj*/**-oj* distinction statistically, since unambiguous cases of **-oj* are so few. Still, among the cases of **-oj* that are identifiable, there are no crossovers with **-aj* at all. I reconstruct the following *Shījīng* rhyme words with **-oj*:

(1075) 吹 *chuī* < *tsyhwe* < **thjoj* 'blow'

(1076) 和 *hè* < *hwaH* < **gojs* 'respond in singing, join in' (also read *hé* < *hwa* < **goj* 'harmonious')

(1077) 萎 [*wěi*] < *ʔjwe* (III) < **ɣ(r)joj* 'wither'

(1078) 摧 [= 莝] *cuò* < *tshwaH* < **tshojs* 'fodder' (Xiàng Xī 1986: 64)

Of these, 吹 *chuī* is a *hékǒu* word with an acute initial, and must be reconstructed with **-oj* according to the rounded vowel hypothesis. It rhymes with 和 *hè* in 85.1B. Now 和 *hè* ~ *hé* < *hwa(H)* is phonologically ambiguous, but other evidence confirms that it is to be reconstructed with **-oj*: it rhymes as **-oj* in *Lǎozǐ* (see below), and it is ultimately the phonetic element in 萎 **ɣ(r)joj*.[309] The word 萎 *wěi* < *ʔjwe* < **ɣ(r)joj* is traditionally assigned to the 微 Wēi group, not the 歌 Gē group, but its Middle Chinese reading *ʔjwe* and its phonetic 和 indicate the 歌 Gē group; it rhymes in 201.3A with **-uj* and **-on*. Finally, 摧, normally [*cuī*] < *dzwoj* 'to oppress, cut' (implying a reconstruction **dzuj*), is read *cuò* < *tshwaH* (implying

**tshojs*) in Ode 216.4A, according to the *Jīngdiǎn shìwén*. This follows Zhèng Xuán, who says that 摧 **dzuj* here is a loan for

(1079) 莝 *cuò* < *tshwaH* < **tshojs* 'fodder'.

(Note the phonetic 坐 *zuò* < *dzwaX* < **dzoj?* 'to sit'.) It rhymes in 216.4A with 綏 *suí* < *swij* < **snjuj* 'pacify, comfort'.[310]

Though the *Shījīng* rhyming data are skimpy, the distinction between **-aj* and **-oj* receives further support from the rhymes of *Lǎozǐ*, which also distinguish **-aj* from **-oj* without exception. There are eight 歌 Gē-group rhyme sequences in *Lǎozǐ*, of which six are **-aj* and two are **-oj*.[311] The rhyme sequences in **-aj* are as follows:

Chapter 20:

阿 *ē* < *ʔa* < **ʔaj*
何 *hé* < *ha* < **gaj*

Chapter 37:

爲 *wéi* < *hjwe* (III) < **w(r)jaj*
爲 *wéi* < *hjwe* (III) < **w(r)jaj*
化 *huà* < *xwæH* < **hng*^{w}*raj(s)*

Chapter 44:

化 *huò* < *xwaH* < **hng*^{w}*aj(s)*
多 *duō* < *ta* < **taj*

Chapter 57:

爲 *wéi* < *hjwe* (III) < **w(r)jaj*
化 *huà* < *xwæH* < **hng*^{w}*raj(s)*

Chapter 58:

禍 *huò* < *hwaX* < **g*^{w}*aj?*
倚 *yǐ* < *ʔjeX* (III) < **ʔ(r)jaj?*

Chapter 64:

貨 *huò* < *xwaH* < **hng*^{w}*aj(s)*
過 *guō* < *kwa* < **k*^{w}*aj*
爲 *wéi* < *hjwe* (III) < **w(r)jaj*

The two sequences in **-oj* are as follows:

Chapter 2:

和 *hé* < *hwa* < **goj*
隨 *suí* < *zjwe* < **zljoj*

Chapter 29:

隨 *suí* < *zjwe* < **zljoj*
吹 *chuī* < *tsyhwe* < **thjoj*
蘲 *léi* < *ljwe* < **C-rjoj*
隳 *huī* < *xjwie* (IV) < **hljoj*[312]

This last four-word sequence is especially important evidence for the existence of **-oj* as a separate rhyme.

10.1.4. The traditional 真 Zhēn group

The Middle Chinese finals included in the traditional 真 Zhēn group are listed in Table 10.30.

Table 10.30. Middle Chinese finals of the traditional 真 Zhēn group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
II	*-(w)ɛn*	*-(w)ăn*	山 Shān (Srɛn)	(in part)
III	*-(j)(w)in*	*-i̯(w)ĕn*	真 Zhēn (Tsyin)	(in part)
	(TSr)in	*-i̯ɛn*	臻 Zhēn (Tsrin)	(in part) *TSr-* only
IV	*-(w)en*	*-i(w)en*	先 Xiān (Sen)	(in part)

This group includes division-IV finals *-(w)en*, but no division-I finals, so by the front-vowel hypothesis it is to be reconstructed with a front vowel: **-in*. All contrasts between *kāikŏu* and *hékŏu* can be attributed to rounded initials:

(1080) 詢 [*xún*] < *swin* < **swjin* 'consult'

(1081) 旬 *xún* < *zwin* < **fiswjin* 'ten-day week; all round'

With these compare

(1082) 洵 [*xún*] < *xwen* < **hwin* 'far away'.

A few words assigned to this group have the coda *-ng* in Middle Chinese; as explained in section 8.1.2, I regard these as traces of an original final **-ing*, which merged with **-in* in some dialects and with **-eng* in others. An example is

(1083) 命 *mìng* < *mjængH* < **mrjeng(s)* < **mrjing(s)* 'command',

which rhymes as **-in* in the *Shījīng*. Occasionally we seem to have MC *-ing* < **-jing*; for example, the pronunciation of

(1084) 令 *lìng* < *ljengH* < **C-rjing(s)* 'command'

in Ode 100.2 is given as *lingH*, not *ljengH*, in the *Jīngdiǎn shìwén*. In most cases, however, it is difficult to reconstruct **-ing* with confidence.

10.1.4.1. The reconstruction of the *-in *group*

The development of **-in* after nonlabialized initials is summarized in Table 10.31 below.

Table 10.31. Development of **-in* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-in*	all	*-en*	**-ien*	**-in*	**-ə́ɲ*
**-rin*	all	*-ɛn*	**-ăn*	**-rin*	**-ʳə́ɲ*
**-jin*	grave	*-jin* (IV)	**-i̯ĕn*	**-jin*	**-ə̀ɲ*
	acute	*-in*	**-i̯ĕn*	**-jin*	**-ə̀ɲ*
**-rjin*	grave	*-in* (III)	**-i̯ĕn*	**-jin*	**-ʳə̀ɲ*
	acute	*-in*	**-i̯ĕn*	**-rjin*	**-ʳə̀ɲ*

The development after labialized initials, which is parallel, is summarized in Table 10.32 below.

Table 10.32. Development of **-in* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**Kʷin*	*Kwen*	**Kiwen*	**Kwin*	**Kʷə́ɲ*
**Kʷrin*	*Kwɛn*	**Kwĕn*	**Kwrin*	**Kʷrə́ɲ*
**Kʷjin*	*Kjwin* (IV)	**Ki̯wĕn*	**Kwjin*	**Kʷə̀ɲ*
**Kʷrjin*	*Kwin* (III)	**Ki̯wĕn*	**Kwjin*	**Kʷrə̀ɲ*

The association between front-vowel rhyme groups and the division-IV *chóngniǔ* syllables has been known for some time, and, perhaps for this reason, the existence of division-III *chóngniǔ* syllables in front-vowel rhyme groups has been widely ignored or treated as irregular. In my system, such syllables are the regular reflexes of syllables with **-rj-* followed by front vowels. For example, with **-rjin* we have the division-III word

(1085) 筠 *yún* < *hwin* (III) < **wrjin* 'rind of the bamboo'.

The medial **-r-* is needed here not only to account for the division-III *chóngniǔ* final, but also to account for the failure of **w-* to palatalize. Compare

(1086) 畇 *yún* < *ywin* < **wjin* 'to clear land for cultivation' (also read *swin* < **swjin* and *zwin* < **fiswjin*),

which shows the palatalization **wj-* > *yw-* before front vowels when **-r-* is not present (discussed in section 6.1.6). We may also reconstruct **-rjin* in

(1087) 嚚 *yín* < *ngin* (III) < **ngrjin* (or **Nkrjin*) 'deceitful, insincere',

whose phonetic, according to the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 923), is

(1088) 臣 *chén* < *dzyin* < **gjin* 'servant',

with palatalization of the velar initial.

Additional examples of **-in*

(1089) 年 *nián* < *nen* < **nin* 'harvest, year'

(1090) 玄 *xuán* < *hwen* < **g^{w}in* 'dark-colored'

(1091) 人 *rén* < *nyin* < **njin* 'person'

(1092) 民 *mín* < *mjin* (IV) < **mjin* 'people'

(1093) 均 *jūn* < *kjwin* (IV) < **k^{w}jin* 'well-balanced'

(1094) 真 *zhēn* < *tsyin* < **tjin* 'true, real'

(1095) 榛 *zhēn* < *tsrin* < **tsrjin* 'hazel'

10.1.4.2. The reconstruction of *-ing

For finals in **-ing*, I tentatively suggest the developments summarized in Table 10.33 below.

Table 10.33. Development of **-ing* after nonlabialized initials

Baxter	Initial	MC
**-ing*	all	*-en ~ -eng*
**-ring*	all	*-ɛn ~ -ɛng*
**-jing*	grave	*-jin* (IV) *~ -ing ~ -jieng* (IV)
	acute	*-in ~ -ing ~ -jeng*
**-rjing*	grave	*-in* (III) *– -ing ~ -jæng*
	acute	*-in – -ing ~ -jeng*

Syllables with labialized initials would presumably be parallel.

Except for the reconstruction of **-ing*, my treatment of this group is consistent with the traditional analysis, so I will omit further discussion of its rhyming.

10.1.5. The traditional 文 Wén group

The Middle Chinese finals included in the traditional 文 Wén group are listed in Table 10.34.

Table 10.34. Middle Chinese finals of the traditional 文 Wén group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-on*	*-ən*	痕 Hén (Hon)	**K-* only
	-won	*-uən*	魂 Hún (Hwon)	
II	*-(w)ɛn*	*-(w)ăn*	山 Shān (Srɛn)	(in part)
III	*-jɨn*	*-i̯ən*	殷 Yīn (ʔJɨn)	grave only
	-jun	*-i̯uən*	文 Wén (Mjun)	grave only
	-(w)in	*-i̯(w)ĕn*	真 Zhēn (Tsyin)	(in part)
	(TSr)in	*-i̯ɛn*	臻 Zhēn (Tsrin)	(in part) *TSr-* only
IV	*-(w)en*	*-i(w)en*	先 Xiān (Sen)	(in part)

This group includes both the division-I final *-on* and the division-IV final *-en,* so at first glance it would appear that we must reconstruct both front and back vowels here. But as was pointed out in section 7.1.3, *-on* and *-en* are in complementary distribution in words of this group: the former is limited to grave initials, the latter to acute initials. I assume that the final *-en* in words such as

(1096) 先 *xiān* < *sen* < **sɨn* 'first'

results from the change ***ɨ-fronting** followed by **hi > mid**: **sɨn* > *sin* > *sen*. Front vowels in this group are thus a secondary phenomenon, and need not be projected back to Old Chinese.

However, this group does show contrasts between *kāikǒu* and *hékǒu* finals after acute initials:

(1097) 辰 *chén* < *dzyin* < **djɨn* 'time'

(1098) 鶉 *chún* < *dzywin* < **djun* 'quail'

In accordance with the rounded-vowel hypothesis, I account for this contrast by reconstructing both **-ɨn* and **-un* in this group. We will see below that this contrast is clearly supported by the rhyme evidence.

10.1.5.1. The reconstruction of the *-ɨn *group*

After nonlabialized initials, finals in **-ɨn* developed as shown in Table 10.35 below.[313] The development of **-ɨn* after labialized initials is summarized in Table 10.36.

Additional examples of **-ɨn*

(1099) 恩 *ēn* < *ʔon* < **ʔɨn* 'kind'

(1100) 門 *mén* < *mwon* < **mɨn* 'gate, door'

(1101) 先 *xiān* < *sen* < **sɨn* 'first'

(1102) 殄 [*tiǎn*] < *denX* < **dɨnʔ* 'cease, put an end to, destroy'

(1103) 艱 *jiān* < *kɛn* < **krɨn* 'distress, difficulty'

(1104) 鰥 *guān* < *kwɛn* < **k*^{w}*rɨn* 'widower'

Table 10.35. Development of **-in* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-in*	**K-*	*-on*	**-ən*	**-ən*	**-ə́n*
	**P-*	*-won*	**-wən*	**-ən*	**-ə́n*
	acute	*-en*	**-iən*	**-iən*	**-(j)ə́n* (?)
**-rin*	all	*-ɛn*	**-ɛn*	**-r(i)ən*	**-rə́n*
**-jin*	**K-*	*-jin*	**-i̯ən*	**-jən*	**-ə̀n*
	**P-*	*-jun*	**-i̯wən*	**-jən*	**-ə̀n*
	acute	*-in*	**-i̯ən*	**-jiən*	**-ə̀n*
**-rjin*	grave	*-in* (III)	**-i̯ɛn*	**-jiən*	**-ʳə̀n*
	acute	*-in*	**-i̯ən*	**-rjiən*	**-ʳə̀n*

Table 10.36. Development of **-in* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**Kʷin*	*Kwon*	**Kwən*	**Kwən*	**Kʷə́n*
**Kʷrin*	*Kwɛn*	**Kwɛn*	**Kwrən*	**Kʷrə́n*
**Kʷjin*	*Kjun*	**Ki̯wən*	**Kwjən*	**Kʷə̀n*
**Kʷrjin*	*Kwin* (III)	**Ki̯wɛn*	**Kwjiən*	**Kʷrə̀n*

(1105) 近 *jìn* < *gjinX* < **gjin?* 'near'

(1106) 芬 *fēn* < *phjun* < **phjin* 'fragrant'

(1107) 雲 *yún* < *hjun* < **wjin* 'cloud'

(1108) 辰 *chén* < *dzyin* < **djin* 'planet; date'

(1109) 巾 *jīn* < *kin* (III) < **krjin* 'scarf'

(1110) 隕 *yǔn* < *hwinX* (III) < **wrjin(?)* 'to drop, fall'

(1111) 貧 *pín* < *bin* (III) < **brjin* 'poor'

(1112) 塵 *chén* < *drin* < **drjin* 'dust'

(1113) 詵 *shēn* < *srin* < **srjin* 'numerous'

10.1.5.2. The reconstruction of the *-un *group*

The development of **-un* after nonlabial initials is summarized in Table 10.37 below.

Table 10.37. Development of **-un* after nonlabial initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-un*	all	*-won*	**-wən*	**-ən*	**-ʷán*
**-run*	all	*-wɛn*	**-wɛn*	**-rən*	**-ʳʷán*
**-jun*	grave	*-jun*	**-i̯wən*	**-jən*	**-ʷàn*
	acute	*-win*	**-i̯wən*	**-jən*	**-ʷàn*
**-rjun*	grave	*-win* (III)	**-i̯wɛn*	**-wjiən*	**-ʳʷàn*
	acute	*-win*	**-i̯wən*	**-rjən*	**-ʳʷàn*

I assume that **rounding diphthongization** preceded ***r*-color** in words like

(1114) 綸 *guān* < *kwɛn* < *kwrin* < **krun* 'head kerchief' (also read *lún* < *lwin* < **C-rjun* 'twist, twine'; root meaning perhaps "to wrap or twist around"?).

The reason is that it seems to be a general rule that ***r*-color** applied only to unrounded vowels.

Syllables with labial initials are parallel to those in Table 10.37, except that *-w-* was lost or became nondistinctive as a result of ***w*-neutralization**. An example is

(1115) 緡 *mín* < *min* (III) < **mrjun* 'string, twist'.

This word rhymes as **-un* in 24.3A and must be related to the previous example; see discussion in section 7.3.2. As a result of **rounding diphthongization** and ***w*-neutralization**, this **mrjun* merged with

(1116) 閔 *mǐn* ~ 瘖 *mín* < *min(x)* (III) < **mrjin(?)* 'suffering',

which rhymes as **-in* in 155.1A, 206.1A (erroneously written as 疧 *qí*; see note below), and 257.4A. Similarly,

(1117) 聞 *wén* < *mjun* < **mjun* 'hear' (earlier written with 昏 **hmun* as phonetic; see Chapter 9 and discussion below)

merged with

(1118) 文 *wén* < *mjun* < **mjin* 'pattern, culture'.

Additional examples of **-un*

(1119) 昆 [*kūn*] < *kwon* < **kun* 'elder brother'

(1120) 奔 *bēn* < *pwon* < **pun* 'to run, flee'

(1121) 哼 *tūn* < *thwon* < **thun* 'rumble'

(1122) 君 *jūn* < *kjun* < **kjun* 'lord'

(1123) 愠 *yùn* < *ʔjunH* < **ʔjuns* 'hate'

(1124) 焚 *fén* < *bjun* < **bjun* 'to burn'

(1125) 春 *chūn* < *tsyhwin* < **thjun* 'spring'

(1126) 川 *chuān* < [*tsyhwen*] < **KHju/on* 'river'

The Middle Chinese form of 川 *chuān* appears to be irregular, as pointed out by Karlgren (1957, item 462a). This item also shows palatalization of a velar initial in an unexpected environment; hence the reconstruction with capital **KH-*.

(1127) 麕 *jūn* < *kwin* (III) < **krjun* 'waterdeer'

(1128) 囷 *qūn* < *khwin* (III) < **khrjun* 'round granary'

(1129) 輪 *lún* < *lwin* < **C-rjun* 'wheel'

10.1.5.3. The rhyming of *-in *and* *-un

We may use the following criteria to identify phonologically unambiguous cases of **-in* and **-un*:

1. *Kāikǒu* words are unambiguously **-in*, except for words with labial initials.
2. *Hékǒu* words with acute initials are unambiguously **-un*, except for words with initials of type *TS-* or *TSr-*, which could reflect clusters of type **SK*^{w}*(r)-*.

The rhyme occurrences of unambiguous **-in* and **-un* words are tabulated in Table 10.38. (The 0.95 confidence interval for **P**[**-un*] in *píngshēng* extends from 6/27 = 0.222 to 15/27 = 0.556. The 0.94 confidence interval for **P**[**-un*] in *qùshēng* extends from 2/7 = 0.286 to 6/7 = 0.857.) The *Shījīng* rhyme sequences involving unambiguous **-un* and **-in* words are tabulated in Table 10.39 by tone group and length of sequence.[314]

Table 10.38. Rhyme occurrences of unambiguous **-un* and **-in* words

	píng	*shǎng*	*qù*
**-un* tokens	10	0	4
**-in* tokens	17	5	3
total tokens	27	5	7
P[**-un*]	0.370	0	0.571
P[**-in*]	0.630	1.000	0.429

Table 10.39. Rhyme sequences involving unambiguous **-un* and **-in* words

tone	sequence length	total sequences	**-un*	**-in*	mixed
píng	2	5	0	5	0
	4	1	1	0	0
shǎng	none				
qù	2	1	0	1	0

The number of rhymes involving phonologically unambiguous words is rather small; in fact there are none at all in *shǎngshēng*. But the four-word *píngshēng* sequence of unambiguous **-un* words (which occurs in Ode 112.3A) is especially noteworthy, since **-un* is the less common of the two groups. Using the method of section 3.2.6, we arrive at a value of

$$\mathbf{P} = 0.00042$$

for the whole sample. (This value does not exceed .0042 for any values of **P**[**-un*] within the 0.95 confidence interval.) Thus the data from phonologically unambiguous words support the rounded-vowel hypothesis for this group.

Most phonologically ambiguous words can be reconstructed without difficulty on the basis of their rhyming behavior and their *xiéshēng* connections. The reconstructions of particular rhyme words may be found in Appendix C; the *Shījīng* rhymes in **-in* and **-un* are listed in the next section.

10.1.5.4. Rhyme sequences in *-in *and* *-un

The following *Shījīng* rhyme sequences involve **-in:* 5.1A, 40.1A, 43.2A (with **-ij*), 58.4A, 93.1A (see item 3 in section 10.1.5.5 below), 104.1A, 155.1A, 169.4C (with **-ij, *-ij*), 182.3A (with **-ij*), 192.12B, 197.6A,

197.6B, 199.1A, 206.1A (with *-*e*?), 210.2A, 222.2A (with *-*ij*), 237.8A, 247.6A, 248.5A (with *-*un*), 257.4A, 261.4C, 290.1B, and 299.1A (with *-*ɨj*). Only one sequence (248.5A) appears to mix *-*ɨn* and *-*un*; it is discussed below.

The following *Shījīng* rhyme sequences involve *-*un*: 23.1A, 24.3A, 49.1A, 49.2B, 71.3B, 73.2A, 82.3B, 112.3A, 128.3A (with *-*uj*, *-*on*), 190.1A, 209.4A (with *-*an*), 237.8B, 248.5A (apparently with *-*ɨn*, but see note below), 256.2A, and 258.5A; possibly also 183.1A (with *-*uj*, *-*ɨj*?), 183.2A (with *-*uj*?), and 269.1B (with *-*in*, *-*eng*?). The sequences 183.1A and 183.2A may not be intended to rhyme, and are usually not treated as rhymes. The sequence in 269.1B is aberrant and may also not be intended as a rhyme.

10.1.5.5. Additional notes

1. Words with the phonetics 員, 分, and 云 are generally to be reconstructed with *-*ɨn*; words with the phonetics 君 and 困 are reconstructed with *-*un*.

2. I reconstruct *-*un* in

(1130) 聞 *wén* < *mjun* < **mjun* 'hear'

and the probably related

(1131) 問 *wèn* < *mjunH* < **mjuns* 'ask',

even though the modern characters 聞 and 問 have as phonetic the *-*ɨn* word

(1132) 門 *mén* < *mwon* < **mɨn* 'gate, door'.

The modern characters probably originated after **rounding diphthongization** and (possibly) ***w*-neutralization**, as pointed out in Chapter 9.

3. I assume an irregular development *-*ɨn* > *-*un* in

(1133) 存 *cún* < [*dzwon*] < **dzɨn* 'be among, exist'.

In spite of its *hékǒu* final in Middle Chinese, it should probably be reconstructed with the main vowel *-*ɨ*: 存 *cún* rhymes as *-*ɨn* in Ode 93.1A, and in other Old Chinese rhymes as well.[315] Note that according to the *Shuōwén*, the phonetic element in 存 *cún* is

(1134) 才 *cái* < *dzoj* < **dzɨ* 'material, value, talent' (Dīng Fúbǎo 1928–1932 [1976]: 6607).

The regular development would be for **dzɨn* to develop a front vowel by ***ɨ*-fronting**, becoming *dzen* > *qián*. It may have retained its back vowel because of analogy to the possibly related

(1135) 在 *zài* < *dzojX* < **dzɨʔ* 'be in, exist',

which is used as a gloss for 存 *cún* in the *Ěryǎ* (as 存 *cún* is used as a gloss for 在 *zài*).

The main vowel did become front, as expected, in words which have 存 *cún* as phonetic, such as

(1136) 荐 *jiàn* < *dzenH* < **dzɨns* 'grass, herb'.

But the *Jīngdiǎn shìwén* preserves other pronunciations for this word, too, which may illustrate the divergence of dialects on this point; in its annotations on the *Ěryǎ*, it has the following note on 荐 *jiàn*:

> [pronounced] 徂薦反 [*dzu* + *tsenH* = *dzenH*]; also 徂遜反 [*dzu* + *swonH* = *dzwonH*]; [according to] Guō 郭 [Pú 璞], 徂很反 [*dzu* + *honX* = *dzonX*] (Lù Démíng 583 [1975]: 411)

Ting Pang-hsin (1975: 220–21) comments on the peculiar behavior of 存 *cún* in rhyming of the Wèi-Jìn period (A.D. 220–420): it rhymes in his 元 Yuán category in the Wèi period (A.D. 220–265), and shifts to his 魂 Hún category in the Jìn period (A.D. 265–420). The former case is consistent with the expected regular reading *dzen*, the latter with MC *dzwon* (or perhaps *dzon* = [dzʌn]).

4. The phonetic 熏 generally indicates **-un*:

(1137) 薰 *xūn* < *xjun* < **xjun* 'to smoke' (Ode 258.5A).

It represents **-on* in

(1138) 壎 [*xūn*] < *xjwon* < **xjon* 'ocarina'.

However, the reduplicative binome 熏熏 *xūnxūn* < *xjun-xjun* rhymes with **-ɨn* words in Ode 248.5A. This is in fact the only apparent rhyme contact in the *Shījīng* between **-ɨn* and **-un* (aside from the rhyming of 存 *cún* in 93.1A; see above). Although Karlgren translates 熏熏 *xūnxūn* here as "befumed" (Karlgren 1942–1946 [1964], gloss 894), it is not clear that this expression is related to the primary meaning of 熏 *xūn*, "to smoke"; the

Máo commentary glosses it as "harmonious and joyful [hé yuè 和悅]". Perhaps the graph 熏 here results from a late modification of the text.

5. Ode 57.2B is the following rhyme sequence:[316]

倩 *qiàn* < *tshenH* 'dark red'
盼 *pàn* < *phɛnH* 'black and white in contrast'

The word 盼 *pàn* is traditionally assigned to the 文 Wén group because of its phonetic 分 *fēn* < **pjin*; if we base our reconstruction on this fact, we would reconstruct it as **phrins*. However, other evidence suggests that we should reconstruct this sequence as a rhyme in **-ins*. MC *phɛnH* could represent **phrins* or **phrens* as well as **phrɨns*. It is unclear how we should reconstruct the other word of the sequence, 倩 *qiàn* < *tshenH*: its phonetic 青 suggests **-eng*; the Middle Chinese reading *tshenH* should reflect either **-ens*, **-ins*, or **-ɨns*. But a quotation of this passage in *Lúnyǔ* 論語: *Bā yì* 八佾 appears to tip the scales in favor of reconstructing **-ins*. The *Lúnyǔ* version of this passage has an extra line, whose rhyme word is

(1139) 絢 *xuàn* < *xwenH* < **hwins* 'ornate, decorated'.[317]

Both the phonetic element of this word and its Middle Chinese reading indicate **-in*. Although the graphic evidence on the other words of the sequence is conflicting, the pronunciations preserved in the reading tradition are all consistent with a rhyme in **-in*. For this reason, I assign all three words to **-in*, the traditional 真 Zhēn group.

6. The word

(1140) 塵 *chén* < *drin* < **drjin* 'dust'

is usually assigned to the 真 Zhēn group, but I reconstruct it with **-in*. Its only *Shījīng* rhyme is in 206.1A, where the Máo text has the following rhyme sequence:

塵 *chén* < *drin* < **drjin* 'dust'
疧 *qí* < *gjie* (IV) < **gJe* 'suffering'

The word 疧 *qí* is simply glossed as "suffering [bìng 病]". This version of the text makes no sense phonologically; there are no other examples in the *Shījīng* of either **-in* or **-in* rhyming with **-e*. Dài Zhèn (cited in Xiàng Xī 1986: 348) proposed that 疧 *qí* was a scribal error for 疢, an abbreviated form of

(1141) 瘨 *mín* < *min* (III) < **mrjin* 'suffering'.

In spite of its phonetic 昏 *hūn* < **hmun*, which makes it look as if it should be reconstructed with **-un*, I reconstruct this with **-in*: it rhymes with **-in* in 257.4A, and it is also etymologically the same word as

(1142) 閔 *mǐn* < *minX* (III) < **mrjin(ʔ)* 'suffering'.

For example, the phrase

多我覯瘖
duō wǒ gòu mín
'I have seen much distress'

in Ode 257.4 is paralleled by a similar phrase with 閔 *mǐn* in Ode 26.4:

覯閔既多
gòu mǐn jì duō
'I have met with suffering in plenty'

The phonetic element in 閔 *mǐn* is the **-in* phonetic 文 *wén* < **mjin* (Dīng Fúbǎo 1928–1932 [1976]: 5340), and furthermore 閔 *mǐn* rhymes as **-in* in Ode 155.1A. (The other rhyme word in 155.1A is a *píngshēng* word, suggesting that the tone distinction between 瘖 *mín* < *min* and 閔 *mǐn* < *minX* is of late origin.)

If 疧 *qí* in 206.1 is really 瘖 ~ 閔 *mín* ~ *mǐn* < **mrjin(ʔ)*, this suggests that 塵 *chén* should also be reconstructed with **-in*. Although this is the only occurrence of 塵 *chén* as a rhyme word in the *Shījīng*, it is noteworthy that it also rhymes with **-in* words in two rhyme sequences in *Lǎozǐ*.[318]

10.1.6. The traditional 質 Zhì group

The traditional 質 Zhì group is the *rùshēng* group parallel to the 真 Zhēn group. It includes the Middle Chinese finals listed in Table 10.40.

Table 10.40. Middle Chinese finals of the traditional 質 Zhì group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
II	*-(w)ɛt*	*-(w)ăt*	黠 Xiá (Hɛt)	(in part)
III	*-(j)(w)it*	*-i̯(w)ĕt*	質 Zhì (Tsyit)	(in part)
	(TSr)it	*-i̯ɛt*	櫛 Zhì (Tsrit)	(in part) *TSr-* only
IV	*-(w)et*	*-i(w)et*	屑 Xiè (Set)	(in part)

These finals are accounted for in my system by reconstructing **-it*. I also include in the **-it(s)* group *qùshēng* words which show rhyming, *xiéshēng*, or etymological connections with **-it*; the evolution of these finals is summarized below. Since original **-its* became **-ijs* by **final cluster simplification**, the distinction between original **-its* and **-ijs* is difficult to recover in some cases.

Like the 真 Zhēn group, the 質 Zhì group has division-IV finals but no division-I finals, and all cases of *hékǒu* can be attributed to rounded initials. A few words in this group have a velar coda *-k* in Middle Chinese, and in at least some cases it is likely that this *-k* is original. For example,

(1143) 即 *jɨ́* < *tsik* < **tsjik* 'approach'

rhymes with **-it* words in 89.2A, 99.1A, and 250.6D. This character is phonetic in

(1144) 節 *jié* < *tset* < **tsit* < **tsik* 'joint or section of bamboo',

which may be compared with Tibeto-Burman **tsik* 'joint' (Benedict 1972: 27–28). Probably there are other apparent cases of **-it* which are really **-ik*, but the distinction is often not recoverable from Chinese data alone.

10.1.6.1. The reconstruction of the *-it(s) *group*

After nonlabialized initials, **-it* developed as shown in Table 10.41.[319]

Table 10.41. Development of **-it* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-it*	all	*-et*	**-iet*	**-it*	**-ɔ́c*
**-rit*	all	*-ɛt*	—	**-rit*	**-ʳɔ́c*
**-jit*	grave	*-jɨt* (IV)	**-i̯ĕt*	**-jit*	**-ɔ̀c*
	acute	*-it*	**-i̯ĕt*	**-jit*	**-ɔ̀c*
**-rjit*	grave	*-it* (III)	**-i̯ĕt*	**-jit*	**-ʳɔ̀c*
	acute	*-it*	**-i̯ĕt*	**-rjit*	**-ʳɔ̀c*

Syllables with labialized initials, which are parallel, developed as shown in Table 10.42. The corresponding developments for syllables with **-its*, which merged with **-ijs*, are summarized in Tables 10.43 and 10.44 (compare Tables 10.55 and 10.56 below).

Table 10.42. Development of **-it* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}it*	*Kwet*	**Kiwet*	**Kwit*	**K^{w}ə́c*
**K^{w}rit*	*Kwɛt*	—	**Kwrit*	**K^{w}rə́c*
**K^{w}jit*	*Kjwit* (IV)	**Kɨwĕt*	**Kwjit*	**K^{w}ə̀c*
**K^{w}rjit*	*Kwit* (III)	**Kɨwĕt*	**Kwjit*	**K^{w}rə̀c*

Table 10.43. Development of **-its* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-its*	all	*-ejH*	**-ied*	**-idh*	**-ə́cs*
**-rits*	all	*-ɛjH*	**-ĕd*	**-ridh*	**-^{r}ə́cs*
**-jits*	grave	*-jɨjH* (IV)	**-ɨĕd*	**-jidh*	**-ə̀cs*
	acute	*-ijH*	**-ɨĕd*	**-jidh*	**-ə̀cs*
**-rjits*	grave	*-ijH* (III)	**-ɨĕd*	**-jidh*	**-^{r}ə̀cs*
	acute	*-ijH*	**-ɨĕd*	**-rjidh*	**-^{r}ə̀cs*

Table 10.44. Development of **-its* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}its*	*KwejH*	**Kiwed*	**Kwidh*	**K^{w}ə́cs*
**K^{w}rits*	*Kwɛjh*	**Kwĕd*	**Kwridh*	**K^{w}rə́cs*
**K^{w}jits*	*KjwijH* (IV)	**Kɨwĕd*	**Kwjidh*	**K^{w}ə̀cs*
**K^{w}rjits*	*KwijH* (III)	**Kɨwĕd*	**Kwjidh*	**K^{w}rə̀cs*

As in other front-vowel groups, my reconstruction predicts the existence of both division-III and division-IV *chóngniǔ* finals in this group, and there are a number of good examples, including the following pair:

(1145) 蜜 *mì* < *mjit* (IV) < **mjit* 'honey' (found in *Chǔcí* 楚詞)

(1146) 密 *mì* < *mit* (III) < **mrjit* (< **Nprjit*?) 'dense'.

The **r* in this last is supported by the synonymous and possibly related word

(1147) 栗 *lì* < *lit* < **C-rjit* 'dense, compact'.

Another contrasting pair is the following:

(1148) 必 *bì* < *pjit* (IV) < **pjit* 'must'

(1149) 柲 *bì* < *pit* (III) < **prjit* 'handle, lath', also read *bì* < *pijH* (III) < **prjits*.

Most reconstructions simply treat such contrasts as irregular (e.g. Li Fang-kuei 1971 [1980]: 64).

The evidence bearing on the reconstruction of OC **-ik* is scanty, but I tentatively reconstruct the following developments:

**-ik* > *-ek* ~ *-et*
**-(r)jik* > *-ik* ~ *-it*.

Except for the reconstruction of **-ik*, and the inclusion of *qùshēng* words with connections to **-it*, which some scholars include in the 脂 Zhī group, my reconstruction does not conflict with the traditional analysis of this group, so I will not discuss its rhyming further.

Additional examples of *-it(s)

(1150) 結 *jié* < *ket* < **kit* (< **kik*?) 'tie'

Compare Tibetan *'khyig-pa* 'to bind' (Coblin 1986: 150).

(1151) 髻 *jì* < *kejh* < **kits* (< **kiks*?) 'chignon, hair-knot'

(1152) 血 *xiě* ~ *xuè* < *xwet* < **hwit* 'blood'

(1153) 黠 *xiá* < *hɐt* < **grit* 'shrewd'

(1154) 吉 *jí* < *kjit* (IV) < **kJit* 'auspicious'

(1155) 一 *yī* < *ʔjit* (IV) < **ʔjit* 'one'

(1156) 日 *rì* < *nyit* < **njit* 'sun, day'

(1157) 至 *zhì* < *tsyijH* < **tjits* 'arrive'

(1158) 室 *shì* < *syit* < **stjit* 'house, hall'

10.1.7. The traditional 物 Wù group

The traditional 物 Wù group is the *rùshēng* counterpart to the 文 Wén group. The Middle Chinese finals traditionally included in this group are listed in Table 10.45.

Table 10.45. Middle Chinese finals of the traditional 物 Wù group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-(w)ot*	*-(u)ət*	没 Mò (Mwot)	
II	*-(w)ɛt*	*-(w)ăt*	黠 Xiá (Hɛt)	(in part)
III	*-jɨt*	*-i̯ət*	迄 Qì (Xjɨt)	grave only
	-jut	*-i̯uət*	物 Wù (Mjut)	grave only
	-(w)it	*-i̯(w)ĕt*	質 Zhì (Tsyit)	(in part)
	(TSr)it	*-i̯ɛt*	櫛 Zhì (Tsrit)	(in part) *TSr-* only
IV	*-(w)et*	*-i(w)et*	屑 Xiè (Set)	(in part) acute only

Just as division-I *-on* and division-IV *-en* are in complementary distribution in the 文 Wén group, so *-ot* and *-et* are in complementary distribution in the 物 Wù group. Thus this group can be reconstructed with back vowels only; the Middle Chinese front vowels in finals like *-et* result from secondary developments. Good examples of *-et* in the 物 Wù group are actually not easy to find; an apparent example is the second syllable of

(1159) 饕餮 *tāotiè* < *thaw-thet* < **thaw-thɨt* 'glutton'.

There are, however, contrasts between *kāikǒu* and *hékǒu* finals after acute initials in this group, so we must reconstruct both *-*ɨt* and *-*ut* according to the rounded-vowel hypothesis.

The corresponding *qùshēng* finals *-*ɨts* and *-*uts* merged with *-*ɨjs* and *-*ujs* respectively as a result of **final cluster simplification**; but *-*ɨts* and *-*uts* can usually be distinguished from *-*ɨjs* and *-*ujs* on the basis of *xiéshēng* connections and likely etymological relationships. I will refer to *-*ɨt* and *-*ɨts* as the *-*ɨt(s)* group, and to *-*ut* and *-*uts* as the *-*ut(s)* group. Since the *Shījīng* already shows evidence of the merger of *-*ps* with *-*ts*, when discussing rhymes I include *-*ɨps* in the *-*ɨt(s)* group and *-*ups* in the *-*ut(s)* group.

10.1.7.1. The reconstruction of the *-ɨt(s) *group*

After nonlabialized initials, finals in *-*ɨt* developed as shown in Table 10.46. Syllables with labialized initials, which are parallel, are shown in Table 10.47.

Table 10.46. Development of **-ɨt* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ɨt*	**K-*	*-ot*	**-ət*	**-ət*	**-ə́t*
	**P-*	*-wot*	**-wət*	**-ət*	**-ə́t*
	acute	*-et*	**-iət*	**-iət*	**-(ʲ)ə́t* (?)
**-rɨt*	all	*-ɛt*	**-ɛt*	**-r(i)ət*	**-ʳə́t*
**-jɨt*	**K-*	*-jɨt*	**-i̯ət*	**-jət*	**-ə̀t*
	**P-*	*-jut*	**-i̯wət*	**-jət*	**-ə̀t*
	acute	*-it*	**-i̯ət*	**-jiət*	**-ə̀t*
**-rjɨt*	grave	*-it* (III)	**-i̯ɛt*	**-jïət*	**-ʳə̀t*
	acute	*-it*	**-i̯ət*	**-rjiət*	**-ʳə̀t*

Table 10.47. Development of **-ɨt* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**Kʷɨt*	*Kwot*	**Kwət*	**Kwət*	**Kʷə́t*
**Kʷrɨt*	*Kwɛt*	**Kwɛt*	**Kwrət*	**Kʷrə́t*
**Kʷjɨt*	*Kjut*	**Ki̯wət*	**Kwjət*	**Kʷə̀t*
**Kʷrjɨt*	*Kwit* (III)	**Ki̯wɛt*	**Kwjiət*	**Kʷrə̀t*

The corresponding *qùshēng* finals in **-ɨts*, which merged with **-ɨjs*, developed as shown in Tables 10.48 and 10.49 (compare Tables 10.57 and 10.58 below).

Table 10.48. Development of **-ɨts* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ɨts*	**K-*	*-ojH*	**-əd*	**-ədh*	**-ə́ts*
	**P-*	*-wojH*	**-wəd*	**-ədh*	**-ə́ts*
	acute	*-ejH*	**-iəd*	**-iədh*	**-(ʲ)ə́ts* (?)
**-rɨts*	all	*-ɛjH*	**-ɛd*	**-r(i)ədh*	**-ʳə́ts*
**-jɨts*	grave	*-jɨjH*	**-i̯əd*	**-jədh*	**-ə̀ts*
	acute	*-ijH*	**-i̯əd*	**-jiədh*	**-ə̀ts*
**-rjɨts*	grave	*-ijH* (III)	**-i̯ɛd*	**-jiədh*	**-ʳə̀ts*
	acute	*-ijH*	**-i̯əd*	**-rjiədh*	**-ʳə̀ts*

Table 10.49. Development of **-it̲s* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}it̲s*	*KwojH*	**Kwəd*	**Kwədh*	**K^{w}ə́ts*
**K^{w}rit̲s*	*KwɐjH*	**Kwɐd*	**Kwrədh*	**K^{w}rə́ts*
**K^{w}jit̲s*	*KjwijH*	**Kɨwəd*	**Kwjədh*	**K^{w}ə̀ts*
**K^{w}rjit̲s*	*KwijH* (III)	**Kɨwɐd*	**Kwjiədh*	**K^{w}rə̀ts*

Examples of **-it̲(s)*

(1160) 愛 *ài* < *ʔojH* < **ʔit̲s* 'to love, to grudge'

(1161) 逮 *dài* < *dojH* ~ *dejH* < **(g-)lit̲s* (< **(g-)lit̲ps*) 'to come to, reach, come forward'

(1162) 棣 *dì* < *dejH* < **lit̲s* (< **lit̲ps*) 'wild plum'

Note that in the last two examples we have both MC *dojH* and *dejH* from original **lit̲ps* (or **(g-)lit̲ps*). I attribute this to dialect divergence in the application of the change ***i̲-fronting**: the reading *dejH* probably reflects a dialect in which ***i̲-fronting** followed ****-ps* > **-ts***, resulting in a development **lit̲ps* > **lit̲s* > **lits* > *dejH*; the reading *dojH* would represent a dialect in which ***i̲-fronting** either preceded ****-ps* > **-ts*** or failed to occur at all. For further discussion, see sections 10.1.7.5 and 10.3.4.

(1163) 溉 *gài* < *kojH* < **kit̲s* 'to rinse, wash'

(1164) 妹 *mèi* < *mwojH* < **mit̲s* 'younger sister'

(1165) 謂 *wèi* < *hjwijH* < **wjit̲s* 'to say; call, be called'

(1166) 位 *wèi* < *hwijH* < **wrjit̲s* < **(w)rjit̲ps* 'position, standing'

The phonology of this last example is puzzling; see discussion below.

(1167) 埶 *xì* < *xjijH* < **xjit̲s* 'to take'

(1168) 肄 *yì* < *yijH* < < **ljit̲s* (< **ljit̲ps*) 'toil; a shoot'

10.1.7.2. The reconstruction of the *-ut(s) *group*

Syllables in **-ut* with nonlabial initials developed as shown in Table 10.50.

Table 10.50. Development of **-ut* after nonlabial initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ut*	all	*-wot*	**-wət*	**-ət*	**-^{w}ə́t*
**-rut*	all	*-wɛt*	**-wɛt*	**-rət*	**-^{rw}ə́t*
**-jut*	grave	*-jut*	**-i̯wət*	**-jət*	**-^{w}ə̀t*
	acute	*-wit*	**-i̯wət*	**-jət*	**-^{w}ə̀t*
**-rjut*	grave	*-wit* (III)	**-i̯wɛt*	**-jiət*	**-^{rw}ə̀t*
	acute	*-wit*	**-i̯wət*	**-rjət*	**-^{rw}ə̀t*

In syllables with labial initials, the *-w-* of the finals above was lost or became nondistinctive through ***w-neutralization**; for example, I assume that

(1169) 筆 *bǐ* < *pit* < **prjut* 'writing pencil'

developed as follows: **prjut* > **prjwit* (**rounding diphthongization**) > **prjit* (***w-neutralization**) > *pit* (***r-color**, ***r-loss**).

The *qùshēng* syllables in **-uts* (which merged with **-ujs*) are parallel; they developed as shown in Table 10.51 (compare Table 10.59 below).

Table 10.51. Development of **-uts* after nonlabial initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-uts*	all	*-wojH*	**-wəd*	**-ədh*	**-^{w}ə́ts*
**-ruts*	all	*-wɛjH*	**-wɛd*	**-rədh*	**-^{rw}ə́ts*
**-juts*	grave	*-jwijH*	**-i̯wəd*	**-jədh*	**-^{w}ə̀ts*
	acute	*-wijH*	**-i̯wəd*	**-jədh*	**-^{w}ə̀ts*
**-rjuts*	grave	*-wijH* (III)	**-i̯wɛd*	**-jiədh*	**-^{rw}ə̀ts*
	acute	*-wijH*	**-i̯wəd*	**-rjədh*	**-^{rw}ə̀ts*

As with **-ut*, I assume that in labial-initial syllables, *-w-* was lost or became nondistinctive through ***w-neutralization**.

Additional examples of OC **-ut(s)*

(1170) 忽 *hū* < *xwot* < **hmut* 'careless, confused' (possibly related to 昏 *hūn* < *xwon* < **hmun* 'dark, benighted, stupid')

(1171) 潰 [*kuì*] < *hwojH* < **guts* 'energetic; turbulent, violent'

(1171) 悖 *bèi* < *bwojH* < **buts* 'be disorderly, silly'

(1172) 沒 *mò* < *mwot* < **mut* 'make an end, disappear, exhaust'

(1173) 内 *nèi* < *nwojH* < **nuts* < **nups* 'inside'

(1174) 退 *tuì* < *thwojH* < **hnuts* < **hnups* '(go in:) withdraw, retire'

(1175) 出 *chū* < *tsyhwit* < **thjut* 'to come out, go out, go away', also read *chuì* < *tsyhwijH* < **thjuts* 'to bring out, send out'

(1176) 慁 [*duì*] < *drwijH* < **g-ljuts* < **g-ljups* 'to cause resentment'

(1177) 芾 *fú* < *pjut* < **pjut* 'ceremonial apron'

(1178) 律 *lǜ* < *lwit* < **b-rjut* 'row; pitchpipe'

(1179) 述 *shù* < *zywit* < **Ljut* 'proceed, pass on, transmit'

(1180) 率 *shuài* < *srwijH* < **srjuts* 'to lead', also read *srwit* < **srjut*

(1181) 物 *wù* < *mjut* < **mjut* 'category; thing'

(1182) 卒 *zú* < *tswit* < **tsjut* < **Stjut* 'finish, end, exhaust'

(1183) 醉 *zuì* < *tswijH* < **tsjuts* 'drunk'

10.1.7.3. The rhyming of *-ɨt(s) *and* *-ut(s)

Shījīng rhyming shows that **-ɨt(s)* and **-ut(s)* are distinguished in phonologically unambiguous syllables, confirming the proposed reconstruction. However, as in the case of the **-at(s)*, **-et(s)*, and **-ot(s)* groups, it is often difficult to reconstruct phonologically ambiguous forms with confidence. Some of these problems may be due to textual corruption; others probably represent diverse dialect developments, especially different treatments of vowels before original **-ps*.

We may use the following criteria to identify phonologically unambiguous cases of **-ɨt(s)* and **-ut(s)* in this group:

1. *Kāikǒu* words are unambiguously **-ɨt(s)*, except for words with labial initials.
2. *Hékǒu* words with acute initials are unambiguously **-ut(s)*, except for words with initials of type *TS-* or *TSr-*, which could reflect clusters with labiovelars.

The rhyme occurrences of unambiguous **-ɨt(s)* and **-ut(s)* words are tabulated in Table 10.52 below.[320]

Table 10.52. Rhyme occurrences of unambiguous **-it(s)* and **-ut(s)* words

	rù	*qù*
**-it(s)* tokens	1	13
**-ut(s)* tokens	5	13
total tokens	6	26
P[**-it(s)*]	0.167	0.500
P[**-ut(s)*]	0.833	0.500

The *Shījīng* rhyme sequences involving unambiguous **-it(s)* and **-ut(s)* words are tabulated by tone group and length of sequence in Table 10.53.[321]

Table 10.53. Rhyme sequences involving unambiguous **-it(s)* and **-ut(s)* words

tone	sequence length	total sequences	**-it(s)*	**-ut(s)*	mixed
rù	2	1	0	1	0
qù	2	5	3	2	0
	4	1	0	1	0

As Table 10.53 shows, there is no mixing of unambiguous **-ut(s)* and unambiguous **-it(s)*. Even though the sample is rather small, the rhyming separation is statistically significant: the probability of getting such a result by chance is

P = 0.0028.

(This value does not exceed 0.015 anywhere in the 0.95 confidence intervals for **P**[**-it*] and **P**[**-its*].) We may conclude that there is a significant tendency for **-it(s)* and **-ut(s)* to rhyme separately in phonologically unambiguous syllables.

10.1.7.4. Rhyme sequences in *-it(s) *and* *-ut(s)

The following *Shījīng* rhyme sequences involve **-it(s)* (irregular sequences are discussed below): 10.2A (with **-it(s)*), 20.3A, 35.6B (with **-ut(s)*?), 132.3A (with **-ut(s)*?), [178.1C, 2C, 3B (with **-ut(s)*?)], 228.4A, 236.5A, 241.8C (with **-ut(s)*), 249.4B, 251.3A, and 257.6B.

The following *Shījīng* rhyme sequences involve **-ut(s)*: 29.4A, possibly 35.6B (with **-it(s)*?), 60.1B–2B (with **-it(s)*?), 65.2B (with **-it(s)*), 132.3A

(with **-it(s)*), 141.2A, 151.1A (with **-ot(s)*), 151.4A (with **-ops*), 168.2B (with **-ot(s)*?), 178.1C, 2C, 3B (with **-ips*?), 194.4A (with **-o/up*), 194.5A, 202.2A, 202.6A, 232.2A, 241.3B (with **-it(s)*), 241.8C (with **-it(s)*), 245.4C (with **-ot(s)*), 247.5B, 255.3A, 257.13A, and 264.5D.

10.1.7.5. Additional notes

Although no phonologically unambiguous words of this group appear in mixed rhymes, there are a number of irregular sequences involving ambiguous words; while some of these probably result from errors in transmission of the text, others probably involve either imperfect rhymes or phonological differences among dialects. Aside from rhymes between **-ut(s)* and **-ot(s)* (a common phenomenon we have already mentioned), the main types are discussed below.

Rhymes mixing **-ut(s)* or **-it(s)* with **-it(s)*

The sequences of this type are 10.2A, 60.1B–2B, 65.2B, and 241.3B. These are exceptions to the traditional rhyming analysis as well as to the analysis proposed here, since they involve crossovers between the traditional 物 Wù and 質 Zhì groups.[322] Nevertheless, we should note that the irregularity in 60.1B–2B may result from a late change in the text. The Máo version has the following sequence:

遂 *suì* < *zwijH* < **zjuts* 'jade insignium'
悸 *jì* < *gjwijH* (IV) < **g^{w}jits* 'hanging down'

But the Hán version, instead of 悸 *jì*, had

(1184) 萃 [*cuì*][323] < *dzwijH* < **dzjuts* (possibly < **dzjups*?) 'hanging down'

which would rhyme regularly with 遂 **zjuts* (see Karlgren 1942–1946 [1964], gloss 191).

The other three rhyme sequences, 10.2A, 65.2B and 241.3B, seem to be genuine irregularities. It is noteworthy that Ode 241 contains several irregular rhymes and may have suffered textual corruption.

Rhymes mixing **-it(s)* and **-ut(s)*

There are four rhyme sequences which could represent rhyming between **-it(s)* and **-ut(s)* as I have reconstructed them, and thus count as potential evidence against the rounded-vowel hypothesis: they are 35.6B, 132.3A, 178.1C–3C, and 241.8C. The sequence in 241.8C is simply irregular, and I have no further explanation for it. The other cases call for some further discussion, however.

The rhyme words of sequence 35.6B are

潰 [*kuì*] < *hwojH* < **guts* 'violent' (line 5)
肆 *yì* < *yijH* < **ljɨts* < **ljɨps* 'toil' (?) (line 6)
墜 *xì* < *xjijH* < **xjɨts* 'rest' (line 8)

I reconstruct the first word with **-uts* because of its phonetic:

(1185) 貴 *guì* < *kjwɨjH* < **kjuts* 'precious, expensive' (cf. Tibetan *gus-po* 'costly, expensive, dear', *gus-pa* 'respect, reverence', cited in Coblin 1986: 121)

It is, of course, possible that the character is of late origin, and that the word was actually **g^{w}ɨts*. But in any case, this word is in an odd-numbered line; a glance at the poem will show that it is not necessary to assume that this word is part of the rhyme.

The sequence 132.3A is as follows:

棣 *dì* < *dejH* < **lɨps* 'wild plum'
檖 *suì* < *zwijH* < **zjuts* 'pear tree'
醉 *zuì* < *tswijH* < **tsjuts* 'drunk'

Here there is no doubt that all three words are intended as rhymes. I suspect that the irregularity may have something to do with divergent dialect developments of syllables with labial codas. A coda **-p* is reconstructed in 棣 *dì* because of the phonetic

(1186) 隶 ~ 逮 *dài* < *dojH* < **(g-)lɨps* 'reach to',

which is interchangeable in early writing with the unsuffixed form

(1187) 眾 [*tà*] < *dop* < **(g-)lɨp* 'reach to'.

The Middle Chinese reading tradition preserves several pronunciations for 棣 *dì*. The *Guǎngyùn* gives only the reading *dejH*, but the *Jīngdiǎn shìwén* gives also a pronunciation *dwojH* (attributed to the *Zìlín* 字林, a character dictionary of the Jìn period, cited in the note to Ode 24) and a pronunciation

dojH for the phrase 棣棣 'perfect' in Ode 26.3 (a loan for 逮 *dài* < *dojH* < ***lịps***). The pronunciation *dejH* could represent a dialect where ***i*-fronting** followed the assimilation ***-ps* > *-ts***: ***lịps* > *lits* > *lits* > *dejH***. In a dialect where ***i*-fronting** either preceded ***-ps* > *-ts*** or failed to occur at all, we would have ***lịps* > *lits* > *lijH* > *dojH***. Finally, the *hékǒu* pronunciation *dwojH* could represent a dialect where back vowels became rounded before labial codas: ***lịps* > *lups* > *luts* > *dwojH***.[324]

A similar rounding of vowels before labial codas could be responsible for the following exceptional sequence occurring in each stanza of Ode 178:

粒 *lì* < *lijH* < **C-rjịps* 'to arrive'
率 *shuài* < *srwit* ~ *srwijH* < **srjut(s)* 'to lead'

There is some doubt whether this sequence is a rhyme, but I suspect that it is. The pronunciation *lijH* would imply **C-rjịps* (or conceivably **C-rjips*), but the *Jīngdiǎn shìwén* gives an alternate pronunciation *lwijH*, implying **C-rjups*; this could represent a dialect which rounded back vowels before labial codas, deriving **C-rjups* from original **C-rjịps*.[325] The influence of such a dialect could also be a factor in the puzzling pronunciation of

(1188) 位 *wèi* < *hwijH* < **(w)rjịps* (perhaps from a form like **rjups*, a dialect form of **rjịps*?) 'standing, position'.

It has long been clear that this word is related to

(1189) 立 *lì* < *lip* < **C-rjịp* 'to stand' (cf. Tibeto-Burman **g-ryap* 'stand', Benedict 1972: 57),

but their exact phonological relationship remains unclear.[326]

10.1.8. The traditional 脂 Zhī and 微 Wēi groups

In an important and influential paper (1937), Wáng Lì proposed that the traditional rhyme group which Jiāng Yǒugào had given the label 脂 Zhī should be split into two groups: a 脂 Zhī group, reconstructed with a front vowel, and a 微 Wēi group, reconstructed with a nonfront vowel.[327] This proposal has been generally accepted by later scholars.[328] Generally speaking, Wáng's 脂 Zhī group corresponds to my **-ij*, and his 微 Wēi group corresponds to my **-ịj* and **-uj*; but since I argue that Wáng Lì did not draw the boundary between 脂 Zhī and 微 Wēi quite correctly, I will discuss these two traditional groups together.

My reconstruction involves two major modifications of Wáng Lì's proposal: (1) that some of the words which he assigned to the 脂 Zhī group actually belong in the 微 Wēi group; and (2) that the 微 Wēi group should be divided into an **-ɨj* group and an **-uj* group in accordance with the rounded-vowel hypothesis.[329]

Jiāng Yǒugào's original 脂 Zhī group included words with the Middle Chinese finals listed in Table 10.54.[330]

Table 10.54. Middle Chinese finals of Jiāng Yǒugào's 脂 Zhī group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-oj*	*-ậi*	咍 Hāi (Xoj)	(in part) *K-* only
	-woj	*-uậi*	灰 Huī (Xwoj)	(in part)
II	*-(w)ɛj*	*-(w)ǎi*	皆 Jiē (Kɛj)	(in part)
III	*-j(w)ɨj*	*-(w)ɐi*	微 Wēi (Mjɨj)	grave only
	-(w)ij	*-(w)i*	脂 Zhī (Tsyij)	
	-j(w)e	*-(w)iɐ*	支 Zhī (Tsye)	(in part)
IV	*-(w)ej*	*-i(w)ei*	齊 Qí (Dzej)	(in part)

Note that this group includes contrasts between division-I *-oj* and division-IV *-ej*, such as the following minimal pair:

(1190) 豈 *kǎi* < *khojX* < **khɨj?* 'joyous'

(1191) 稽 *qǐ* < *khejX* < **khij?* 'bow the head'

According to the front-vowel hypothesis, this means we must reconstruct a contrast between front and back vowels. This is basically in agreement with Wáng Lì's proposal to split the group into two: generally, it is the front-vowel words (in **-ɨj*) that Wáng Lì assigned to the 脂 Zhī group, and the back vowel words that he assigned to the 微 Wēi group.

It will also turn out to be necessary to reconstruct a rounding contrast for nonfront vowels, to account for such contrasts as the following:

(1192) 妻 *qī* < *tshej* < *tshɨj* 'wife'

(1193) 崔 *cuī* < *tshwoj* < **tshuj* '(place-name)'

Accordingly, I reconstruct **-ɨj* and **-uj* in the traditional 微 Wēi group.[331]

Wáng Lì proposed criteria for distinguishing 脂 Zhī from 微 Wēi that were based almost entirely on Middle Chinese pronunciation. Among

words from Jiāng Yǒugào's original 脂 Zhī group, Wáng Lì proposed the following:

1. All words with the finals *-(w)ej*—the *Guǎngyùn*'s 齊 Qí (Dzej) rhyme—were assigned to the 脂 Zhī group.
2. All words with the finals *-(w)oj* or *-j(w)ɨj*—the *Guǎngyùn*'s 灰 Huī (Xwoj), 哈 Hāi (Xoj), and 微 Wēi (Mjɨj) rhymes—were assigned to the 微 Wēi group.
3. The *Guǎngyùn* rhymes 脂 Zhī (Tsyij) and 皆 Jiē (Kɛj) included words from both groups: *Kāikǒu* words from these rhymes (MC *-(j)ij* and *-ɛj*) were assigned to the 脂 Zhī group, and *hékǒu* words (MC *-(j)wij* and *-wɛj*) were assigned to the 微 Wēi group. (Exception: words with the phonetics 癸 *guǐ* < *kjwijX* (IV) and 季 *jì* < *kjwijH* (IV) were to be assigned to the 脂 Zhī group even though they were *hékǒu*.)[332]

Wáng Lì used *Shījīng* rhyme evidence to support this proposal: he found that out of somewhat over a hundred *Shījīng* rhyme sequences, 脂 Zhī and 微 Wēi words, as defined by these criteria, rhymed separately about three-fourths of the time.[333]

Dǒng Tónghé basically supported Wáng Lì's proposal, but supplemented and revised it on the basis of *xiéshēng* evidence. While Dǒng accepted criteria 1 and 2 above, he proposed modifying criterion 3, arguing that words from the 脂 Zhī (Tsyij) and 皆 Jiē (Kɛj) rhymes (MC *-(j)(w)ij* and *-(w)ɛj*) should be assigned to one group or the other according to their *xiéshēng* connections, not just according to whether they are *kāikǒu* or *hékǒu* (1944 [1948]: 67–72).

One of the recognized advantages of Wáng Lì's proposal is that it removed a gap in the traditional rhyme analysis. As we have seen, traditional rhyme groups can be grouped into the three categories *yīn, yáng,* and *rù* depending on their Middle Chinese codas: *yīnshēng* words have vocalic codas, *yángshēng* words have nasal codas, and *rùshēng* words have voiceless stop codas. There is a general parallelism among the three types, so that the *yīnshēng* category 魚 Yú (OC **-a*) corresponds to the *yángshēng* category 陽 Yáng (OC **-ang*) and the *rùshēng* category 鐸 Duó (OC **-ak*). But in Jiāng Yǒugào's analysis, the single *yīnshēng* group 脂 Zhī corresponded to two different *yángshēng* groups: 真 Zhēn (generally reconstructed with a front vowel) and 文 Wén (generally reconstructed with a back vowel). Splitting Jiāng Yǒugào's 脂 Zhī group as Wáng Lì did makes a more symmetrical system: 脂 Zhī is then the front-vowel *yīnshēng* group correspond-

ing to the front-vowel *yángshēng* rhyme group 真 Zhēn, and 微 Wēi becomes the nonfront *yīnshēng* group corresponding to the nonfront *yángshēng* rhyme group 文 Wén.

However, as Wáng Lì defined these groups, the *yīnshēng-yángshēng* parallelism is still not complete. It has long been recognized that the Middle Chinese division-IV final *-en* can come from either the 真 Zhēn group (my **-in*) or the 文 Wén group (my **-in*):[334]

(1194) 田 *tián* < *den* < **din* 'cultivated land'

(1195) 先 *xiān* < *sen* < **sin* 'first'

In my system, the nonfront vowel **i* in words like 先 *xiān* < **sin* is fronted by a process of ***i-fronting**; in the systems of Karlgren and Li, 先 *xiān* is reconstructed with the final **-iən*, and the fronting is attributed to the influence of the "strong vocalic" medial **i*.

Similarly, it is well known that MC *-in* can come from either the 真 Zhēn group or the 文 Wén group, as in the following minimal contrast:

(1196) 真 *zhēn* < *tsyin* < **tjin* 'real'

(1197) 振 *zhēn* < *tsyin* < **tjin* 'numerous; majestic'

This merger is also due to ***i-fronting**.

If 脂 Zhī and 微 Wēi really are parallel to 真 Zhēn and 文 Wén, then just as *-en* and *-in* come from both 真 Zhēn and 文 Wén, we would expect *-ej* and *-ij* to come from both 脂 Zhī and 微 Wēi. But Wáng Lì's criteria above assign all cases of *-ej* and *-ij* to the 脂 Zhī group, and none to the 微 Wēi group.[335]

But there are in fact some words in MC *-ej* and *-ij* which rhyme regularly as **-ij* in the *Shījīng*, and thus figure prominently in Wáng Lì's list of exceptional rhymes which mix the 脂 Zhī and 微 Wēi categories as he defined them. For example, the word

(1198) 躋 *jī* < *tsej* < **tsij* 'ascend',

which Wáng Lì assigns to the 脂 Zhī group because of its Middle Chinese final *-ej*, rhymes three times in the *Shījīng* (129.2A, 189.4B, and 304.3A); in all three cases, it rhymes with words which Wáng Lì assigns (correctly) to the 微 Wēi group, so he listed all three sequences as irregular.[336] In fact, 躋 *jī* is a 微 Wēi group word too, and these rhymes can be regarded as regular. We can reconstruct 躋 *jī* as **tsij*, parallel to words like 先 *xiān* < **sin* in the 文 Wén group: in both cases, Middle Chinese front vowels develop from original **i* by ***i-fronting**.

Similarly, Wáng Lì assigned

(1199) 遲 *chí* < *drij* < **drjɨj* 'delay'

to the 脂 Zhī group by his criterion 3, because it is a *kāikǒu* word of the 脂 Zhī (Tsyij) rhyme. But this word should also be reconstructed with **-ɨj*, as the *Shījīng* rhymes show. I identify nine *Shījīng* rhyme sequences in which 遲 *chí* appears. Of these, Wáng Lì listed four as irregular (168.6A, 209.5C, 300.1A, and 304.3A); he divided two into shorter sequences so that they conform to his categories (154.2C, 167.6A); he argued that 遲 *chí* was not intended as a rhyme in one (35.2A); he treated one as a regular 脂 Zhī-group rhyme (138.1A[337]); and one is not mentioned at all (162.1A). If we reconstruct 遲 with **-ɨj*, as *chí* < *drij* < **drjɨj*, then it is parallel to 文 Wén-group words like 辰 *chén* < *dzyin* < **djɨn* 'time' or 塵 *chén* < *drin* < **drjɨn* 'dust', and all its rhymes become regular. Modifying Wáng Lì's proposal in this way both improves the symmetry of the reconstruction system and reduces the number of apparent irregularities in *Shījīng* rhymes.[338]

Instead of Wáng Lì's criteria, then, I propose the following:

1. Within Jiāng Yǒugào's 脂 Zhī group, words with the Middle Chinese finals *-(w)oj* or *-j(w)ɨj* must reflect **-ɨj* or **-uj*, and are assigned to the 微 Wēi group. (This is the same as Wáng Lì's criterion 2.)
2. Grave-initial syllables in *-(w)ej* or *-j(w)ij* (IV) must reflect **-ij*, and are assigned to the 脂 Zhī group.
3. Acute-initial words with *hékǒu* finals generally reflect **-uj*, and thus are assigned to the 微 Wēi group. (Possible exceptions include words with *TS-* or *TSr-* initials, which could reflect a cluster of metathesizing **S-* with **K*^{w}- initials, and words like 維 *wéi* < *ywij* < **wjij* 'bind', where initial **w-* has been palatalized.)
4. All other words in Jiāng Yǒugào's 脂 Zhī group are phonologically ambiguous and must be reconstructed on the basis of evidence other than Middle Chinese pronunciation—primarily *Shījīng* rhymes and *xiéshēng* evidence.

The number of words in the last category is rather large, and although many of these words (such as 躋 *jī* and 遲 *chí*) may be reconstructed with confidence on the basis of their numerous rhymes, others which rhyme less often are less certain. Some of these problems are discussed in the notes section below. The following sections summarize the reconstructions of finals in **-ij*, **-ɨj*, and **-uj*.

10.1.8.1. The reconstruction of the *-ij *group*

After nonlabialized initials, OC **-ij* developed as shown in Table 10.55. Syllables with labialized initials, which are parallel, developed as shown in Table 10.56.

Table 10.55. Development of **-ij* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ij*	all	*-ej*	**-iər*	**-id*	**-ə́j*
**-rij*	all	*-ɛj*	**-ɛr*	**-rid*	**-ʳə́j*
**-jij*	grave	*-jij* (IV)	**-i̯ər, *-i̯ɛr*	**-jid*	**-ə̀j*
	acute	*-ij*	**-i̯ər*	**-jid*	**-ə̀j*
**-rjij*	grave	*-ij* (III)	**-i̯ɛr*	**-jid*	**-ʳə̀j*
	acute	*-ij*	**-i̯ər*	**-rjid*	**-ʳə̀j*

Table 10.56. Development of **-ij* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**Kʷij*	*Kwej*	**Kiwər*	**Kwid*	**Kʷə́j*
**Kʷrij*	*Kwɛj*	**Kwɛr*	**Kwrid*	**Kʷrə́j*
**Kʷjij*	*Kjwij* (IV)	**Ki̯wɛr*	**Kwjid*	**Kʷə̀j*
**Kʷrjij*	*Kwij* (III)	**Ki̯wɛr*	**Kwjid*	**Kʷrə̀j*

Examples of **-ij*

(1200) 迷 *mí* < *mej* < **mij* 'go astray'

(1201) 禮 *lǐ* < *lejX* < **C-rij?* 'rites'

(1202) 體 *tǐ* < *thejX* < **hrij?* 'body, shape, form'

(1203) 皆 *jiē* < *kɛj* < **krij* 'complete, all'

(1204) 偕 [*xié*] < *kɛj* < **krij(?)* 'together with'

(1205) 妣 *bǐ* < *pjijX* (IV) < **pjij?* 'deceased mother, ancestress'

(1206) 鴟 *chī* < *tsyhij* < **thjij* 'owl; sparrow hawk'

(1207) 葵 *kuí* < *gjwij* (IV) < **gʷjij* 'sunflower; mallow'

(1208) 視 *shì* < *dzyijX/H* < **gjij?/s* 'see, look'

(1209) 死 *sǐ* < *sijX* < **sjij?* 'to die'

(1210) 㙜 *mí* < *mij* (III) < **mrjij* (?) 'brink, edge'

(1211) 師 *shī* < *srij* < **srjij* 'multitude, army; master'

(1212) 維 *wéi* < *ywij* < **wjij* 'to bind, tie up'

(1213) 屎 *xī* < *xjij* (IV) < **xJij* (?) 'to groan'

(1214) 脂 *zhī* < *tsyij* < **kjij* 'fat, grease'

(1215) 秭 *zǐ* < *tsijX* < **tsjij?* 'a high number'

10.1.8.2. The reconstruction of the *-ɨj *group*

After nonlabialized initials, OC *-ɨj* developed as shown in Table 10.57. The development of syllables with labialized initials, which is parallel, is shown in Table 10.58.

Table 10.57. Development of *-ɨj* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
*-ɨj	*K-	-oj	*-ər	*-əd	*-ə́l
	*P-	-woj	*-wər	*-əd	*-ə́l
	acute	-ej	*-iər	*-iəd	*ʲə́l (?)
*-rɨj	all	-ɛj	*-ɛr	*-r(i)əd	*-ʳə́l
*-jɨj	grave	-jɨj	*-i̯(w)ər	*-jəd	*-ə̀l
	acute	-ij	*-i̯ər	*-jiəd	*-ə̀l
*-rjɨj	grave	-ij (III)	*-i̯ɛr	*-jiəd	*-ʳə̀l
	acute	-ij	*-i̯ər	*-rjiəd	*-ʳə̀l

Table 10.58. Development of *-ɨj* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
*K^{w}ɨj	Kwoj	*Kwər	*Kwəd	*K^{w}ə́l
*K^{w}rɨj	Kwɛj	*Kwɛr	*Kwrəd	*K^{w}rə́l
*K^{w}jɨj	Kjwɨj	*Ki̯wər	*Kwjəd	*K^{w}ə̀l
*K^{w}rjɨj	Kwij (III)	*Ki̯wɛr	*Kwjiəd	*K^{w}rə̀l

Some words in MC *-a* and *-je* are also assigned to this group, especially in *shǎngshēng*. I noted in section 10.1.3.2 that there was some confusion be-

tween **-aj* and **-ɨj* in *shǎngshēng*, perhaps a change of **-ɨj?* to **-aj?* in some dialects, though the exact conditions are not clear. Examples include

(1216) 火 *huǒ* < *xwaX* < **hmɨj?* 'fire',

which rhymes as **-ɨj* (154.1A–3A, 212.2C), and the probably related word

(1217) 燬 *huǐ* < *xjweX* (III) < **hmjaj?* < **hmjɨj?*(?) 'destroy'

which has a regular doublet

(1218) 煅 *huǐ* < *xjwɨjX* < **hmjɨj?* 'destroy'.

Another likely example of MC *-jeX* < **-jɨj?* is

(1219) 迩 *ěr* < *nyeX* < **njɨj?* 'near'

which rhymes with **-ɨj* in 10.3A, 169.4C, and possibly 246.2A (where it is written as 爾; this rhyme is irregular, however). This phonetic series may contain both **-aj* and **-ɨj* words, however; perhaps we should reconstruct original **-aj* in

(1220) 爾 *ěr* < *nyeX* < **njaj?* 'you',

agreeing with the vowel in

(1221) 汝 *rǔ* < *nyoX* < **nja?* 'you'.

Additional examples of **-ɨj*

(1222) 哀 *āi* < *ʔoj* < **ʔɨj* 'to pity'

(1223) 豈 *kǎi* < *khojX* < **khɨj?* 'joyous'

(1224) 回 *huí* < *hwoj* < **wɨj* 'revolve, swerve'

(1225) 妻 *qī* < *tshej* < **tshɨj* 'wife'

(1226) 齊 *qí* < *dzej* < **Hts(h)ɨj* 'even'

(1227) 衣 *yī* < *ʔjɨj* < **ʔjɨj* 'garment'

(1228) 夷 *yí* < *yij* < **ljɨj* 'level, at rest, peaceful'

(1229) 飛 *fēi* < *pjɨj* < **pjɨj* 'to fly'

(1230) 歸 *guī* < *kjwɨj* < **k^{w}jɨj* (< **k^{w}juj*?) 'return, go home'

This word is discussed further below.

(1231) 私 *sī* < *sij* < **sjɨj* 'private'

(1232) 微 [*wēi*] < *mɨj* < **mjɨj* 'small'

(1232) 尾 *wěi* < *mjɨjX* < **mjɨj?* 'tail'

(1233) 飢 *jī* < *kij* (III) < **krjɨj* 'be hungry, starve'

(1234) 悲 *bēi* < *pij* (III) < **prjɨj* 'unhappy, pained'

10.1.8.3. The reconstruction of the *-uj *group*

After nonlabial initials, **-uj* developed as shown in Table 10.59.

Table 10.59. Development of **-uj* after nonlabial initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-uj*	all	*-woj*	**-wər*	**-əd*	$*\_^{w}$*ól*
**-ruj*	all	*-wɛj*	**-wɛr*	**-rəd*	$*\_^{rw}$*ól*
**-juj*	grave	*-jwɨj*	**-ɨwər*	**-jəd*	$*\_^{w}$*òl*
	acute	*-wij*	**-ɨwər*	**-jəd*	$*\_^{w}$*òl*
**-rjuj*	grave	*-wij* (III)	**-ɨwɛr*	**-jiəd*	$*\_^{rw}$*òl*
	acute	*-wij*	**-ɨwər*	**-rjəd*	$*\_^{rw}$*òl*

We would expect labial-initial syllables to be parallel, but in fact I know of no examples of syllables like **Puj*, **Pruj*, **Pjuj*, or **Prjuj*. It is possible that **-uj* originally existed after labials, but dissimilated to **-ɨj* in such syllables in pre-*Shījīng* times. This possibility will be pursued further in section 10.1.8.6 below.[339]

Examples of **-uj*

(1235) 推 *tuī* < *thwoj* < **thuj* 'push away'

(1236) 雷 *léi* < *lwoj* < **C-ruj* 'thunder'

(1237) 罪 *zuì* < *dzwojX* < **dzuj?* 'crime, offense, guilt'

(1238) 懷 *huái* < *hwɛj* < **gruj* 'embrace, yearn'

(1239) 水 *shuǐ* < *sywijX* < **h[l]juj?* 'water'

(The initial consonant of this item is uncertain.)

(1240) 綏 [*suí*] < *swij* < **snjuj* 'pacify, comfort'

(1241) 威 *wēi* < *ʔjwɨj* < **ʔjuj* 'to overawe, terrorize'

(1242) 畏 *wèi* < *ʔjwɨjH* < **ʔjujs* 'to fear; be awesome'

(1243) 遺 *yí* < *ywij* < **ljuj* 'to leave, hand down'

(1244) 追 *zhuī* < *trwij* < **trjuj* 'to pursue'

10.1.8.4. The rhyming of *-ɨj *and* *-uj

Although I have redrawn the boundary between Wáng Lì's 脂 Zhī and 微 Wēi groups, I will take the rhyming distinction between them as established, and will not argue for it further; the revisions I propose merely reduce the number of irregular contacts between 脂 Zhī and 微 Wēi which need to be recognized. (The interested reader can verify this by comparing the rhyme lists below with those in Wáng Lì 1937 [1980].) Instead, I will focus on the distinction within the 微 Wēi group between *-*ɨj* and *-*uj*.

The question of whether *-*ɨj* and *-*uj* rhyme separately is largely independent of how one draws the boundary between 脂 Zhī and 微 Wēi. To emphasize this fact, I will do the statistical analysis of the distinction between *-*ɨj* and *-*uj* using the 微 Wēi group as Wáng Lì defined it.[340] For words within Wáng Lì's 微 Wēi group, then, we can identify unambiguous cases of *-*ɨj* and *-*uj* as follows:

1. Words with the *kāikǒu* finals *-oj* or *-jɨj* unambiguously reflect *-*ɨj*, except for words with labial initials.
2. Acute-initial words with the *hékǒu* finals *-woj* or *-wij* unambiguously reflect *-*uj*, except for words with *TS-* or *TSr-* initials (which could reflect **SK*^{w}*(r)-*) and words pronounced *ywij* (which could represent OC **wjij*, with palatalization of initial **w-*).

The rhyme occurrences of unambiguous *-*ɨj* words and *-*uj* words, as defined by these criteria, are summarized in Table 10.60. (The 0.95 confidence interval for **P**[*-*uj*] in *píngshēng* extends from 0.195 to 0.463. We will not be using **P**[*-*uj*] in *shǎngshēng* or *qùshēng*.)

The *Shījīng* rhyme sequences of unambiguous *-*uj* or *-*ɨj* words are summarized in Table 10.61.[341]

Table 10.60. Rhyme occurrences of unambiguous **-uj* and **-ɨj* words

	píng	*shǎng*	*qù*
**-uj* tokens	13	7	0
**-ɨj* tokens	28	1	0
total tokens	41	8	0
P[**-uj*]	0.317	0.875	
P[**-ɨj*]	0.683	0.125	

Table 10.61. Rhyme sequences involving unambiguous **-uj* and **-ɨj* words

tone	sequence length	total sequences	**-uj*	**-ɨj*	mixed
píng	2	7	3	4	0
shǎng	[none]				
qù	[none]				

Since there are no cases in *shǎngshēng* or *qùshēng* where unambiguous words occur in the same sequences, we will consider the *píngshēng* sequences only. The probability that a sample of this size will have no unmixed sequences and at least one **-uj* sequence (section 3.2.6) is

$$\mathbf{P} = (\mathbf{P}[\text{*-}uj]^2 + \mathbf{P}[\text{*-}ɨj]^2)^7 - (\mathbf{P}[\text{*-}ɨj]^2)^7$$
$$= ((0.317)^2 + (0.683)^2)^7 - ((0.683)^2)^7 = 0.014.$$

(This figure does not exceed 0.025 for any value of **P**[**-uj*] in the 0.95 confidence interval.) Thus we may conclude that phonologically unambiguous words show a significant rhyming distinction between **-uj* and **-ɨj*. The full set of *Shījīng* rhyme words and rhyme sequences in **-ij*, **-ɨj*, and **-uj* is summarized below.

10.1.8.5. Rhyme sequences in *-ij, *-ɨj, *and* *-uj

No matter how the boundary between **-ij* and **-ɨj* is drawn, there are a considerable number of irregular rhymes which mix them. This sometimes makes it difficult to decide between **-ij* and **-ɨj* in reconstructing particular words.

A possible source of these irregularities may be that ****ɨ*-fronting** applied differently, or at different times, in different Old Chinese dialects. In some

dialects (or in some phonological environments) this change may have occurred early enough to affect *Shījīng* rhymes. For example, the word

(1245) 弟 *dì* < *dejX* < **dɨj/ijʔ* 'younger brother'

clearly rhymes with *-*ɨj* in some sequences (164.1A, 173.3A, 240.2B, 246.2A; probably also 35.2B), and with *-*ij* in others (39.2A, 51.1B, 110.3B).[342] I suspect that **dɨjʔ* was the earlier pronunciation, which changed to *-*ij* within the time period (or in parts of the geographical area) represented by the *Shījīng*; and it is noteworthy that the clear cases of 弟 *dì* rhyming as *-*ij* all seem to occur in the *Guó fēng* section.

In most cases, the distinction between *-*ɨj* and *-*uj* is clearer, though some interesting exceptional rhymes will be discussed in the notes below.

The following *Shījīng* rhymes involve *-*ɨj*: 35.1D, 39.2A (with 弟 *dì*), 51.1B (with 弟 *dì*), 52.3, 53.1 (with *-*it(s)*), 110.3 (with 弟 *dì*), 119.1B–2B, 153.3B, 170.2B, 170.5A, 179.5A (with *-*ej*), 180.4A, 191.3A, 198.6A, 203.1A, 213.1B, 220.1B, 222.5A (with *-*ets*), 245.7b, 257.3B, 264.3A, 279.1B, 290.1G.

The following *Shījīng* rhymes appear to mix *-*ij* and *-*ɨj*: 57.2A, 133.1A–3A, 169.4C, 195.2A, 209.5C, 246.1A, and 254.5A. It should be noted that 57.2A is among the fragments found in the Fùyáng *Shī*, and its text there is quite different from the Máo version (Hú Píngshēng & Hán Zìqiáng 1988: 63–66, fragment S069); perhaps textual corruption is responsible for the irregularity. The sequences 133.1A–3A occur in odd-numbered lines and are repeated in each stanza; they are not necessarily intended as rhymes. In 209.5C, the only *-*ij* word is the phonologically ambiguous item

(1246) 尸 *shī* < *syij* < **hljij* 'corpse, representative of the dead'

which also rhymes in 254.5A, another mixed sequence. It occurs in an odd-numbered line in 209.5C, and may not be intended as a rhyme. If it is not, or if it is reconstructed with *-*ɨj* instead of *-*ij*, then 209.5C becomes regular. The sequence 254.5A could similarly be repaired by changing the reconstruction of the phonologically ambiguous word

(1247) 懠 *jì* < *dzejH* < **dzɨjs* 'angry',

or by excluding it from the rhyme sequence. I have no explanation for the irregular rhyming of 169.4C and 195.2A.

The sequences involving *-*ɨj* are 2.1B, 2.3A, 10.1A, 10.3A, 13.3B, 14.3A, 26.5A, 28.1A, 28.2A, 28.3A, 35.1C, 35.2A, 36.1A, 36.2A, 39.2A, 41.2A, 42.2B, 42.3A, 43.2A (with *-*ɨn*), 51.1B, 51.2A, 54.2B (with *-*it(s)*), 57.1A, 88.4A, 90.1A, 100.2A, 105.2A, 110.3B, 129.2A, 138.1A, 147.2A, 151.4B,

154.1A, 154.2A, 154.2C, 154.3A, 156.1B, 156.4B, 159.4A, 160.1B, 162.1A, 162.2A, 164.1A, 167.1A, 167.2A, 167.3A, 167.5A, 167.6A, 168.6A, 169.2B, 169.2C, 173.3A, 174.1A, 177.1A, 182.3A (with **-in*), 189.4B, 191.5C, 193.1B, 200.1A, 204.2A, 204.8A, 208.2A, 212.2C, 212.3A, 212.3B, 221.2B, 222.2A (with **-in*), 239.1A, 239.6A, 240.2B, 246.2A, 250.4A, 252.9C, 257.2A, 259.6A, 260.8A, 263.6D, 264.6C, 298.2B, 299.1A (with **-in*), 300.1A, 303.1E (with **-aj*), and 304.3A. This list omits those sequences listed above as involving both **-ij* and **-ɨj* words, and those sequences in which 弟 *dì* appears to rhyme as **-ij*.

Shījīng rhyme sequences in **-uj* are 3.2A, 4.1A, 30.4A, 40.3A, 76.1B–3B, 104.3A, 128.3A (with **-un, *-on*), 156.2E, 164.2A, 171.3A, 178.4B, 183.2A (with **-un*), 194.1B, 198.1B, 201.2A, 201.3A (with **-oj, *-on*), 216.4A (with **-oj*), 254.7C, 258.3A, and 284.1B.

The following sequences appear to have words in **-ɨj* rhyming with words in **-uj*: 68.1B–3B, 71.1A–3A, 92.1A–2A, 101.1A, 101.1B, 183.1A, 251.2B, and 284.1C.

10.1.8.6. Stock rhymes as a source of irregularity

If we examine more closely the rhymes which appear to mix **-ij* and **-uj*, we find some interesting patterns which may be relevant to the literary history of the text.

For one thing, it is striking that the short list above of rhymes mixing **-ɨj* and **-uj* includes three sequences which are repeated in more than one stanza within the same ode (68.1B–3B, 71.1A–3A, 92.1A–2A). This could be one explanation of their apparent irregularity: often, lines which are repeated without change in more than one stanza are not intended as rhymes at all. While rhyme typically functions structurally to link together lines within a single stanza, repeated lines link whole stanzas together, and do not always rhyme. An example is Ode 69, where each of the three stanzas is six lines long, and the first and third lines are the same in each stanza:

中谷有蓷　　*zhōng gǔ yǒu tuī,*
……
有女仳離　　*yǒu nǚ pǐ lí,*
……

In the midst of the valley there are motherworts,
……
there is a girl who has been (separated:) rejected,
……

Here, 薇 *tuī* < *thwoj* < **thuj* 'motherwort' and 離 *lí* < *lje* < **C-rjaj* 'separate' are not in the same rhyme group, and not generally regarded as an intended rhyme. By analogy to such cases, one might argue that the repeated lines in 68.1B–3B, 71.1A–3A, and 92.1A–2A need not be intended as rhymes.

However, it is by no means a constant rule that repeated lines do not rhyme. If we assume that these really are intended as rhymes, then a more interesting possibility arises. Lines which are repeated in more than one stanza are also often found in more than one ode. This suggests that they may represent a body of stock or formulaic traditional material drawn upon by the poets of the *Shījīng*. If such material was passed down by tradition to the *Shījīng* poets, it may preserve traces of an earlier phonological system, already archaic in *Shījīng* times. The possibility that rhymes may be influenced by such nonphonological factors was discussed in Chapter 3. This may be another explanation for the apparent irregularities found in these passages.

Consider, for example, the word

(1248) 歸 *guī* < *kjwij* < **k*^{w}*jij* 'return (home)'.

The Middle Chinese reading *kjwij* could represent either **k*^{w}*jij* or **kjuj* (or perhaps **k*^{w}*juj*), but I reconstruct 歸 **k*^{w}*jij* because this word, a very common rhyme word in the *Shījīng*, almost always rhymes as *-*ij*.[343] But in a few cases, it appears to rhyme as *-*uj*, and some of these cases are repeated lines which may have been passed down from an earlier tradition. For example, the repeated lines in 68.1B–3B are

懷哉懷哉	*huái zāi HUÁI zāi*	懷 *hwɛj* < **gruj*
曷月予還歸哉	*hé yuè yú huán GUĪ zāi?*	歸 *kjwij*

I yearn, I YEARN,
what month shall I RETURN HOME?

Note that the word

(1249) 懷 *huái* < *hwɛj* < **gruj* 'yearn'

elsewhere rhymes consistently as *-*uj*.[344] Another example is the text of Ode 101.1:

南山崔崔	*nán shān cuī CUI*	崔 *tswij* < **Sduj*
雄狐綏綏	*xióng hú suí SUÍ*	綏 *swij* < **snjuj*
魯道有蕩	*Lǔ dào yǒu dàng*	
齊子由歸	*Qí zǐ yóu GUI*	歸 *kjwij*

既曰歸止	*jì yuē GUI zhǐ*	歸 *kjwɨj*
曷又懷止	*hé yòu HUÁI zhǐ*	懷 *hwɛj* < **gruj*

Karlgren (1974: 65) translates:

> The Southern mountain is scraggily HIGH;
> the male fox has walked SLOWLY (slyly);
> the road to [Lǔ] is smooth and easy,
> the young lady of [Qí] WENT by it TO HER NEW HOME;
> since she has now GONE TO HER NEW HOME,
> why do you still YEARN for her?

Although I separate 101.1A from 101.1B for statistical purposes (since the rhyme word shifts from the fourth to the third syllable), we can see that they are structurally of a piece, and the same "yearn/return" pair is involved here as in 68.1B–3B.

I conjecture that at an earlier, pre-*Shījīng* stage, 歸 *guī* may have been **k*^{w}*juj*, with the final **-uj*, which by *Shījīng* times had dissimilated to **k*^{w}*jɨj*, the vowel losing its rounding through the influence of the labiovelar initial **k*^{w}-. (This same dissimilation process could be responsible for the lack of good examples of **-uj* after labial initials, mentioned earlier.) But in certain passages, 歸 *guī* < **k*^{w}*jɨj* < **k*^{w}*juj* 'return' and 懷 *huái* < **gruj* 'yearn' may have continued to be used as a stock rhyme pair, even though they no longer rhymed perfectly in contemporary pronunciation.

Given this line of reasoning, we may have pre-*Shījīng* **mjuj* in

(1250) 薇 [*wēi*] < *mjɨj* < **mjɨj* < ***mjuj* 'name of an edible fern (Osmunda regalis)' (Schuessler 1987: 637),

which forms what is probably another stock rhyme with 歸 *guī*; in 167.1A–3A we have the following repeated lines:

采薇采薇	*cǎi wēi cǎi WĒI*	薇 *mjɨj*
.....		
曰歸曰歸	*yuē guī yuē GUĪ*	歸 *kjwɨj*
.....		

> We gather the *wēi* plant, we gather the *WĒI* plant,
> .....
> oh, to go home, to GO HOME
> .....

In this case, the rhyme pair remained regular, since both words were affected by the dissimilation.

We have what may be a stock phrase if not a stock rhyme in the exceptional sequence 251.2B, where 歸 *guī* rhymes with the word

(1251) 罍 *léi* < *lwoj* < **C-ruj* 'pitcher'.

Here 歸 *guī* occurs in the following context:

豈弟君子	*kǎitì jūnzǐ*	
民之攸歸	*mín zhī yōu GUĪ*	歸 *kjwij*

the joyous and pleasant lord
is one to whom the people TURN.

The use of the archaic particle 攸 *yōu* (corresponding to later 所 *suǒ*) suggests that this passage may be of early origin.

There are similar clues that there may originally have been a rounded vowel in 弟 *dì* < *dejX* < **dij?* < **dɨj?* < ***duj?* (?) 'younger brother'. We have already seen that this word seems to shift from rhyming as **-ɨj* in the older parts of the *Shījīng* to rhyming as **-ij* in certain poems of the *Guó fēng* section. The older **-ɨj* pronunciation is supported by the apparent rhyming binome

(1252) 豈弟 *kǎi*[*tì*] < *khojX-dejX* < **khɨj?-dɨj?* 'joyous and pleased'.

Now the second syllable of this expression is written with the character 弟 *dì* (sometimes with the "heart" radical added), but there is no reason to assume an etymological connection between this and "younger brother". However, 弟 *dì* 'younger brother' and the binome 豈弟 *kǎitì* 'joyous and pleased' rhyme in 173.3A with each other and with 豈 *kǎi* 'joyous' (possibly some sort of play on words), and this combined with the graphic evidence strongly supports the reconstruction of **-ɨj* in 弟 *dì*.

But 弟 *dì* also seems to rhyme with **-uj* in repeated lines in 71.1A–3A and 92.1A–2A. In Ode 71 we have the following pattern:

緜緜葛藟	*mián mián gé LĚI*	藟 *lwijX* < **C-rjuj?*
……		
終遠兄弟	*zhōng yuǎn xiōng DÌ,*	弟 *dejX*
……		

Long-drawn-out are the *gé* creepers and the *LĚI* creepers,
……
far away indeed I am from my BROTHERS,
……

Here the other rhyme word is an unambiguous **-uj* word:

(1253) 藟 *lěi* < *lwijX* < **C-rjuj?* 'name of a plant; the *lěi* creeper'

The pattern is similar in Ode 92, as is the very line in which 弟 *dì* appears:

揚之水　　*yáng zhī SHUǏ*　　水 *sywijX* < **h[l]juj?*
……
終鮮兄弟　　*zhōng xiǎn xiōng DÌ*　　弟 *dejX*
……
(Even) stirred WATERS
……
few indeed are we BROTHERS,
……

Here the other rhyme word is

(1254) 水 *shuǐ* < *sywijX* < **h[l]juj?* 'water, river'

whose initial is uncertain, but whose final must be **-uj*.

In the sequence 183.1A, 弟 *dì* may rhyme with 水 *shuǐ* and

(1255) 隼 *sǔn* < *swinX* < **sjun?* 'hawk, falcon',

though this is less certain.

If 弟 *dì* was originally **duj?*, it is not clear what process might have caused it to lose its rounding; we would expect it to become MC *dwojX*. But note also the rounded vowel in the probable Tibeto-Burman cognate **doy* (tone **B*) 'younger brother' (Coblin 1986: 49).

10.1.8.7. Additional notes

1. The word

(1256) 濟 *jǐ* < *tsejX* < **tsɨj?* 'stately'

appears to rhyme as **-ɨj?* everywhere but in Ode 290.1G, where it rhymes as **-ij?*; in this passage, it is usually interpreted as "many, numerous". I conjecture that there were originally two words: **tsɨj?* 'many', cognate to 秭 *zǐ* < *tsijX* < **tsjɨj?* 'large number', and **tsɨj?* 'stately, even', cognate to 齊 *qí* < *dzej* < **dzɨj* (or **fits(h)ɨj*) 'equal, in line'. The original character for **tsɨj?* 'many', whatever it may have been, has become confused in Ode 290.1G with 濟, whose phonetic indicates **-ij*.[345]

2. The word

(1257) 洗 *xǐ* < *sejX* < **sɨj?* 'wash',

which rhymes with **-ɨj?* and **-ɨn?* in Ode 43.2A, is assigned the pronunciation *tshwojX* by the *Jīngdiǎn shìwén*; this is evidently based on the text of the Hán *Shī*, which has the character 漼 *cuǐ* < *tshwojX* instead (Xiàng Xī

1986: 385). Such a reading would generally imply **-uj*, making this sequence irregular. But the character 洒 itself indicates **-ɨj*, since it has the phonetic

(1258) 西 *xī* < *sej* < **sɨj* 'west'.

Moreover, the character 洒 is normally considered an alternate form of

(1259) 洗 *xǐ* < *sejX* < **sɨj?* 'wash'

whose phonetic 先 *xiān* < *sen* < **sɨn* also indicates the vowel **ɨ*.

3. The word

(1260) 喈 *jiē* < *kɛj* < **krɨj* 'sound of birds chirping or bells tinkling'

is sometimes taken to be related to 皆 *jiē* < *kɛj* < **krij(?)* 'together', but this identification is doubtful, because the words appear to have different vowels: 喈 *jiē* rhymes regularly as **-ɨj* (Odes 2.1B, 41.2A, 90.1A, 168.6A, 208.2A, 252.9C, 260.8A), while 皆 *jiē* and the related 偕 *xié* appear to rhyme as **-ij(?)* (110.3B, 170.5A, 220.1B, 279.1B; but 偕 *xié* appears to rhyme as **-ɨj?* in 169.4C).

4. I reconstruct

(1261) 騤 *kuí* < *gwij* (III) < **g^{w}rjɨj* 'sturdy'

with **-ɨj* on the basis of rhymes with **-ɨj* (167.5A, 177.1A, 257.2A, 260.8A), even though the phonetic element 癸 *guǐ* < *kjwijX* < **k^{w}jij?* '10th heavenly stem' must be reconstructed with a front vowel because of its division-IV *chóngniǔ* final. Note that 騤 *kuí* < *gwij* has a division-III final.

5. The modern character

(1262) 祁 *qí* < *gij* (III) < **grjɨj* 'great, large, numerous'

appears to have 示 *shì* < *zyijX/H* < **sgjij?/s* as phonetic, which would suggest a reconstruction 祁 *qí* < *gij* (III) < **grjij*; but the word rhymes consistently as **-ɨj* (see Odes 13.3B, 154.2C, 168.6A, 212.3A), except for a rhyme in Ode 303.1E with **-aj*.

6. Although the phonetic element in

(1263) 坻 *chí* < *drij* 'islet'

generally seems to indicate **-ij* (see 氐 *dǐ* in Ode 191.3A, 砥 *dǐ* in Ode 203.1A), this word rhymes in a long **-ɨj* sequence in Ode 129.2A. I conjecture that it is etymologically the same word as

(1264) 墀 *chí* < *drij* < **drjɨj* 'raised path from the gate to the wall of a palace'

whose phonetic indicates **-ɨj* (cf. 遲 *chí* < **drjɨj* 'to tarry, delay' above). The same phonetic 氐 appears again in

(1265) 祇 *zhī* < *tsyij* < **tjɨj* 'reverence',

which rhymes in a long **-ɨj* sequence in 304.3A. But the phonetic compound 祇 is probably recent; in bronze inscriptions, this word is written as



(Zhōu Fǎgāo et al. 1974a, item 13). The vowel **ɨ* in this word is further supported by the phonetically and semantically similar

(1266) 振 *zhēn* < *tsyin* < **tjɨn* 'majestic'.

This rhymes as **-jɨn* in 5.1A, and is used as a loan character for 祇 *zhī*, according to Zhū Jùnshēng (quoted in Dīng Fúbǎo 1928–1932 [1976]: 38.)

The preceding sections have shown that the rhyme evidence supports the reconstruction of a six-vowel system before acute initials, and that a revision of the traditional rhyme categories is required. To take syllables with the coda **-n* as an example, where the traditional analysis identified three rhyme groups (元 Yuán, 真 Zhēn, and 文 Wén), a reexamination of the rhyme evidence confirms the existence of six rhyme groups, as predicted by the rounded-vowel hypothesis and the front-vowel hypothesis:

**-in*	**-ɨn*	**-un*
**-en*		**-on*
	**-an*	

We now turn our attention to syllables with codas of other types.

10.2. Syllables with zero or back codas

10.2.1. The traditional 之 Zhī group

The Middle Chinese finals included in the traditional 之 Zhī group are listed in Table 10.62 below. This group includes division-I finals but no division-

IV finals, so no front vowels need to be reconstructed here. There are also no *hékǒu* finals with acute initials which would require us to reconstruct rounded vowels. Generally, I reconstruct the finals of the group with **-i̯*. But before summarizing the proposed reconstruction, there are a few problems which need to be discussed.

Table 10.62. Middle Chinese finals of the traditional 之 Zhī group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-oj*	*-ậi*	咍 Hāi (Xoj)	(in part)
	-woj	*-uậi*	灰 Huī (Xwoj)	(in part)
	-uw	*-ậu*	侯 Hóu (Huw)	(in part)—labials only
II	*-(w)ɛj*	*-(w)ǎi*	皆 Jiē (Kɛj)	(in part)
III	*-i*	*-i*	之 Zhī (Tsyi)	
	-juw	*-i̯ậu*	尤 Yóu (Hjuw)	(in part)—grave only
	-ij	*-(j)i* (III)	脂 Zhī (Tsyij)	(in part)—*P-* only
	-wij	*-(j)wi* (III)	脂 Zhī (Tsyij)	(in part)—*K-* only

10.2.1.1. The Pwoj / Puw *distinction*

The first problem is the contrast of the two division-I finals *-woj* and *-uw* after labial initials in words traditionally assigned to this group. A minimal pair is

(1267) 母 *mǔ* < *muwX* 'mother'

(1268) 每 *měi* < *mwojX* 'each, every'.

Karlgren accounted for this distinction by reconstructing **Pəg* > *Puw* and **Pwəg* > *Pwoj* (1954: 330). Dǒng Tónghé assumed a length distinction (with the short vowel marked by a subscript dot): **Puậg* > *Pwoj*, **Puậ̣g* > *Puw* (1944 [1948]: 80–81). Li Fang-kuei left the question open (1971 [1980]: 38). None of these solutions explains why the contrast should be limited to labial-initial syllables.

I propose to reconstruct

**Pi̯* > *Pwoj*
**P(r)o* > *Puw*.

(An **r* is included in parentheses because, in syllables with **-o*, it is generally impossible to distinguish grave-initial syllables with and without medial **-r-*; see section 10.2.10 below.)

Thus we have

(1269) 母 *mǔ* < *muwX* < **m(r)o?* 'mother'

(1270) 每 *měi* < *mwojX* < **mɨ?* 'each, every'.

This reconstruction (proposed in Baxter 1977: 291–95, 1980: 24–25) accounts very easily for the Middle Chinese pronunciations of these words: OC **-(r)o* is the usual source of MC *-uw*, and **-ɨ* > *-woj* is the development we would expect after labial initials (with *-w-* inserted as a result of ***w-neutralization**). The problem is that the syllables I reconstruct as **P(r)o* regularly rhyme as **-ɨ* in the *Shījīng* (see the rhymes of 母 *mǔ* listed in Appendix C), and show *xiéshēng* contacts with words in **-ɨ* (as in the examples just cited). I account for these facts by assuming that **P(r)o* merged with **P(r)ɨ* in some Old Chinese dialects, including some represented in the *Shījīng* and in *xiéshēng* characters. The dialects directly ancestral to the Middle Chinese of the *Qièyùn* were not affected by this change, however, since original **P(r)o* and **P(r)ɨ* remain distinct in the *Qièyùn*. In Chapter 1, I raised the possibility that the language of the *Shījīng* might not be directly ancestral to the language of the *Qièyùn*; Old Chinese, however, was defined as the common ancestor of both. The merger of **P(r)o* with **P(r)ɨ* is an example of an innovation which affected at least some dialects represented in the *Shījīng*, but not the dialect ancestral to Middle Chinese.

In support of this proposal, note first that the reconstruction of **P(r)o* fills what would otherwise be a gap in the syllable inventory of Old Chinese, for there are no other words which need to be given this reconstruction. We would expect to find syllables like **P(r)o* in the traditional 侯 Hóu group, along with words like

(1271) 偶 *ǒu* < *nguwX* < **ng(r)o?* 'mate, counterpart'.

But the only labial-initial words with the finals *-uw*, *-uwX*, or *-uwH* which are traditionally assigned to the 侯 Hóu group have origins other than **P(r)o*. According to Dǒng Tónghé's phonological tables (1944 [1948]: 149), the 侯 Hóu group includes only two syllables of the form *Puw*, both in *qùshēng*: *phuwH* and *muwH*. The syllable *phuwH* is represented only by a single item:

(1272) 扑 [*pū*] < *phuwH* < **ph(r)oks* 'fall prostrate' (also read *pū* < *phuwk* < **phok* 'rod, stick').[346]

Now in my system, MC *phuwH* might reflect either OC **ph(r)os* or **ph(r)oks*; but here we clearly should reconstruct **ph(r)oks*, both because of the alternate reading *phuwk* < **phok*, and because of the phonetic element

(1273) 卜 *bǔ* < *puwk* < **pok* 'to divine (with shells or bones)'.

As for the words pronounced *muwH* which Dǒng Tónghé assigns to the 侯 Hóu group, these are all to be reconstructed *muwH* < *mjuwH* < **m(r)jus*; they reflect a minor sound change ***mjuw(K) > muw(K)*** which occurred in the early Middle Chinese period (see Kōno Rokurō 1954 [1979]: 253, note 7, and section 10.2.13). The Old Chinese vowel in these words is **u*, not **o*; they actually belong in the traditional 幽 Yōu group, not the 侯 Hóu group. An example is

(1274) 懋 [*mào*] < *muwH* (< *mjuwH*) < **m(r)jus* 'to strive',

whose phonetic is

(1275) 矛 [*máo*] < *mjuw* < **m(r)ju* 'lance',

a word of the 幽 Yōu group (see rhymes in Odes 133.1B and 191.8B). Dǒng Tónghé was apparently unaware of the change ***mjuw(K) > muw(K)***, and assigned words like these to 侯 Hóu because they had the Middle Chinese final *-uwH*.

Thus there are no syllables of the form *Puw* < **P(r)o* in the traditional 侯 Hóu group as usually defined. The hypothesis proposed here explains this gap: since **P(r)o* rhymed as **-i* in the *Shījīng*, the relevant words were included in the 之 Zhī group instead.

As we have seen, *xiéshēng* characters also reflect a *Shījīng*-type dialect where **P(r)o* became **P(r)i*; according to the *Shuōwén*, 母 *mǔ* < **m(r)oʔ* 'mother' is phonetic in 每 *měi* < **miʔ* 'each, every'. But there is also *xiéshēng* evidence to support the reconstruction of **o* in 母 **m(r)oʔ*. For example, 母 **m(r)oʔ* is phonetic in

(1276) 侮 *wǔ* < *mjuX* < **m(r)joʔ(s)* 'to offend, insult, maltreat'

which rhymes consistently as **-o* in the *Shījīng* (see 192.2A, 237.9B, 241.8B, 246.6A). Moreover, the graph for 母 *mǔ* < **m(r)oʔ* 'mother' is regularly used in bronze inscriptions as a loan word for the word now written

(1277) 毋 *wú* < *mju* < **m(r)jo* 'don't'.

I reconstruct 毋 **m(r)jo* because of the *xiéshēng* connection with 母 **m(r)o?*. Previous investigators have generally reconstructed 毋 *wú* as a simple homonym of

(1278) 無 *wú* < *mju* < **m(r)ja* 'have not',

which is sometimes used with the same meaning in classical texts; but the confusion of 毋 and 無 seems to be rather late, and 母, whether it is **m(r)o?* or **mi?*, should not be a good phonetic to write **m(r)ja* in anyone's reconstruction, because of the difference in main vowels.[347] If we reconstruct 母 **m(r)o?* 'mother' and 毋 **m(r)jo* 'should not', then this problem is removed. The graphic confusion of 毋 **m(r)jo* 'should not' and 無 **m(r)ja* 'have not' reflects the change ****-ja* > *-jo***, which eventually led to the merger of OC **P(r)ja* and **P(r)jo* as MC *Pju*.

Another curious bit of evidence comes from the expression

(1279) 鞸琫 *bǐngběng* < *pengX-puwngX* < **peng?-pong?* 'scabbard ornaments',

which appears in Odes 213.2 and 250.2.[348] Note that the second syllable must be reconstructed **pong?*, with the main vowel **o*, in order to account for its Middle Chinese pronunciation. In the *Zuǒ zhuàn* (year 2 of Duke Huán 桓), the same expression appears, written as 鞸韐, where the second character has the phonetic 音. The pronunciation and meaning of this 音 are obscure, but it is traditionally assigned to the 之 Zhī rhyme group, and it is the phonetic element in several words of that group which I reconstruct with **P(r)o*, e.g.

(1280) 剖 *pǒu* < *phuwX* < **ph(r)o?* 'cleave, cut open'

(1281) 掊 *pǒu* < *phuwX* ~ *puwX* < **p(h)(r)o(k)?* 'to beat, crush'.

Duàn Yùcái (quoted in Dīng Fúbǎo 1928–1932 [1976]: 2148) also pointed out a rhyme sequence in the *Yìjīng* (55.4) which suggests that this character and its derivatives belong to the 侯 Hóu group (his Group 4) rather than the 之 Zhī group (his Group 1):

部 *bù* < *buwX* ~ *phuwX* < **b(r)o?* ~ **ph(r)o?* 'screen'
斗 *dǒu* < *tuwX* < **to?* 'dipper'
主 *zhǔ* < *tsyuX* < **tjo?* 'master'

This rhyme sequence evidently represents a dialect unaffected by the change **P(r)o* > **P(r)i*. The rhyme occurs in the so-called line text (*yáocí* 爻辭), which probably dates from early Western Zhōu (Qū Wànlǐ 1983b: 309–13).

All this points to the vowel **o* in words with the phonetic 音, in agreement with my proposal. The final nasals in 鞞鞛 *bĭngbĕng* are unexplained, but the expression seems to be a typical **e/o* binome (like 輾轉 *zhănzhuăn* < *trjenX-trjwenX* < **trjen?-trjon?* 'toss and turn' and many others).

Finally, the following comparisons with Tibetan are suggestive, at least:

(1282) 母 *mŭ* < *muwX* < **m(r)o?* 'mother', Tibetan *mo* 'female'

(1283) 畝 *mŭ* < *muwX* < **m(r)o?* 'Chinese acre', Tibetan *rmo* 'plow'[349]

This array of evidence can best be accounted for by reconstructing both **Pɨ* and **P(r)o*, and assuming that they developed as expected in Middle Chinese, but that **P(r)o* shifted to **P(r)ɨ* in certain Old Chinese dialects reflected in the *Shījīng*.

10.2.1.2. ***Rounding assimilation***

The second problem in this group is accounting for the contrast in this rhyme group between MC *-juw* and *-(w)ij* after grave initials. Superficially, the problem of reconstructing MC *-juw* in the 之 Zhī group may seem parallel to the problem of reconstructing syllables of the form *Puw*, but in fact MC *-juw* is the regular reflex of OC **-jɨ* after labial and labiovelar initials, as in the following examples:

(1284) 丘 *qiū* < *khjuw* < **k^{w}hjɨ* 'hill'

(1285) 牛 *niú* < *ngjuw* < **ng^{w}jɨ* 'bovine'

(1286) 裘 *qiú* < *gjuw* < **g^{w}jɨ* 'fur garment'

(1287) 尤 *yóu* < *hjuw* < **wjɨ* 'guilt, fault, blame'

(1288) 不 [*bù*] < *pjuw* < **pjɨ* 'not' (later pronounced *pwot*)

These reflexes result from a change I call **rounding assimilation**:

**-jɨ* > *-juw* / [labial] ____

Here "[labial]" includes labials, labiovelars, and labiolaryngeals. This change seems to have occurred in several stages, as Ting Pang-hsin notes (1975: 253–55). Judging from Luó & Zhōu (1958: 17–18), syllables with labiovelar or labiolaryngeal initials **K^{w}-* had already been affected by the Western Hàn period (206 B.C.–A.D. 23), but syllables with labial initials (including **w-*) seem to have been affected only later, around the Three Kingdoms period (A.D. 220–280).[350] This same process also affected the

finals **-jɨk* and **-jɨng*, as we will see below, but not necessarily all at the same time.

Rounding assimilation was blocked by medial **-r-*, presumably because the change ****r*-color** fronted vowels after **-r-* so that the conditions for **rounding assimilation** were not met. Here are some examples:

(1289) 龜 *guī* < *kwij* (III) < **k^{w}rjɨ* 'turtle, tortoise'.

(1290) 丕 *pī* < *phij* (III) < **phrjɨ* 'great, grand'

(1291) 鮪 *wěi* < *hwijX* (III) < **wrjɨʔ* 'a kind of sturgeon'.

Thus OC **-jɨ* and **-rjɨ* remained distinct in Middle Chinese after **P-* and **K^{w}*-type initials.

However, syllables of the form **Kjɨ* and **Krjɨ* had evidently merged by Middle Chinese times, so in syllables with **K*-type initials, it is impossible to distinguish **-j-* from **-rj-* on the basis of Middle Chinese readings alone. Sometimes there is other evidence which suggests the presence of **r*; for example, in the *Bái hǔ tōng yì* 白虎通義 (an Eastern Hàn compilation of discussions on classical texts),

(1292) 里 *lǐ* < *liX* < **C-rjɨʔ* 'to divide fields into sections'

is used as a sound gloss for

(1293) 紀 [*jì*] < *kiX* < **k(r)jɨʔ* 'leading thread, regulator; to lead',

which may indicate that we should reconstruct medial **r* in 紀 *jì*. Most of the time, however, **Krjɨ* and **Kjɨ* are indistinguishable; in such cases I will write **K(r)jɨ*. The change which caused the merger of **-rjɨ* and **-jɨ* as MC *-i* may be called simply ****-jɨ(K) > -i(K)*** ; it also affected syllables with final **-k* and **-ng*. The exact formulation of this change is unclear, and in any case is more a matter of Middle Chinese than Old Chinese phonology.

*10.2.1.3. The reconstruction of the *-ɨ group*

Except for the issues just mentioned, the reconstruction of this group is relatively straightforward. We may call it the **-ɨ* group; its development is summarized in Table 10.63. I emphasize that the **-ɨ* group corresponds only partially to the traditional 之 *Zhī* group, partly because I include some of that group in the **-o* group, and partly because I move some words with *rùshēng* connections to the **-ɨk(s)* group (see section 10.2.2 below).[351]

Table 10.63. Development of finals in **-ɨ*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ɨ*	unrounded	*-oj*	**-əg*	**-əg*	**-ə̀ɣ*
	**Kʷ-*, **P-*	*-woj*	**-wəg*	**-əg*	**-ʷə̀ː ɣ* (?)
**-rɨ*	unrounded, **P-*	*-ɛj*	**-ɛg*	**-rəg*	**-ʳə̀ɣ*
	**Kʷ-*	*-wɛj*	**-wɛg*	**-rəg*	**-ʳʷə̀ɣ*
**-jɨ*	unrounded	*-i*	**-i̯əg*	**-jəg*	**-ə̀ɣ*
	**Kʷ-*, **P-*	*-juw*	**-i̯ŭg*	**-jəg*	**-ʷə̀ɣ*
**-rjɨ*	acute	*-i*	**-i̯əg*	**-rjəg*	**-ʳə̀ɣ*
	**K-*	*-i*	**-i̯əg*	**-jəg*	**-ə̀ɣ*
	**Kʷ-*	*-wij*	**-i̯wəg*	**-jiəg*	**-ʳʷə̀ɣ*
	**P-*	*-ij*	**-i̯əg*	**-jiəg*	**-ʳʷə̀ɣ*

To account for the coda **-j* in MC *-oj* < **-ɨ* and *-ɛj* < **-rɨ*, I assume the change ***j*-insertion**, which inserted a coda *-j* after final mid unrounded vowels:

$$\varnothing \rightarrow j \;/\; \begin{matrix} \text{V} \\ \left[\begin{matrix} -\text{high} \\ -\text{low} \\ -\text{round} \end{matrix}\right] \end{matrix} \_\_\_\_\_ \#$$

The same change will account for the coda of MC *-ej* < **-e* (see section 10.2.7). Perhaps in some dialects ***j*-insertion** applied after high vowels also; this could account for the merger in some Middle Chinese dialects of the *Qièyùn*'s 之 Zhī (Tsyi) and 脂 Zhī (Tsyij) rhymes.

10.2.1.4. Additional examples of **-ɨ*

(1294) 臺 *tái* < *doj* < **lɨ* 'tower'

(1295) 態 *tài* < *thojH* < **hnɨs* 'apparition, bearing, manner'

(1296) 梅 *méi* < *mwoj* < **mɨ* 'Prunus mume'

(1297) 賄 [*huì*] < *xwojX* < **hwɨʔ* < **hmɨʔ* 'to present, assign; valuables, dowry'

(1298) 埋 *mái* < *mɛj* < **mrɨ* 'to bury'

(1299) 豺 *chái* < *dzrɛj* < **dzrɨ* 'wolf'

(1300) 耳 *ěr* < *nyiX* < **njɨʔ* 'ear'

(1301) 恥 *chǐ* < *trhiX* < **hnrjɨʔ* 'shame'

(1302) 子 *zǐ* < *tsiX* < **tsjɨʔ* 'child'

(1303) 久 *jiǔ* < *kjuwX* < **k*^{w}*jɨʔ* 'long time'

(1304) 婦 *fù* < *bjuwX* < **bjɨʔ* 'wife, lady, woman'

(1305) 謀 *móu* < (*muw* <) *mjuw* < **mjɨ* 'to plan, counsel'

(1306) 箕 *jī* < *ki* < **k(r)jɨ* 'winnowing basket'

(1307) 使 *shǐ* < *sriX* < **srjɨʔ* 'send, employ, cause'

10.2.2. The traditional 職 Zhí group

The Middle Chinese finals traditionally included in the 職 Zhí group are listed in Table 10.64.

Table 10.64. Middle Chinese finals of the traditional 職 Zhí group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-(w)ok*	*-(w)ək*	德 Dé (Tok)	
II	*-(w)ɛk*	*-(w)ɛk*	麥 Mài (Mɛk)	(in part)
III	*-(w)ik*	*-i̯(w)ək*	職 Zhí (Tsyik)	
	-juwk	*-i̯uk*	屋 Wū (ʔUwk)	(in part)—grave only

This group is largely parallel to the previous one; I reconstruct it with **-ɨk*. There are no rounding contrasts after acute initials; the *hékǒu* finals in the table above occur only after guttural initials. Generally, no division-IV finals are included in this group, but Karlgren (1954: 326) included the word

(1308) 殈 *xù* < *xwek* < **hwik* 'burst, cleave (said of egg shells)'.

This is an extremely rare character (known only from a passage in the *Yuè jì* 樂記 section of the *Lǐ jì* 禮記); its pronunciation probably represents a dialect development of the final **-ik*, which generally seems to have merged with **-it*, as in

(1309) 節 *jié* < *tset* < **tsit* < **tsik* 'knot, joint in plants', cf. Tibeto-Burman **tsik* 'joint'.

(This problem was discussed in Chapter 8 and section 10.1.6.) I will assume that there was an original **-ik* which usually merged with **-it*, but

sometimes shows up in Middle Chinese as *-ik* < **-jik* and *-ek* < **-ik*. **Rounding assimilation** applied to **-jik* as it did to **-ji*. Without medial **-r-*, the final **-jik* was rounded to MC *-juwk* after rounded initials:

(1310) 福 *fú* < *pjuwk* < **pjik* 'benefit, favor, good fortune'

(1311) 彧 *yù* < *ʔjuwk* < **ʔʷjik* 'be luxuriant'

(1312) 牧 *mù* < *mjuwk* < **mjik* 'pasture; herdsman'[352]

However, **rounding assimilation** is blocked by medial **-r-*:

(1313) 域 *yù* < *hwik* < **wrjik* 'boundary, territory'

In support of the reconstruction of **-r-* in such cases, consider the following possible etymological relationships:

(1314) 力 *lì* < *lik* < **C-rjik* 'sinew; strength, force, power'

偪 *bī* < *pik* < **prjik* 'to crowd; encroach upon; press upon; adjoin, be near to'

逼 *bī* < *pik* < **prjik* 'to urge, press; close'

For 力 *lì*, Vietnamese has the early loan *sức* 'force', where initial *s-* suggests an early cluster **Cr-* (Mei & Norman 1971: 102); compare Sino-Vietnamese *lực*.

(1315) 扐 *lè* < *lok* < **C-rik* 'space between the fingers (where divination sticks were inserted)'

阞 *lè* < *lok* < **C-rik* 'vein or duct in soil; fraction'

泐 *lè* < *lok* < **C-rik* 'to split according to the veins (sc. stone)'

仂 *lè* < *lok* ~ *lik* < **C-r(j)ik* 'a tenth'

靆 *pì* < *pɛk* ~ *phik* 'split, cut open' < **prik* ~ **phrjik*

副 *pì* < *phik* < **phrjik* 'cleave, divide' (also read *fù* < *phjuwH* < **phjiks* 'a kind of headdress')

With the last two items, compare Tibetan *phrag* 'intermediate space, interstice, interval'.

As with the previous group, with unrounded **K*-type initials it is usually impossible to recover the distinction between **Kjik* and **Krjik*, and we must often write **K(r)jik*; this is because of the change ****-ji(K)* > *-i(K)***. However, as in the 之 Zhī group, in some cases we can find evidence for reconstructing **-rj-* with confidence. For example, I reconstruct **-rj-* in

(1316) 棘 *jí* < *kik* < **krjɨk* 'jujube; thorns'.

There are two bits of evidence for **-r-* here:

1. The *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 5679) says that 棘 *jí* is "read like [dú ruò 讀若]" the following word:

(1317) 戟 *jǐ* < *kjæk* < **krjak* 'halberd',

which must be reconstructed with **-rj-* according to the present system (see section 10.2.5 below). At the time of the *Shuōwén*, the medial **-r-* should still have been present. Also, Zhèng Zhòng 鄭衆 (died A.D. 83), an Eastern Hàn commentator, said in his commentary to the *Zhōu lǐ* 周禮 that 棘 *jí* < **krjɨk* should be read as 戟 *jǐ* < **krjak* (cited in Coblin 1983: 152, item 133).

2. In Ode 189.4, where 棘 *jí* is a rhyme word, the Hán *Shī* has instead

(1318) 朸 *lì* < *lik* < **C-rjɨk* 'corner',

which is also evidence for the reconstruction of **-r-* in 棘 *jí*. The same character is also found for 棘 *jí* (evidently with the ordinary meaning "thorns") in the Mǎwángduī *Lǎozǐ* (A version, chapter 30).[353]

Since **-ɨk?* and **-ɨks* merged with **-ɨ?* and **-ɨs* as a result of **final cluster simplification**, it is sometimes difficult to decide whether or not to reconstruct a coda **-k* in *shǎngshēng* and *qùshēng* words. Generally, I reconstruct **-ɨk?* and **-ɨks* in words which rhyme with or show obvious morphological relationships to words in **-ɨk*. In doubtful cases, I put the **k* in parentheses.

10.2.2.1. The reconstruction of the *-ɨk(s) *group*

The development of **-ɨk* after nonlabialized initials is summarized in Table 10.65. Syllables with labialized initials, which are largely parallel, developed as shown in Table 10.66.

As we have seen, these developments are accounted for by the same changes listed above for the **-ɨ* group, except of course that ***j-insertion** does not apply. Syllables in **-ɨk?* or **-ɨks* lost their **k* (by **final cluster simplification**) and then developed like original **-ɨ?* and **-ɨs* respectively.

Table 10.65. Development of **-ɨk* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ɨk*	all	*-ok*	**-ək*	**-ək*	**-ə́k*
**-rɨk*	all	*-ɛk*	**-ɛk*	**-rək*	**-ʳə́k*
**-jɨk*	unrounded	*-ik*	**-i̯ək*	**-jək*	**-ə̀k*
	**P-*	*-juwk*	**-i̯ŭk*	**-jək*	**-ə̀k*
**-rjɨk*	acute	*-ik*	**-i̯ək*	**-rjək*	**-ʳə̀k*
	**K-*	*-ik*	**-i̯ək*	**-jək*	**-(r)ə̀k* (?)
	**P-*	*-ik*	**-i̯ək*	**-jiək*	**-ʳə̀k*

Table 10.66. Development of **-ɨk* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**Kʷɨk*	*Kwok*	**Kwək*	**Kwək*	**Kʷə́k*
**Kʷrɨk*	*Kwɛk*	**Kwɛk*	**Kwrək*	**Kʷrə́k*
**Kʷjɨk*	*Kjuwk*	**Ki̯ŭk*	**Kwjək*	**Kʷə̀k*
**Kʷrjɨk*	*Kwik*	**Ki̯wək*	**Kwjiək*	**Kʷrə̀k*

It was pointed out in Chapter 8 that final **-k* was evidently lost by some analogical process in

(1319) 來 *lái* < *loj* < **C-rɨ* < **C-rɨk* 'wheat; come',

which is phonetic in, and must be related to,

(1320) 麥 *mài* < *mɛk* < **mrɨk* 'wheat'.

10.2.2.2. Additional examples of *-ɨk(s)

(1321) 克 *kè* < *khok* < **khɨk* 'overcome'

(1322) 德 *dé* < *tok* < **tɨk* 'virtue'

(1323) 黑 *hēi* < *xok* < **hmɨk* 'black'

(1324) 國 *guó* < *kwok* < **kʷɨk* 'state'

(1325) 革 *gé* < *kɛk* < **krɨk* 'to change; hide of an animal'

(1326) 戒 *jiè* < *kɛjH* < **krɨk(s)* 'guard against, admonish'

(1327) 馘 *guó* < *kwɛk* < **kʷrɨk* 'cut-off ears (or heads) of slain enemies'

(1328) 北 *běi* < *pok* < **pik* 'north'

(1329) 背 *bèi* < *pwojH* < **piks* 'the back, posterior'

(1330) 織 *zhī* < *tsyik* < **tjik* 'to weave'

(1331) 億 *yì* < *ʔik* < **ʔ(r)jik* 'one hundred thousand'

(1332) 福 *fú* < *pjuwk* < **pjik* 'benefit, favor, good fortune'

(1333) 富 *fù* < *pjuwH* < **pjiks* 'rich'

(1334) 域 *yù* < *hwik* < **wrjik* 'boundary, territory'

10.2.3. The traditional 蒸 Zhēng group

The Middle Chinese finals traditionally included in the 蒸 Zhēng group are listed in Table 10.67.

Table 10.67. Middle Chinese finals of the traditional 蒸 Zhēng group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-(w)ong*	*-(w)əng*	登 Dēng (Tong)	
II	*-(w)ɛng*	*-(w)ɛng*	耕 Gēng (Kɛng)	(in part)
III	*-(w)ing*	*-i̯(w)əng*	蒸 Zhēng (Tsying)	
	-juwng	*-i̯ung*	東 Dōng (Tuwng)	(in part)—grave only

This group is parallel to the previous two; I reconstruct it with **-ing*. **Rounding assimilation** operated here also, as in these examples:

(1335) 弓 *gōng* < *kjuwng* < **k*^{w}*jing* '(archer's) bow'

(1336) 夢 *mèng* (< *muwng(H)*) < *mjuwng(H)* < **mjing(s)* 'dream'

(The last item is affected also by the minor change ***mjuw(K)* > *muw(K)***.)

But **rounding assimilation** is blocked by medial **-r-*. Especially clear evidence for medial **-r-* comes from this pair of related words:

(1337) 冰 *bīng* < *ping* < **prjing* 'ice'

(1338) 凌 *líng* < *ling* < **C-rjing* 'ice'.

Both words occur together in an interesting passage in Ode 154.8 (*Bīn fēng* 豳風: *Qī yuè* 七月):

二之日鑿冰沖沖　*èr zhīrì zuò bīng CHŌNG-CHŌNG*
三之日納于凌陰　*sān zhī rì nà yú LÍNG YĪN.*

In the days of the second, we cut out the ice, (it sounds)
[**G-LJUNG-G-LJUNG*];
In the days of the third we take it into the ICE-HOUSE.

(The translation is adapted from Karlgren 1974: 99.)

As with the previous two groups, **-jing* and **-rjing* have merged after unrounded gutturals, and we often have to write **K(r)jing*, as in

(1339) 興 *xīng* < *xing* < **x(r)jing* 'lift, raise'.

10.2.3.1. The reconstruction of the *-ing *group*

The reconstruction of **-ing* in syllables with nonlabialized initials is summarized in Table 10.68 below.

Table 10.68. Development of **-ing* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ing*	all	*-ong*	**-əng*	**-əng*	**-óŋ*
**-ring*	all	*-ɛng*	**-ɛng*	**-rəng*	**-ʳóŋ*
**-jing*	unrounded	*-ing*	**-i̯əng*	**-jəng*	**-òŋ*
	**P-*	*-juwng*	**-i̯ŭng*	**-jəng*	**-ʷòŋ*
**-rjing*	acute	*-ing*	**-i̯əng*	**-rjəng*	**-ʳòŋ*
	**K-*	*-ing*	**-i̯əng*	**-jəng*	**-(ʳ)òŋ*
	**P-*	*-ing*	**-i̯əng*	**-jiəng*	**-ʳʷòŋ*

Syllables with labialized initials, which are parallel, developed as shown in Table 10.69.

Table 10.69. Development of **-ing* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K*ʷ*ing*	*Kwong*	**Kwəng*	**Kwəng*	**K*ʷ*óŋ*
**K*ʷ*ring*	*Kweng*	**Kwɛng*	**Kwrəng*	**K*ʷ*róŋ*
**K*ʷ*jing*	*Kjuwng*	**Ki̯ŭng*	**Kwjəng*	**K*ʷ*òŋ*
**K*ʷ*rjing*	*Kwing* (?)	**Ki̯wəng*	**Kwjiəng*	**K*ʷ*ròŋ*

The MC final *-wing* is a theoretical possibility in syllables like **K^{w}rjing*, but no such syllable actually occurs in the *Qièyùn*.

10.2.3.2. Additional examples of *-ɨng

(1340) 登 *dēng* < *tong* < **tɨng* 'ascend'

(1341) 崩 *bēng* < *pong* < **pɨng* 'collapse'

(1342) 薨 *hōng* < *xwong* < **hmɨng* 'to die; buzzing sound'

(1343) 肱 *gōng* < *kwong* < **k^{w}ɨng* 'upper arm'

(1344) 繃 *bēng* < *pɛng* < **prɨng* 'to bind round'

(1345) 宏 *hóng* < *hwɛng* < **g^{w}rɨng* 'great'

(1346) 勝 *shèng* < *syingH* < **hljɨngs* 'conquer'

(1347) 蒸 *zhēng* < *tsying* < **tjɨng* 'to steam'

(1348) 雄 [*xióng*] < *hjuwng* < **wjɨng* 'male of birds and small animals'

The initial consonant of 雄 *xióng* has developed irregularly. The fricative initial in Early Middle Chinese words with *hj-* was generally lost by Late Middle Chinese, so we would expect Early Middle Chinese *hjuwng* to become Mandarin *yóng* (and then possibly *róng*, by the minor sound change discussed in Chapter 1). But the placement of this word in the *Yùnjìng* indicates that 雄 *xióng* still had a fricative initial in Late Middle Chinese, which accounts for the initial *x-* [ɕ-] in modern Mandarin.

10.2.4. The traditional 魚 Yú group

The Middle Chinese finals traditionally included in the 魚 Yú group are listed in Table 10.70.

In this group, *-w-* is not contrastive after acute initials, so there is no need to reconstruct a rounding contrast. There are division-I finals but no division-IV finals, so I reconstruct a back vowel **-a*, but no front vowels. The major problem in this group is accounting for the contrast between *-jo* and *-jæ*.

Table 10.70. Middle Chinese finals of the traditional 魚 Yú group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-u*	*-uo*	模 Mú (Mu)	
II	*-(w)æ*	*-(w)a*	麻 Má (Mæ)	(in part)
III	*-jo*	*-i̯wo*	魚 Yú (Ngjo)	
	-jæ	*-i̯a*	麻 Má (Mæ)	(in part)—acute only
	-ju	*-i̯u*	虞 Yú (Ngju)	(in part)—grave only

10.2.4.1. The -jo / -jæ *contrast*

The contrast between MC *-jo* and *-jæ* in this group occurs only with Middle Chinese palatal and dental sibilant initials (though in the relevant words, some of these reflect original velar initials). Karlgren and Li reconstructed distinct finals to account for the contrast:

MC	Karlgren	Li
-jo	*-i̯o*	*-jag*
-jæ	*-i̯å*	*-jiag*

Karlgren's solution requires distinct vowels **o* and **å* to rhyme with each other; Li's is suspect because there is a **-jiag* in his system but no **-iag*. Also, neither solution explains why the final which is the source of *-jæ* should occur only after a restricted set of initials.

In my system, contrasting division-III finals are usually handled by reconstructing a medial contrast **-j-* versus **-rj-*; but this option is not available in this case because **-rj-* would produce a retroflex initial, but neither *-jo* nor *-jæ* is restricted to retroflex initials. There is a parallel problem in the **-ak(s)* group, as we will see in the next section.

I suspect that this contrast arose as a result of dialect mixture, but for the present I maintain the distinction in my reconstruction, writing OC **-jA* as the source of MC *-jæ* and **-ja* as the source of MC *-jo* (and *-ju*). (Similarly, I write **-jAk* > *-jek* and **-jAks* > *-jæH* in the **-ak(s)* group; see section 10.2.5 below.) The capital **A* is simply a device to mark an unsolved problem; I claim no phonetic characteristics for it different from **a*.

Probably, however, both MC *-jæ* and *-jo* reflect original **-ja*. The *-jæ* final can be attributed to a sound change ****-jA(k)* fronting**, which fronted original

-ja* in certain acute-initial syllables. The precise conditions for **-jA(k)* fronting** must have varied from dialect to dialect. Our Middle Chinese sources sometimes preserve one reading, sometimes the other, sometimes both. Here are some further facts bearing on this problem:

1. The idea that *-jæ* and *-jo* in this group have a common origin is supported by the fact that a number of words have readings with both finals. For example, the *Guǎngyùn* records both *tsyo* and *tsyæ* as pronunciations for the character 諸 *zhū* when used as a surname. Similarly, it lists the pronunciations *yo* and *dzyæ* for the surname 余 *Yú*; under the entry for the *dzyæ* reading, it says, "it comes from Nánchāng jùn 南昌郡" (modern Jiāngxī). Different pronunciations of the same surname seem especially likely to represent different dialects. Also, the reading tradition preserves two readings for the following item, which occurs in Ode 7.1:

(1349) 罝 *jiē ~ jū < tsjæ ~ tsjo < *tsjA ~ *tsja* 'rabbit net'.

2. Among the contrasting words pronounced *yæ* and *yo*, there is a strong tendency for the words in *yo* to be written with the phonetics 與, 予, and 余, which I would reconstruct with initial **l-*, while words in *yæ* mostly have the phonetic

(1350) 牙 *yá < ngæ < *ngra* 'tooth, tusk'.[354]

Perhaps words in *y-* with this phonetic have *y- < *r-* (section 6.1.3.2), e.g.

(1351) 邪 *yé < yæ < *rA* 'place-name' (琅邪 *Lángyé < lang-yæ < *C-rang-rA*, in modern Shāndōng).[355]

This pattern suggests that the contrast between *yæ* and *yo* may in some cases be conditioned by differences in Old Chinese initials. Notice also the different finals in the two pronunciations of 車 *chē*, whose precise relationship is unclear:

(1352) 車 *jū < kjo < *k(r)ja* 'vehicle'

(1353) 車 *chē < tsyhæ < *KHjA* 'vehicle'

The palatalization and front vowel of the second reading evidently occurred early enough to be reflected in the *Shìmíng*, which says that in ancient times 車 was pronounced like 居 (*jū < kjo < *k(r)ja* 'to reside'), but "nowadays" like 舍 *shè < syæH < *hljAks* 'lodging house') (quoted in Dīng Fúbǎo 1928–1932 [1976]: 6398).[356]

3. Some of the cases of *-jæ* are in words which may originally have had a coda **-k*. In these cases, ****-jA(k)* fronting** may have begun while the **-k*

was still present, and may have followed somewhat different conditions than the fronting of simple **-ja*. Some examples are

(1354) 舍 *shě* < *syæX* < **hljA(k)ʔ* 'to put away, let off, leave; bestow, grant'

which is probably related to the following:

(1355) 釋 *shì* < *syek* < **hljAk* 'unloose; dissolve; loose, leave, let go'

(1356) 赦 *shè* < *syæH* < **hljAks* 'to reduce a penalty, to pardon, let off'

(1357) 射 *shè* < *zyæH* < **LjAks* 'shoot with bow; archer'

Another example (which could be related to the examples just mentioned, if we reconstruct it with **sl-*) is

(1358) 寫 *xiě* < *sjæX* < **s(l)jAkʔ* 'to disburden, relieve'

whose phonetic is

(1359) 舄 *xì* < *sjek* < **sjAk* 'shoe, slipper; large'.

Cases such as these, then, fall under our **-ak(s)* group, not the **-a* group; see the following section for a discussion of ****-jA(k)* fronting** in that group.

10.2.4.2. The reconstruction of the *-a *group*

The reconstruction of the **-a* group is summarized in Table 10.71 below.

Table 10.71. Development of finals in **-a*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-a*	unrounded	*-u*	**-o*	**-ag*	**-á ɣ*
	**K^{w}-, *P-*	*-u*	**-wo*	**-ag*	**-^{w}á ɣ*
**-ra*	unrounded	*-æ*	**-å*	**-rag*	**-^{r}á ɣ*
	**K^{w}-, *P-*	*-wæ*	**-wå*	**-rag*	**-^{rw}á ɣ*
**-ja*	unrounded	*-jo*	**-i̯o*	**-jag*	**-à ɣ*
	**K^{w}-, *P-*	*-ju*	**-i̯wo*	**-jag*	**-à ɣ*
**-jA*	some acute?	*-jæ*	**-i̯å*	**-jiag*	**-à:ɣ* (?)
**-rja*	acute	*-jo*	**-i̯o*	**-rjag*	**-^{r}à ɣ*
	**K-*	*-jo*	**-i̯o*	**-jag*	**-à ɣ*
	**K^{w}-, *P-*	*-ju*	**-i̯wo*	**-jag*	**-^{w}à ɣ*

The above developments are accounted for by the changes ****-jA(k)* fronting, *-ja > -jo, *r-color, *-a > -u***, and ****r-loss***. Note that as a result of ****-a > -u*** syllables like **Ka* and **K^{w}a* merged as MC *Ku*; we must assume that

*K^wu was at some point reanalyzed as *Ku*. OC *Ka and *K^wa are often distinguishable, however, on the basis of division-II or division-III words in the same *xiéshēng* series. Thus I reconstruct a labiovelar initial in

(1360) 狐 *hú* < *hu* < *g^wa 'fox' (cf. Tibeto-Burman *gwa 'fox'; see Benedict 1972: 34, note 111)

because a labiovelar initial is required in its phonetic:

(1361) 瓜 *guā* < *kwæ* < *k^wra 'muskmelon'

But I reconstruct nonlabialized *ga in

(1362) 湖 *hú* < *hu* < *ga 'lake',

which in Middle Chinese is a homonym of 狐 *hú* < *g^wa 'fox'. This is because in the case of 湖 *ga, *xiéshēng* evidence indicates plain *K-, not *K^w-, for we find in the same *xiéshēng* series

(1363) 居 *jū* < *kjo* < *$k(r)ja$ 'reside',

which must be reconstructed with nonlabialized *k-; OC *$K^w(r)ja$ would give not MC *Kjo* but MC *Kju*, as in

(1364) 瞿 *qú* < *gju* < *$g^w(r)ja$ 'a kind of lance'.

Note also that *$-rja$ is not normally distinguishable from *$-ja$ after grave initials. (After acute initials, the *r remains as a feature of retroflexion.) If we assume that ***-ja* > *-jo*** preceded ***r*-color**, then the merger of *$-rja$ and *$-ja$ can be accounted for by the general principle that ***r*-color** did not apply to rounded vowels. Thus Middle Chinese readings provide no clues to the presence or absence of *$-r$- in syllables like *Kjo*, *Kju*, or *Pju*. However, there is good *xiéshēng* evidence for medial *$-r$- in some cases. An example is

(1365) 筥 *jǔ* < *kjoX* < *$krja?$* 'round basket',

which has as phonetic

(1366) 呂 *lǚ* < *ljoX* < *g-$rja?$* 'backbone'

With 呂 *lǚ* < *g-$rja?$*, Coblin (1986: 138) compares Tibetan *gra-ma*, for which he gives the following gloss:

> the awn, bristles or the ears of cereals (which often have a symmetrical arrangement); the bones or skeleton of a fish (which has the appearance of layered symmetrical bristles); a lattice, trellis, frame

Another example where we may reconstruct *$-r$- is

(1367) 膚 *fū* < *pju* < **prja* 'human skin',

which is in *xiéshēng* series with such *l*-initial words as

(1368) 廬 [*lú*] < *ljo* < **C-rja* 'hut; inn; to lodge'.

But we have no guarantee that all such **r*'s will be indicated in the *xiéshēng* series, so in doubtful cases I write **-(r)ja*.

10.2.4.3. Additional examples of *-a

(1369) 吾 *wú* < *ngu* < **nga* 'I'

Compare Tibeto-Burman **ŋa*, tone *A (Coblin 1986: 96).

(1370) 五 *wǔ* < *nguX* < **nga?* 'five'

Compare Tibeto-Burman **l-ŋa*, tone *B (Coblin 1986: 80).

(1371) 苦 *kǔ* < *khuX* < **kha?* 'bitter'

Compare Tibeto-Burman **ka*, tone *B (Coblin 1986: 44).

(1372) 家 *jiā* < *kæ* < **kra* 'family'

(1373) 馬 *mǎ* < *mæX* < **mra?* 'horse'

(1374) 寡 *guǎ* < *kwæX* < **k^{w}ra?* 'single, resourceless, alone'

(1375) 于 *yú* < *hju* < **w(r)ja* 'to go'

Compare Tibeto-Burman **s-wa*, tone *A (Coblin 1986: 86).

(1376) 雨 *yǔ* < *hjuX* < **w(r)ja?* 'rain'

Compare Tibeto-Burman **r-wa*, tone *A (Coblin 1986: 122).

(1377) 無 *wú* < *mju* < **m(r)ja* 'have not'

(1378) 衢 *qú* < *gju* < **g^{w}(r)ja* 'street, course'

(1379) 魚 *yú* < *ngjo* < **ng(r)ja* 'fish'

Compare Tibeto-Burman **ngya*, tone *B (Coblin 1986: 80).

(1380) 許 *xǔ* < *xjoX* < **hng(r)ja?* 'permit'

10.2.5. The traditional 鐸 Duó group

The Middle Chinese finals traditionally included in the 鐸 Duó group are listed in Table 10.72.

Table 10.72. Middle Chinese finals of the traditional 鐸 Duó group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-(w)ak*	*-(w)âk*	鐸 Duó (Dak)	
II	*-(w)æk*	*-(w)ɒk*	陌 Mò (Mæk)	
III	*-j(w)ak*	*-j̑(w)ak*	藥 Yào (Yak)	(in part)
	-j(w)æk	*-j̑(w)ɒk*	陌 Mò (Mæk)	(in part)
	-jek	*-j̑äk*	昔 Xī (Sjek)	(in part)—acute only

The finals with *-w-* appear only after guttural initials, so there is no need to reconstruct rounded vowels in this group.

Karlgren assigned a few words in MC *-ek* to this group, reconstructing them with the final **-iak*; I reconstruct them with **-ek,* in the traditional 錫 Xī group. An example is

(1381) 冪 *mì* < *mek* < **mek* 'cover'.

Karlgren reconstructed this as **miak* rather than **miek* (our **mek*) because of the phonetic

(1382) 莫 *mò* < *mak* < **mak* 'there is not'.

But what seems to be the same word *mì* < *mek* appears as a rhyme in the Máo version of Ode 261.2, written as

(1383) 幭 *miè* < *met* < **met* 'covering'.

As we saw in section 8.1.3, although the phonetic of this character would indicate **-et,* the other rhyme words in the sequence have **-ek,* and the word is written in other versions of the *Shījīng* with characters which would indicate **-ek.* Thus I assign this word to the **-ek* group; the character we find in the Máo *Shī* reflects dialect confusion of **-et* and **-ek* (see section 8.1.3). Thus, for the traditional 鐸 Duó group, there is no need to reconstruct any vowel other than **a.*

A few words from the traditional 鐸 Duó group also appear in the *Qièyùn*'s 麥 Mài (Mɛk) rhyme, most notably

(1384) 獲 *huò* < *hwɛk* < **wrak* 'to catch, take, hit, succeed'.

A Middle Chinese reading *hwɛk* would normally indicate **-ek* or **-ik,* but both the *xiéshēng* evidence and the *Shījīng* rhymes indicate that 獲 *huò* had the final **-ak*. The reading *hwɛk* probably results from the common confusion between MC *-ɛ-* and *-æ-*. (Recall that $*K^{w}ren$ unexpectedly becomes MC *Kwæn,* merging with $*K^{w}ran$, instead of the reflex *Kwɛn* that would be expected.)

10.2.5.1. The -jak / -jek *contrast*

Parallel to the *-jo* / *-jæ* contrast in the **-a* group, we find a contrast between MC *-jak* and *-jek* in the **-ak* group after acute initials. In this case, too, I will assume that the front final *-jek* results from the change ***-jA(k)* fronting**, and that contrasts result from dialect mixture or other factors. There are fewer such contrasts in the **-ak* group than in the **-a* group; in the **-ak* group, ***-jA(k)* fronting** seems to affect almost all acute-initial syllables except those beginning with **n-* or *l-* < **C-r-*. But to be consistent with my notation for the **-a* group, I will write **-jAk* as the source of MC *-jek,* and **-jAks* as the source of MC *-jæH* in this group. We have, for example,

(1385) 赤 *chì* < *tsyhek* < **KHjAk* 'red'[357]

(1386) 石 *shí* < *dzyek* < **djAk* 'stone, rock'

(1387) 借 *jiè* < *tsjæH* ~ *tsjek* < **tsjAk(s)* 'loan, borrow'

(1388) 席 *xí* < *zjek* < **zljAk* 'mat'

(1389) 尺 *chǐ* < *tsyhek* < **thjAk* 'a measure, to measure'

The *rùshēng* component of ***-jA(k)* fronting** evidently did not affect the colloquial stratum of the Mǐn dialects; selected colloquial Mǐn reflexes for these four items are listed in Table 10.73 (data from Norman 1969, with minor changes in notation).

The Mǐn reflexes shown in Table 10.73 are those that usually correspond to Middle Chinese *-jak* < OC **-jak*. No such forms in *-io?* are found corresponding to Middle Chinese *-jek* < **-jek*. This shows that the merger of **-jAk* with **-jek* which is reflected in Middle Chinese did not happen in the colloquial layer of Mǐn. The preservation in Mǐn dialects of the distinction between OC **-jAk* and **-jek*, which was lost in the *Qièyùn*, is one of a number of reasons for believing that the Mǐn dialects cannot be descended from Middle Chinese, but must have broken off at an earlier period.

Table 10.73. Colloquial Mǐn reflexes of OC **-jAk*

	石	借	席	尺
OC	**djAk*	**tsjAk*	**zljAk*	**thjAk*
MC	*dzyek*	*tsjek*	*zjek*	*tsyhek*
Fúzhōu	*sio?8*	*tsio?7*	*tsio?8*	*tshio?7*
Xiàmén	*tsio?8*	*tsio?7*	*tsio?8*	*tshio?7*

A passage in the *Yán shì jiā xùn* (see Chapter 2) mentions that in the *Yùn jí* by Lǔ Jīng, a pre-*Qièyùn* rhyme book mentioned in the *Qièyùn* preface but now lost, the word

(1390) 石 *shí* < *dzyek* < **djAk* 'stone, rock'

was put in a different rhyme from

(1391) 益 *yì* < *ʔjiek* < **ʔjek* 'to add, increase'.

(See Zhōu Zǔmó 1943 [1966]: 420.) Lǔ Jīng lived in the Jìn dynasty (A.D. 265–420), and was a native of Shāndōng (Zhōu Zǔmó 1963 [1966]: 436). His rhyme book evidently represented a dialect where, as in colloquial Mǐn, **-jAk* had not merged with **-jek*.

In the *Qièyùn* itself, although **-jAk* merged with **-jek*, **-jAks* remained distinct from **-jeks*: **-jAks* regularly becomes *-jæH*, while **-jeks* becomes *-jeH*. Thus we have *-jæH* < **-jAks* in

(1392) 炙 *zhì* < *tsyek* ~ *tsyæH* < **tjAk(s)* 'roast, broil'

(1393) 射 *shè* < *zyæH* < **LjAks* 'shoot with bow; archer', also read *yæH* < **ljAks*, *zyek* < **LjAk*, *yek* < **ljAk*

but *-jeH* < **-jeks* in the following words:

(1394) 易 *yì* < *yek* < **ljek* 'to change', also read *yì* < *yeH* < **ljeks* 'be easy; at ease; neglect'.

(1395) 積 *jī* < *tsjek* < **tsjek* 'to collect, accumulate', also read *tsjeH* < **tsjeks*.

(1396) 刺 *cì* < *tshjek* ~ *tshjeH* < **tshjek(s)* 'to prick, pierce, stab'

10.2.5.2. The development of *-rjak

The Middle Chinese final *-jæk* in this group is reconstructed as **-rjak*; the fronting of the vowel is attributed to the change ***r-color**. As outlined in Chapter 7, ***r-color** can be formulated as a fronting and laxing of vowels after medial **-r-*. In most cases, these effects were subphonemic until the **-r-* which conditioned them was lost (***r-loss**), probably around A.D. 500.

The development of **-rjak* after acute initials is not clear; there seems to be vacillation among MC *TSr(j)æk, TSr(j)ɛk, TSrjak,* and even *TSræwk.* (The fact that *TSrj-* was merging with *TSr-* in Middle Chinese times makes these especially difficult to sort out.) For example, we have MC *-æwk* in

(1397) 朔 *shuò* < *sræwk* < **sngr(j)ak*[358] 'north; the first day of the moon'.

We also have

(1398) 索 *suǒ* < *sak* < **sak* 'rope; to search', also read *srjæk* ~ *srɛk* < **srjak.*

The situation is clearer in the parallel **-ang* group, where **TSrjang* became MC *TSrjang,* not *TSrjæng* (see section 10.2.6 below).

10.2.5.3. The reconstruction of the *-ak(s) *group*

The development of **-ak* after nonlabialized initials is summarized in Table 10.74 below.

Table 10.74. Development of **-ak* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ak*	all	*-ak*	**-âk*	**-ak*	**-ák*
**-rak*	all	*-æk*	**-ăk*	**-rak*	**-^{r}ák*
**-jak*	all	*-jak*	**-i̯ak*	**-jak*	**-àk*
**-jAk*	acute	*-jek*	**-i̯ăk*	**-jiak*	**-^{j}àk*
**-rjak*	acute	*-jæk/-jak* (?)	**-i̯ak/*-i̯ăk*	**-rj(i)ak*	**-^{r}àk*
	grave	*-jæk*	**-i̯ăk*	**-jiak*	**-^{r}àk*

Syllables with labialized initials, which are parallel, developed as shown in Table 10.75.

As a result of **final cluster simplification**, finals in **-aks* developed like those in original **-as.*

Table 10.75. Development of **-ak* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}ak*	*Kwak*	**Kwâk*	**Kwak*	**K^{w}ák*
**K^{w}rak*	*Kwæk ~ Kwɛk*	**Kwăk*	**Kwrak*	**K^{w}rák*
**K^{w}jak*	*Kjwak*	**K$_{i}$wak*	**Kwjak*	**K^{w}àk*
**K^{w}rjak*	*Kjwæk*	**K$_{i}$wăk*	**Kwjiak*	**K^{w}ràk*

10.2.5.4. Additional examples of *-ak(s)

(1399) 惡 *è* < *ʔak* < **ʔak* 'evil', also read *wù* < *ʔuH* < **ʔaks* 'hate'

(1400) 度 *duó* < *dak* < **lak* 'to measure', also read *dù* < *duH* < **laks* 'a measure'

(1401) 作 *zuò* < *tsak* < **tsak* 'to act', also read *tsuH* < **tsaks*

(1402) 墓 *mù* < *muH* < **maks* 'tomb'

(1403) 百 *bǎi* < *pæk* < **prak* 'hundred'

(1404) 怕 *pà* < *phæH* < **phraks* 'fear'

(1405) 客 *kè* < *khæk* < **khrak* 'guest'

(1406) 詐 *zhà* < *tsræH* < **tsraks* 'commit treachery'

(1407) 略 *lüè* < *ljak* < **g-rjak* 'sharpen, define'

(1408) 膆 *jué* < *gjak* < **gjak* 'tongue'

(1409) 據 *jù* < *kjoH* < **k(r)jaks* 'depend on'

(1410) 縛 *fù* < *bjak* < **bjak* 'bind, wrap, roll'

(1411) 卻 *què* < *khjak* < **khjak* 'decline, refuse'

(1412) 綌 [*xì*] < *khjæk* < **khrjak* 'coarse dolichos cloth'

(1413) 逆 *nì* < *ngjæk* < **ngrjak* 'to go against'

(1414) 碧 *bì* < *pjæk* < **prjak* 'green or blue precious stone'

(1415) 攫 *jué* < *kjwak* < **k^{w}jak* 'seize'

10.2.6. The traditional 陽 Yáng group

The Middle Chinese finals traditionally included in the 陽 Yáng group are listed in Table 10.76.

Table 10.76. Middle Chinese finals of the traditional 陽 Yáng group

	MC	AC (Karlgren)	*Qièyùn* rhyme	Comments
I	*-(w)ang*	*-(w)âng*	唐 Táng (Dang)	
II	*-(w)æng*	*-(w)ɒng*	庚 Gēng (Kæng)	
III	*-j(w)ang*	*-i̯(w)ang*	陽 Yáng (Yang)	
	-j(w)æng	*-i̯(w)ɒng*	庚 Gēng (Kæng)	(in part)

Like the 魚 Yú and 鐸 Duó groups, this group has division-I finals but no division-IV finals, and shows no *kāikǒu/hékǒu* contrasts after acute initials. It can be reconstructed with **-ang*.

10.2.6.1. The reconstruction of the *-ang *group*

In syllables with nonlabialized initials, **-ang* developed as shown in Table 10.77 below.

Table 10.77. Development of **-ang* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ang*	all	*-ang*	**-âng*	**-ang*	**-áŋ*
**-rang*	all	*-æng*	**-ăng*	**-rang*	**-ʳáŋ*
**-jang*	all	*-jang*	**-i̯ang*	**-jang*	**-àŋ*
**-rjang*	acute	*-jang*	**-i̯ang*	**-rjang*	**-ʳàŋ*
	grave	*-jæng*	**-i̯ăng*	**-jiang*	**-ʳàŋ*

Note that while the vowel **a* was fronted in syllables like **Krjang* > MC *Kjæng*, it remained back in acute-initial syllables like **TSrjang* > MC *TSrjang*. Perhaps we have a phenomenon like that observed by Schane in the history of French vowel nasalization (Schane 1971). French vowel nasalization apparently occurred in three steps: (1) the nasalization of all vowels before nasal consonants; (2) the loss of nasal consonants in some

environments; and (3) the denasalization of vowels before those nasals which remained. The result was that nasalization remained only in those positions where it was phonologically distinctive (because the following nasal was lost), but was lost in those positions where it was predictable (because the following nasal was still there). In the same way, evidently the effects of ***r*-color** remained in those environments where medial **-r-* was lost (as in MC *Kjæng* < **Krjang*), but failed to persist in those environments where the **-r-* was still present as a feature of retroflexion on the initial (as in MC *TSrjang* < **TSrjang*).

Syllables with labialized initials, which are parallel, developed as shown in Table 10.78.

Table 10.78. Development of **-ang* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}ang*	*Kwang*	**Kwâng*	**Kwang*	**K^{w}áŋ*
**K^{w}rang*	*Kwæng*	**Kwăng*	**Kwrang*	**K^{w}ráŋ*
**K^{w}jang*	*Kjwang*	**Kịwang*	**Kwjang*	**K^{w}àŋ*
**K^{w}rjang*	*Kjwæng*	**Kịwăng*	**Kwjiang*	**K^{w}ràŋ*

10.2.6.2. Examples of *-ang

(1416) 藏 *cáng* < *dzang* < **fitshang* (or **fisrang*?) 'to conceal, store', also read *zàng* < *dzangH* < **fitshangs* or **fisrangs* 'a store, treasure'

(1417) 光 *guāng* < *kwang* < **k^{w}ang* 'bright'

(1418) 荒 *huāng* < *xwang* < **hmang* 'waste'

(1419) 更 *gēng* < *kæng* < **krang* 'to change'

(1420) 孟 *mèng* < *mængH* < **mrangs* 'eldest sibling'

(1421) 觥 *gōng* < *kwæng* < **k^{w}rang* 'a kind of drinking vessel'

(1422) 讓 *ràng* < *nyangH* < **njangs* 'to yield'

(1423) 襄 *xiāng* < *sjang* < **snjang* 'to rise'

(1424) 王 *wáng* < *hjwang* < **wjang* 'king'; also read *wàng* < *hjwangH* < **wjangs* 'to be king'

(1425) 方 *fāng* < *pjang* < **pjang* 'square'

(1426) 永 *yǒng* < *hjwængX* < **wrjang?* 'forever'

(1427) 明 *míng* < *mjæng* < **mrjang* 'bright'

This last is probably cognate to

(1428) 亮 *liàng* < *ljangH* < **C-rjangs* 'light'.

(1429) 涼 *liáng* < *ljang* < **g-rjang* 'cold'

Compare Tibeto-Burman **graŋ* 'cold' (Benedict 1972: 39).

(1430) 京 *jīng* < *kjæng* < **krjang* 'hill, capital city'

(1431) 霜 *shuāng* < *srjang* < **srjang* 'hoarfrost'

(1432) 丙 *bǐng* < *pjængX* < **prjang?* '3rd heavenly stem'

(1433) 兩 *liǎng* < *ljangX* < **b-rjang?* 'pair'

10.2.7. The traditional 支 Zhī group

The Middle Chinese finals included in the traditional 支 Zhī group are listed in Table 10.79.

Table 10.79. Middle Chinese finals of the traditional 支 Zhī group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
II	*-(w)ɛi*	*-(w)ai*	佳 Jiā (Kɛi)	
III	*-j(w)(i)e*	*-(w)iɛ*	支 Zhī (Tsye)	(in part)
IV	*-(w)ej*	*-i(w)ei*	齊 Qí (Dzej)	(in part)

This group includes division-IV finals but no division-I finals, indicating that it should be reconstructed with a front vowel; I reconstruct it with **-e*. There is no need to reconstruct a rounded vowel, since *hékǒu* finals appear in this group only after guttural initials.

10.2.7.1. The reconstruction of the *-e *group*

In syllables with nonlabialized initials, OC **-e* developed as shown in Table 10.80 below.

Table 10.80. Development of **-e* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-e*	all	*-ej*	**-ieg*	**-ig*	**-áj*
**-re*	all	*-ɛi*	**-ĕg*	**-rig*	**-ʳáj*
**-je*	grave	*-jie* (IV)	**-i̯ĕg*	**-jig*	**-àj*
	acute	*-je*	**-i̯ĕg*	**-jig*	**-àj*
**-rje*	grave	*-je* (III)	**-i̯ĕg*	**-jig*	**-ʳàj*
	acute	*-je*	**-i̯ĕg*	**-rjig*	**-ʳàj*

With retroflex initials we also find MC *TSrɛi* < *TSrje* by ***TSrj- > TSr-***.

Syllables with labialized initials, which are parallel, developed as shown in Table 10.81.

Table 10.81. Development of **-e* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}e*	*Kwej*	**Kiweg*	**Kwig*	**K^{w}áj*
**K^{w}re*	*Kwɛi*	**Kwĕg*	**Kwrig*	**K^{w}ráj*
**K^{w}je*	*Kjwie* (IV)	**Ki̯wĕg*	**Kwjig*	**K^{w}àj*
**K^{w}rje*	*Kjwe* (III)	**Ki̯wĕg*	**Kwjig*	**K^{w}ràj*

MC *Kjwe* (III) < **K^{w}rje* is a theoretical possibility, but I know of no actual examples.

The change ***j*-insertion**

Note that the change ***j*-insertion** inserted a coda *-j* after original **-e*, causing it to merge with *-ej* < **-ij*. This is probably the same process which caused original **-i* to merge with original **-ij* as MC *-oj* (see section 10.2.1); it can be formulated as the insertion of a coda *-j* after final mid unrounded vowels.

It is unclear whether or not ***j*-insertion** applied to original **-re* and **-je*. In the *Qièyùn*, MC *-ɛi* < **-re* is kept separate from MC *-ɛj* (which represents original **-rij*, **-ri̯j*, and **-ri̯*). But in dialects where ***j*-insertion** applied to **-re*, we would expect a development **-re* > [rɛ] (****r*-color**) > [rɛj] (***j*-insertion**) > MC *-ɛj*. This probably did happen in some dialects, judging from the fact that modern reflexes often show a merger of MC *-ɛi* and *-ɛj*, as in these examples:

(1434) 牌 *pái* < *bɛi* < **bre* 'signboard'

(1435) 排 *pái* < *bɛj* < **brɨj* 'push; push away'

But the modern reflexes of MC *Kɛi* < **Kre* are inconsistent; sometimes MC **Kɛi* merged with MC *Kɛj*, sometimes with MC *Kæ*. For example,

(1436) 街 *jiē* < *kɛi* < **kre* 'street'

has merged with

(1437) 皆 *jiē* < *kɛj* < **krij* 'all',

but

(1438) 佳 *jiā* < *kɛi* < **kre* 'good',

though a homonym of 街 *jiē* according to the *Qièyùn*, has merged with

(1439) 家 *jiā* < *kæ* < **kra* 'family'.

Readings like 佳 *jiā* < *kɛi* may reflect dialects where division-II *-ɛ-* had lowered to *-æ-* before application of ***j*-insertion**. Another possibility is that ***r*-color** operated differently in these dialects, so that **e* became MC *-æ-*, not MC *-ɛ-*, after **r*. In either case, the mid vowel required for ***j*-insertion** was not present.

It is interesting that syllables like MC *Kwɛi* < **K*^{w}*re* seem to take the latter path, merging with *Kwæ* rather than with *Kwɛj*:

(1440) 卦 *guà* < *kwɛiH* < **k*^{w}*res* 'prognosticate; hexagram'.

This suggests that in some dialects **-re-* may have regularly become [æ] after [w]—the same development that we find in words like 環 *huán* < *hwæn* < **wren* 'ring', with *-wæn* instead of the expected *-wɛn* (see section 10.1.1 above).

Chóngniǔ finals *-jie* (IV) and *-je* (III)

As with other front-vowel groups, this group includes words with division-III *chóngniǔ* finals that are often ignored or treated as irregular in other reconstructions. In my system these are the regular reflexes of **-rje* after grave initials, as in

(1441) 碑 *bēi* < *pje* (III) < **prje* 'pillar',

contrasting with

(1442) 卑 *bēi* < *pjie* (IV) < **pje* 'low'.

We also find a division-III *chóngniǔ* final in

(1443) 技 *jì* < *gjeX* (III) < **grje?* 'ability, talent',

whose phonetic

(1444) 支 ~ 枝 *zhī* < *tsye* < **kje* 'branch',

shows regular palatalization of **kj-* before a front vowel. In 技 **grje?*, this palatalization was blocked by the medial **-r-*.

10.2.7.2. Additional examples of *-e

(1445) 觿 *xī* < *hwej* ~ *xjwie* (IV) < **we* ~ **hwje* 'spike of horn or bone for opening knots'

(1446) 倪 *ní* < *ngej* < **nge* 'young and weak'

(1447) 雞 *jī* < *kej* < **ke* 'chicken'

(1448) 提 *tí* < *dej* < **de* 'to take up'

(1449) 圭 *guī* < *kwej* < **k^{w}e* 'jade tablet'

(1450) 解 *jiě* < *kɛiX* < **kre?* 'to unloose, take off'

(1451) 買 *mǎi* < *mɛiX* < **mre?* 'buy'

(1452) 兒 *ér* < *nye* < **ngje* 'child'

(1453) 是 *shì* < *dzyeX* < **dje?* 'this'

(1454) 企 *qǐ* < *khjieX* (IV) < **khJe?* 'stand on tiptoe'

(1455) 規 *guī* < *kjwie* (IV) < **k^{w}je* 'compass'

(1456) 知 *zhī* < *trje* < **trje* 'know'

10.2.8. The traditional 錫 Xī group

The Middle Chinese finals traditionally included in the 錫 Xī group are listed in Table 10.82.

Like the 支 Zhī group, to which it is parallel, this group includes division-IV finals but no division-I finals, and *hékǒu* finals occur only after guttural initials. I reconstruct it with **-ek*.

Table 10.82. Middle Chinese finals of the traditional 錫 Xī group

	MC	AC (Karlgren)	*Qiè yùn* rhyme	comments
II	*-(w)ɛk*	*-(w)ɛk*	麥 Mài (Mɛk)	(in part)
III	*-j(w)(i)ek*	*-i̯(w)ăk*	昔 Xī (Sjek)	(in part)
	-j(w)æk	*-i̯(w)ɔk*	陌 Mò (Mæk)	(in part)
IV	*-(w)ek*	*-i(w)ek*	錫 Xī (Sek)	

10.2.8.1. The reconstruction of the *-ek(s) *group*

In syllables with nonlabialized initials, OC **-ek* developed as shown in Table 10.83 below.

Table 10.83. Development of **-ek* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ek*	all	*-ek*	**-iek*	**-ik*	**-ác*
**-rek*	all	*-ɛk*	**-ĕk*	**-rik*	**-ʳác*
**-jek*	grave	*-jiek* (IV)	**-i̯ĕk*	**-jik*	**-àc*
	acute	*-jek*	**-i̯ĕk*	**-jik*	**-àc*
**-rjek*	grave	*-jæk* (III)	**-i̯ĕk*	**-jik*	**-ʳàc*
	acute	*-jek*	**-i̯ĕk*	**-rjik*	**-ʳàc*

We probably also have MC *TSrɛk* < **TSrjek* by the change ***TSrj- > TSr-***.

Syllables with labialized initials, which are parallel, developed as shown in Table 10.84.

Table 10.84. Development of **-ek* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}ek*	*Kwek*	**Kiwek*	**Kwik*	**K^{w}ác*
**K^{w}rek*	*Kwɛk*	**Kwĕk*	**Kwrik*	**K^{w}rác*
**K^{w}jek*	*Kjwiek* (IV)	**Ki̯wĕk*	**Kwjik*	**K^{w}àc*
**K^{w}rjek*	*Kjwæk* (III)	**Ki̯wĕk*	**Kwjik*	**K^{w}ràc*

MC *Kjwæk* < **K^{w}rjek* is a theoretical possibility, but I know of no actual examples.

Finals in **-eks* developed like those in **-es*, with which they merged as a result of **final cluster simplification**.

The Middle Chinese finals *-jiek* and *-jæk* are not *chóngniǔ* finals in the strict sense, since they are in different *Qièyùn* rhymes—昔 Xī (Sjek) and 陌 Mò (Mæk) respectively—but they pattern like the *chóngniǔ* finals in that *-jiek* is placed in division IV of the rhyme tables, while *-jæk* is placed in division III. Words in this group with the final *-jæk* have usually been regarded as exceptional, but in my system they are the regular reflexes of **-rjek*. Examples include

(1457) 屐 *jī* < *gjæk* < **grjek* 'clog sandal'.

Here the phonetic 支 **kje* indicates the vowel **e*. Another example is the **e/o* binome

(1458) 迟曲 [*xì*]*qū* < *khjæk-khjowk* < **khrjek-kh(r)jok* 'crooked walking'.

This expression is also written 郤曲, with 郤 [*xì*] < *khjæk* < **khrjak* substituted for 迟 **khrjek* (see Dīng Fúbǎo 1928–1932 [1976]: 768; Morohashi 1955–1960, item 39940.4). Here 曲 *qū* < MC *khjowk* could represent either **khjok* or **khrjok* (since ****r*-color** did not affect rounded vowels), but the **-r-* in the first syllable of the binome suggests that the latter reconstruction **khrjok* is correct.

10.2.8.2. Additional examples of *-ek(s)

(1459) 擊 *jī* < *kek* < **kek* 'to beat; strike'

(1460) 繫 *jì* < *kejH* < **keks* (< **kiks*?) 'to tie', also read *xì* < *hejH* < **fikeks* (< **fikiks*?)

This last item could be related to 結 *jié* < *ket* < **kit* < **kik* 'to tie', and/or 繼 *jì* < *kejH* < **keks* (< **kiks*?) 'continue'. Cf. Tibetan *'khyig-pa* 'to bind' (Coblin 1986: 150).

(1461) 錫 *xī* < *sek* < **slek* 'tin'

(1462) 帝 *dì* < *tejH* < **teks* 'sovereign'

(1463) 鵙 *jú* < *kwek* < **k^{w}ek* 'shrike'

(1464) 鬲 *lì* < *lek* < **C-rek* 'a kind of ritual vessel'

This last item is phonetic in the division-II word

(1465) 隔 *gé* < *kɛk* < **krek* 'obstruct'.

(1466) 脈 *mài* < *mɛk* < **mrek* 'vein'

(1467) 畫 ~ 劃 [*huà*] < *hwɛk* < **wrek* 'delineate, mark off'

We would expect MC *hwɛk* to become Mandarin *huò*; the reading *huà* probably comes from the related form

(1468) 畫 *huà* < *hwɛiH* < **wreks* 'picture'.

I suspect that the *rùshēng* form *hwɛk* < **wrek* was originally verbal, and the *qùshēng* form *hwɛiH* < **wreks* nominal (as still in Cantonese: *waahk wá* 'to draw a picture'). In Mandarin, the *qùshēng* form *huà* < *hwɛiH* < **wreks* has evidently been generalized to serve both functions.

(1469) 易 *yì* < *yek* < **ljek* 'change'

(1470) 易 *yì* < *yeH* < **ljeks* 'easy'

(1471) 益 *yì* < *ʔjiek* (IV) < **ʔjek* 'increase'

(1472) 僻 *pì* < *phjiek* (IV) < **phjek* 'oblique; depraved'

(1473) 避 *bì* < *bjieH* (IV) < **bjeks* 'go away from; avoid'

(1474) 役 *yì* < *ywek* < **wjek* 'war expedition'

In modern pronunciation, this word has lost its medial *-w-*, as not infrequently happens before front vowels; Karlgren (1957, item 851a) failed to see that 役 *yì* was *hékǒu* in Middle Chinese, and reconstructed it erroneously as Ancient Chinese *ɟiäk* < **dɟiĕk*. Karlgren's error was pointed out by Dǒng Tónghé (1944 [1948]: 91).

(1475) 責 *zé* < *tsrɛk* < **tsr(j)ek* 'hold responsible'

(1476) 債 *zhài* < *tsrɛiH* < **tsr(j)eks* 'debt'

10.2.9. The traditional 耕 Gēng group

The Middle Chinese finals traditionally included in the 耕 Gēng group are listed in Table 10.85. I reconstruct this group with **-eng*, parallel to **-e* in the 支 Zhī group and **-ek* in the 錫 Xī group.

Table 10.85. Middle Chinese finals of the traditional 耕 Gēng group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
II	*-(w)ɛng*	*-(w)ɛng*	耕 Gēng (Kɛng)	(in part)
III	*-j(w)(i)eng*	*-i̯(w)äng*	清 Qīng (Tshjeng)	
	-j(w)æng	*-i̯(w)ɒng*	庚 Gēng (Kæng)	(in part)
IV	*-(w)eng*	*-i(w)eng*	青 Qīng (Tsheng)	

10.2.9.1. The reconstruction of the *-eng *group*

In syllables with nonlabialized initials, OC **-eng* developed as shown in Table 10.86 below.

Table 10.86. Development of **-eng* after nonlabialized initials

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-eng*	all	*-eng*	**-ieng*	**-ing*	**-áŋ*
**-reng*	all	*-ɛng*	**-ĕng*	**-ring*	**-ʳáŋ*
**-jeng*	grave	*-jieng* (IV)	**-i̯ĕng*	**-jing*	**-àŋ*
	acute	*-jeng*	**-i̯ĕng*	**-jing*	**-àŋ*
**-rjeng*	grave	*-jæng* (III)	**-i̯ĕng*	**-jing*	**-ʳàŋ*
	T-	*-jeng*	**-i̯ĕng*	**-rjing*	**-ʳàŋ*
	TS-	*-(j)æng*	**-i̯ĕng*	**-r(j)ing*	**-ʳàŋ*

Middle Chinese sources vacillate between *TSrjæng* and *TSræng* as the reflex of **TSrjeng*; the reading *TSræng* shows the effects of the change ***TSrj- > TSr-***.

Syllables with labialized initials, which are parallel, developed as shown in Table 10.87.

As with the previous group, MC *-jieng* and *-jæng* are not *chóngniǔ* finals in the strictest sense, since they are in different *Qièyùn* rhymes—清 Qīng (Tshjeng) and 庚 Gēng (Kæng) respectively—but *-jieng* is put in division IV of the rhyme tables, while *-jæng* is put in division III, and in other respects they are parallel to the true *chóngniǔ* finals. And as with the 支 Zhī and 錫 Xī groups, the division-III words in *-jæng* have often been unaccounted for in other reconstructions. In my system they are the regular reflexes of **-rjeng*, as in

Table 10.87. Development of **-eng* after labialized initials

Baxter	MC	Karlgren	Li	Pulleyblank
**K^{w}eng*	*Kweng*	**Kiweng*	**Kwing*	**K^{w}áŋ*
**K^{w}reng*	*Kwɛng*	**Kwĕng*	**Kwring*	**K^{w}ráŋ*
**K^{w}jeng*	*Kjwieng* (IV)	**Kɨwĕng*	**Kwjing*	**K^{w}àŋ*
**K^{w}rjeng*	*Kjwæng* (III)	**Kɨwĕng*	**Kwjing*	**K^{w}ràŋ*

(1477) 驚 *jīng* < *kjæng* (III) < **krjeng* 'be scared, attentive'

(1478) 荊 *jīng* < *kjæng* (III) < **krjeng* 'thorns, briar'

(1479) 平 *píng* < *bjæng* (III) < **brjeng* 'level, even, just'

(1480) 鳴 *míng* < *mjæng* (III) < **mrjeng* 'to sing, make sounds (of animals and musical instruments)' (Schuessler 1987: 422)

This last contrasts with (but could be related to)

(1481) 名 *míng* < *mjieng* (IV) < **mjeng* 'name'.

Perhaps 鳴 **mrjeng* 'to make sound' is related to one or both of the following two items:

(1482) 鈴 *líng* < *leng* < **C-reng* 'small bell, banner bell'

(1483) 笙 *shēng* < *sræng* < *srjæng* < **srjeng* 'reed-organ'

Another example of a division-III *chóngniǔ* final is

(1484) 榮 *róng* < *hwjæng* (III) < **wrjeng* 'flowering, prosperity',

which contrasts with

(1485) 營 *yíng* < *yweng* < **wjeng* 'to lay out, plan, build'.

Here **wj-* is normally palatalized to *yw-* before front vowels, but this palatalization is blocked by medial **-r-*.

10.2.9.2. Additional examples of *-eng

(1486) 青 *qīng* < *tsheng* < **sreng* 'blue or green' (for the initial, see section 6.1.4 above)

(1487) 鼎 *dǐng* < *tengX* < **teng?* 'tripod'

(1488) 貞 [*zhēn*] < *trjeng* < **trjeng* 'to test, try out'

(1489) 荧 *yíng* < *hweng* < **weng* 'dazzle, confuse, delude'

(1490) 耕 *gēng* < *kɛng* < **kreng* 'to plough'

(1491) 迸 *bèng* < *pɛngH* < **prengs* 'drive out, relegate'

(1492) 峥嵘 [*zhēng*]*róng* < *dzrɛng-hwɛng* < **dzreng-wreng* 'high, precipitous'

(1493) 成 *chéng* < *dzyeng* < **djeng* 'to achieve, complete'

(1494) 聲 *shēng* < *syeng* < **xjeng* 'sound'

(1495) 磬 *qìng* < *khengH* < **khengs* 'musical stone'

(1496) 傾 *qīng* < *khjwieng* (IV) < **k*^{w}*hjeng* 'slanting'

(1497) 生 *shēng* < *sræng* < *srjæng* < **srjeng* 'live, be alive'

10.2.10. The traditional 侯 Hóu group

The Middle Chinese finals traditionally included in the 侯 Hóu group are listed in Table 10.88.

Table 10.88. Middle Chinese finals of the traditional 侯 Hóu group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-uw*	*-ɤu*	侯 Hóu (Huw)	
III	*-ju*	*-i̯u*	虞 Yú (Ngju)	(in part)
	-juw	*-i̯ɤu*	尤 Yóu (Hjuw)	(in part)—*TSr-* only

Since this group has division-I finals but no division-IV finals, it is to be reconstructed with a back vowel; I reconstruct it as **-o*. There are no contrasts between *kāikǒu* and *hékǒu* at all.

Labial-initial words of the form **P(r)o*, which we would expect to find in this group, evidently underwent a change to **P(r)i* in some dialects, including those represented in *Shījīng* rhyming. They are therefore usually included in the traditional 之 Zhī group, rather than here. The change ***P(r)o* > *P(r)i*** is not reflected in Middle Chinese, however:

(1498) 母 *mǔ* < *muwX* < **m(r)o?* 'mother'

(See discussion in section 10.2.1.)

This group is unusual that it lacks a division-II final. I account for this (and for other related facts) by assuming that the change ***r*-color**, which was ultimately responsible for the development of independent division-II rhymes, did not apply to rounded vowels. If an original rounded vowel lost its rounding before ***r*-color** took place, then it was affected, as in

(1499) 蠻 *mán* < *mæn* < **mrwan* < **mron* 'southern barbarian'.

But if no such diphthongization took place, the vowel was apparently unaffected, with the result that it is usually impossible to distinguish **-o* from **-ro* or **-jo* from **-rjo* in syllables with grave initials.[359] In grave-initial syllables in **-ro* or **-rjo,* the medial **-r-* was lost by ***r*-loss**, but had no influence on the following vowel. Occasionally, however, we have evidence enabling us to reconstruct **-r-* in words of this group. Here are some examples:

1. The word

(1500) 屨 *jù* < *kjuH* < **krjos* 'sandal, shoe'

should probably be reconstructed with medial **-r-*, since it is written with the phonetic

(1501) 婁 *lǘ* < *lju* < **C-rjo* 'drag, trail'.

2. Clusters can also be reconstructed in a large number of related forms meaning "bent" or "crooked", as in

(1502) 佝僂 *gōulóu* < *kuw-luw* < **k(r)o-C-ro* (?) 'hunchbacked'

(1503) 痀瘻 *jūlǘ* < *kju-lju* < **k(r)jo-C-rjo* 'hunchbacked'

Possibly these are two-syllable extensions of syllables like **kro* or **krjo*. From these forms we should probably infer that there was a cluster in the basic root

(1504) 句 *gōu* < *kuw* < **kro* 'hook, hooked'.[360]

3. For the expression

(1505) 敝漏 *bì lòu* < *bjiejH-luwH* < **bjets-C-ros* 'damaged and leaking' (?)

from the *Yìjīng* (48.2), the Mǎwángduī version reads

(1506) 敝句 *bì gōu* < *bjiejH-kuw* < **bjets-kro* (meaning uncertain).

(See Zhōu Zǔmó 1984: 89.) This probably indicates a medial **-r-* in 句. In light of the Mǎwángduī text, perhaps we should compare this with the following expression, which occurs in Ode 104:

(1507) 敝笱 *bì gǒu* < *bjiejH-kuwX* < **bjets-k(r)o?* 'burst fishtrap'

4. Finally, the expression

(1508) 邂逅 *xièhòu* < *hɛiH-huwH* < **gres-gros* 'carefree and happy'

seems to be a typical **e/o* binome, where we must reconstruct **-r-* in the first syllable because of its division-II final; since such binomes normally have the same medials in both parts, we should probably infer that there was a medial **-r-* in the second syllable also.

10.2.10.1. The reconstruction of the *-o *group*

The development of OC **-o* is summarized in Table 10.89.

Table 10.89. Development of **-o*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-(r)o*	all	*-uw*	**-u*	**-ug*	**-áw*
**-jo*	all	*-ju*	**-ju*	**-jug*	**-àw*
**-rjo*	acute	*-ju(w)*	**-ju*	**-rjug*	**-ʳàw*
	grave	*-ju*	**-ju*	**-jug*	**-(ʳ)àw* (?)

The details of how OC **-(r)o* and **-(r)jo* became MC *-uw* and *-ju* are unclear; for now, I will refer to the changes involved simply as ***-o(K)** > **-uw(K)*** and ***-jo** > **-ju***. Note that **-o* and **-jo,* which rhymed with each other in Old Chinese, ceased to rhyme by Middle Chinese times. According to Ting Pang-hsin (1975: 239), this shift had occurred by the Wèi-Jìn period.

We often find MC *TSrjuw* < **TSrjo* instead of the expected *TSrju.* An example is

(1509) 驟 *zhòu* < *dzrjuwH* < **dzrjos* 'fast-running'.

10.2.10.2. Additional examples of *-o

(1510) 投 *tóu* < *duw* < **do* 'to throw'

(1511) 口 *kǒu* < *khuwX* < **kh(r)o?* 'mouth'

(1512) 偶 *ǒu* < *nguwX* < **ng(r)o?* 'mate, counterpart'

(1513) 寇 *kòu* < *khuwH* < **kh(r)os* 'rob; robber'

(1514) 走 *zǒu* < *tsuwX* < **tso(k)?* 'run' (possibly related to 足 *zú* < *tsjowk* < **tsjok* 'foot')

(1515) 殳 [*shū*] < *dzyu* < **djo* 'a kind of lance'

(1516) 區 *qū* < *khju* < **kh(r)jo* 'section, sort'

(1517) 逾 *yú* < *yu* < **ljo* 'pass on, transgress'

(1518) 主 *zhǔ* < *tsyuX* < **tjo?* 'master'

(1519) 取 *qǔ* < *tshjuX* < **tshjo?* 'take'

(1520) 芻 [*chú*] < *tsrhju* < **tshrjo* 'hay, fodder'

(1521) 儒 *rú* < *nyu* < **njo* 'scholar, literatus'

(1522) 需 *xū* < *sju* < **snjo* 'tarry, wait'

10.2.11. The traditional 屋 Wū group

The Middle Chinese finals traditionally included in the 屋 Wū group, the *rùshēng* counterpart to the 侯 *Hóu* group, are listed in Table 10.90.

Table 10.90. Middle Chinese finals of the traditional 屋 Wū group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-uwk*	*-uk*	屋 Wū (ʔUwk)	
II	*-æwk*	*-ȧk*	覺 Jué (Kæwk)	(in part)
III	*-jowk*	*-i̯wok*	燭 Zhú (Tsyowk)	

Like the previous group, this group has a division-I final but no division-IV final, and can be reconstructed with a back vowel; I reconstruct it as **-ok*. There are no *kāikǒu/hékǒu* contrasts.

Unlike the 侯 Hóu group, however, the 屋 Wū group does have an independent division-II final; we will see below that the 東 Dōng group does also. This probably indicates that the change ***-o(K) > -uw(K)*** applied differently to velar-coda syllables in **-ok* and **-ong* than to open syllables in **-o*. Perhaps syllables in **-ok* and **-ong* had an unrounded main vowel by the time ****r*-color*** applied, while the vowel of syllables in open **-o* was

still rounded, so that ***r*-color** did not affect them. (Note that this could be an indirect argument for the reconstruction of the 侯 Hóu group with open syllables.) The phonetic details are obscure and probably dialect-dependent, but at any rate **-rok* ultimately became MC *-æwk*. Note, however, that **-jok* and **-rjok* apparently merged after grave initials, since finals with **-j-* were not affected by the change ****-o(K) > -uw(K)*** at all.

10.2.11.1. The reconstruction of the *-ok(s) *group*

Old Chinese **-ok* developed as shown in Table 10.91.

OC **-oks* developed like original **-os*, with which it merged as a result of **final cluster simplification**. Since **-roks* is evidently not distinguished from **-oks* in Middle Chinese, this suggests that **final cluster simplification** had already occurred by the time the change ****-o(K) > -uw(K)***.

Table 10.91. Development of **-ok*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ok*	all	*-uwk*	**-uk*	**-uk*	**-ák^{w}*
**-rok*	all	*-æwk*	**-ŭk*	**-ruk*	**-^{r}ák^{w}*
**-jok*	all	*-jowk*	**-i̯uk*	**-juk*	**-àk^{w}*
**-rjok*	grave	*-jowk*	**-i̯uk*	**-juk*	**-(^{r})àk^{w}* (?)
	acute	*-jowk*	**-i̯uk*	**-rjuk*	**-^{r}àk^{w}*

10.2.11.2. Examples of *-ok

(1523) 族 *zú* < *dzuwk* < **dzok* 'clan'

(1524) 屋 *wū* < *ʔuwk* < **ʔok* 'house'

(1525) 木 *mù* < *muwk* < **mok* 'wood'

(1526) 卜 *bǔ* < *puwk* < **pok* 'divine by turtle shell or bone'

(1527) 耨 *nòu* < *nuwH* < **noks* 'hoe'

(1528) 角 *jiǎo ~ jué* < *kæwk* < **krok* 'horn, corner'

(1529) 濁 *zhuó* < *dræwk* < **drok* 'muddy'

(1530) 剝 *bāo ~ bō* < *pæwk* < **prok* 'cut up, flay, peel'

Note that the phonetic here is the possibly related

(1531) 录 *lù* < *luwk* < **C-rok* 'carve wood'.

In the following item, we should probably reconstruct **-r-* because of the binome 迟曲 [*xī*]*qū* < *khjæk-khjowk* < **khrjek-kh(r)jok* 'crooked walking', which must have **-r-* in the first syllable (see section 10.2.8):

(1532) 曲 *qū* < *khjowk* < **kh(r)jok* 'crooked'

(1533) 玉 *yù* < *ngjowk* < **ng(r)jok* 'jade'

(1534) 足 *zú* < *tsjowk* < **tsjok* 'foot'

(1535) 赴 *fù* < *phjuH* < **ph(r)joks* 'hasten to'

(1536) 辱 *rǔ* < *nyowk* < **njok* 'disgrace'

10.2.12. The traditional 東 Dōng group

The Middle Chinese finals traditionally included in the 東 Dōng group are listed in Table 10.92.

Table 10.92. Middle Chinese finals of the traditional 東 Dōng group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-uwng*	*-ung*	東 Dōng (Tuwng)	
II	*-æwng*	*-ǎng*	江 Jiāng (Kæwng)	(in part)
	-jowng	*-i̯wong*	鍾 Zhōng (Tsyowng)	

This group is the *yángshēng* group parallel to the *rùshēng* 屋 Wū group above. As with that group, we are unable to distinguish **-jong* from **-rjong* after grave initials in most cases. One case where we have evidence for **-rjong* is

(1537) 恭 *gōng* < *kjowng* < **krjong* 'respect',

the name of a Western Zhōu king, written in bronze inscriptions with the character



whose phonetic is

(1538) 龍 *lóng* < *ljowng* < **C-rjong* 'dragon'.

(See Zhōu Fǎgāo et al. 1974a, item 321.)

10.2.12.1. The reconstruction of the *-ong *group*

OC **-ong* developed as shown in Table 10.93.

Table 10.93. Development of **-ong*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ong*	all	*-uwng*	**-ung*	**-ung*	$*\text{-}á\eta^{w}$
**-rong*	all	*-æwng*	**-ūng*	**-rung*	$*\text{-}^{r}á\eta^{w}$
**-jong*	all	*-jowng*	**-ɟung*	**-jung*	$*\text{-}à\eta^{w}$
**-rjong*	grave	*-jowng*	**-ɟung*	**-jung*	$*\text{-}(^{r})à\eta^{w}$ (?)
	acute	*-jowng*	**-ɟung*	**-rjung*	$*\text{-}^{r}à\eta^{w}$

10.2.12.2. Examples of *-ong

(1539) 東 *dōng* < *tuwng* < **tong* 'east'

(1540) 工 *gōng* < *kuwng* < **kong* 'work'

(1541) 蓬 *péng* < *buwng* < **bong* 'luxuriant'

(1542) 邦 *bāng* < *pæwng* < **prong* 'country'

(1543) 封 *fēng* < *pjowng* < **p(r)jong* 'fief'

(1544) 用 *yòng* < *yowngH* < **ljongs* 'use'

(1545) 寵 *chǒng* < *trhjowngX* < **hrjong?* 'favor'

(1546) 重 *chóng* < *drjowng* < **drjong* 'double'

(1547) 衝 *chōng* < *tsyhowng* < **thjong* 'assaulting engine'

10.2.13. The traditional 幽 Yōu group

The Middle Chinese finals traditionally included in the 幽 Yōu group are listed in Table 10.94.

This group has contrasts between division-I and division-IV finals, as in the following minimal pair:

(1548) 騷 *sāo* < *saw* 'move, shake, disturb'

(1549) 蕭 *xiāo* < *sew* 'artemisia; whistling'

According to the front-vowel hypothesis, this means that we must reconstruct both front and back vowels in this group. I reconstruct *-aw* < **-u* and *-ew* < **-iw*.

Table 10.94. Middle Chinese finals of the traditional 幽 Yōu group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-aw*	*-âu*	豪 Háo (Haw)	(in part)
	-uw	*-ɔu*	侯 Hóu (Huw)	(in part)—labials only
II	*-æw*	*-au*	肴 Yáo (Hæw)	(in part)
III	*-juw*	*-iɔu*	尤 Yóu (Hjuw)	(in part)
	-wij	*-jwi*	脂 Zhī (Tsyij)	(in part)—gutturals only
	-jiw	*-iĕu*	幽 Yōu (ʔJiw)	grave only
IV	*-ew*	*-ieu*	蕭 Xiāo (Sew)	(in part)

There is also a contrast between the two division-I finals *-aw* and *-uw*:

(1550) 袍 *páo* < *baw* 'long robe'

(1551) 裒 *póu* < *buw* 'collect, assemble'

The final *-uw* occurs in only a few words of this group. We could account for this distinction by setting up a contrast between **-u* and **-iw*, but I have not been able to find support for such a contrast in *Shījīng* rhyming. I have no solution to this problem at present; as a purely notational device, I will write capital **-U* as the source of *-uw* in this group.

However, *muw* in this group does not necessarily represent **mU*, but may result from a different process, namely a minor change ***mjuw(K) > muw(K)*** which evidently affected Early Middle Chinese. By removing the medial *-j-* which was part of the conditions for labiodentalization, this minor change prevented the labiodentalization of *m-* before finals where other labials became labiodentals. An example is

(1552) 貿 [*mào*] < *muwH* < *mjuwH* < **mrjus* 'barter; exchange'

where medial **-r-* is suggested by the phonetic

(1553) 卯 *mǎo* < *mæwX* < **mru?* 'cyclical sign (4th earthly branch)'.

Another example is

(1554) 矛 [*máo*] < *muw* < *mjuw* < **m(r)ju* 'lance'.

The *Guǎngyùn* gives the pronunciation of 矛 *máo* as MC *mjuw*, but the *Jīngdiǎn shìwén*, in its note on Ode 79.2, gives the pronunciation *muw*, reflecting the change ***mjuw(K) > muw(K)***. (The same change also affected cases of *mjuw(K)* which came from OC **mji(K)* by **rounding assimilation**; see section 10.2.1.)

The presence of a few words of the form *Pju* in the 幽 Yōu group where we would expect *Pjuw* is probably due to the influence of northern dialects which had *Pju* corresponding to southern *Pjuw*. Huìlín's *Yíqiè jīng yīnyì* gives readings of both types, but describes the *Pjuw* readings as representing "the pronunciation of Wú 吳 and Chǔ 楚" (quoted in Kōno Rokurō 1954 [1979]: 253.)

*10.2.13.1. The reconstruction of the *-u group*

The development of OC **-u* is summarized in Table 10.95.[361]

To account for the development of **-u* and **-ru*, we must assume a change I call ****-u(K) > -aw(K)***, which changed original **-u* to a diphthong when there was no medial **-j-* in the syllable. This change caused original **-u* and **-ru* to merge with original **-aw* and **-raw* respectively; it must have preceded ****r*-color**, since we have the division-II final *-æw* < **-raw* < **-ru* in such words as the following:

(1555) 包 *bāo* < *pæw* < **praw* < **pru* 'wrap up, bundle up'

Since ****r*-color*** apparently did not affect rounded vowels, it would not have affected original **pru* unless ****-u(K) > -aw(K)*** had already taken place first.

Table 10.95. Development of **-u*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-u*	all	*-ɑw*	**-ôg*	**-əgw*	**-ə́w*
**-U*	**P-* ʔ	*-uw*			
**-ru*	all	*-æw*	**-ǫ̂g*	**-rəgw*	**-ʳə́w*
**-ju*	all	*-juw*	**-i̯ôg*	**-jəgw*	**-ə̀w*
**-rju*	acute	*-juw*	**-i̯ôg*	**-rjəgw*	**-ʳə̀w*
	**K-, *P-*	*-juw* ~ *-jiw*	**-i̯ôg*	**-jəgw*	**-ə̀w*
	**Kʷ-*	*Kwij* (III)	**-i̯wəg*	**-jiəgw*	**-ʳə̀w*

In syllables with medial **-j-*, which were unaffected by ****-u(K) > -aw(K)***, ****r*-color** generally seems to have had no effect; although we can sometimes infer the presence of **-r-* from other evidence, **-ju* and **-rju* generally merged after grave initials. For example, we probably have a medial **-r-* in

(1556) 求 *qiú* < *gjuw* < **grju* 'to seek',

for the Máo text of the *Shījīng* interprets

(1557) 流 *liú* < *ljuw* < **C-rjuw* 'to flow'

in Ode 1 as 求 *qiú* 'to seek'. This is probably a sound gloss, if not a suggestion that 流 *liú* was an error for 求 *qiú*. Bodman (1967: 34) quotes a Zhuàng form *klau* for "ball" which could represent an early borrowing of

(1558) 球 *qiú* < *gjuw* < **grju* 'ball'.

However, I assume that medial **-r-* did have an effect in syllables such as

(1559) 軌 *guǐ* < *kwijX* (III) < **kʷrjuʔ* 'wheel-axle ends'.

It was Li Fang-kuei who proposed that a labiovelar initial was responsible for the unusual development of syllables like this (e.g. Li 1971 [1980]: 42). I account for it by assuming that before ****r*-color**, such syllables underwent a process I will call **rounding dissimilation** which removed the feature of rounding from the main vowel, changing **Kʷrju* to **Kʷrji*. In effect, these words then shifted from the **-u* group (traditional 幽 Yōu) to the **-i* group (traditional 之 Zhī), and thereafter developed just like such **-i* group words as

(1560) 龜 *guī* < *kwij* (III) < **kʷrji* 'turtle, tortoise'.

The loss of rounding in the main vowel made these syllables eligible for ****r*-color**, which fronted the main vowel, eventually producing the Middle Chinese division-III *chóngniǔ* final *-wij*.

Rounding dissimilation can be formulated simply as

$$u \rightarrow \dot{\imath} \,/\, K^{w}(r)j \_\_\_.$$

We can assume that it affected syllables without *-*r*- as well, such as perhaps

(1561) 九 *jiǔ* < *kjuwX* < **k*^{w}*ju?* 'nine',

used as phonetic in 軌 **k*^{w}*rju?* 'wheel-axle ends'.

But the effects of **rounding dissimilation** in such syllables as **k*^{w}*j*$\dot{\imath}$ < **k*^{w}*ju* were soon undone by a reverse change **rounding assimilation**, which must be assumed independently to account for the rounding of the main vowel in certain words of the 之 Zhī group, such as

(1562) 牛 *niú* < *ngjuw* < **ng*^{w}*j*$\dot{\imath}$ 'ox'.

(See discussion in section 10.2.1.) **Rounding assimilation**, however, was blocked by medial *-*r*- (or perhaps by the feature of frontness which medial *-*r*- had added to the main vowel).

This rather confusing series of changes can be summarized by showing the effects of **rounding dissimilation**, ***r*-color**, and **rounding assimilation** on four syllables: two from the *-*u* group and two from the *-$\dot{\imath}$ group, one with *-*r*- and one without in each case. The developments are summarized in Table 10.96.

Table 10.96. Effects of **rounding dissimilation**, ***r*-color**, and **rounding assimilation**

	九	軌	牛	龜
OC	**k*^{w}*ju?*	**k*^{w}*rju?*	**ng*^{w}*j*$\dot{\imath}$	**k*^{w}*rj*$\dot{\imath}$
rounding dissimilation	**k*^{w}*j*$\dot{\imath}$*?*	**k*^{w}*rj*$\dot{\imath}$*?*	——	——
***r*-color**	——	**k*^{w}*rji?*	——	**k*^{w}*rji*
rounding assimilation	**k*^{w}*ju?*	——	**ng*^{w}*ju*	——
MC	*kjuwX*	*kwijX* (III)	*ngjuw*	*kwij* (III)

The result of these three changes was that the two syllables with medial *-*r*- developed alike, and the two syllables without medial *-*r*- developed alike, the original difference of main vowel being lost.

Additional examples of **-u*

(1563) 寶 *bǎo* < *pawX* < **pu?* 'precious'
(1564) 草 *cǎo* < *tshawX* < **tshu?* 'grass'
(1565) 道 *dào* < *dawX* < **lu?* 'way'
(1566) 好 *hǎo* < *xawX* < **xu?* 'good'
(1567) 滔 *tāo* < *thaw* < **hlu* 'swell up'
(1568) 裒 *póu* < *buw* < **bU* 'collect, assemble'
(1569) 茅 *máo* < *mæw* < **mru* 'a kind of grass'
(1570) 讎 *chóu* < *dzyuw* < **Gju* 'counterpart'
(1571) 醜 *chǒu* < *tsyhuwX* < **thju?* 'ugly'
(1572) 臭 *chòu* < *tsyhuwH* < **KHjus* 'smell'
(1573) 酒 *jiǔ* < *tsjuwX* < **tsju?* 'wine'
(1574) 茂 [*mào*] < *muwH* < (*mjuwH* <) **m(r)ju?(s)* 'flourishing'
(1575) 戊 [*wù*] < *muwH* < (*mjuwH* <) **m(r)jus* '5th heavenly stem'
(1576) 牡 *mǔ* < *muwX* < (*mjuwX* <) **m(r)ju?* 'male animal'
(1577) 首 *shǒu* < *syuwX* < **hlju?* 'head'
(1578) 洲 *zhōu* < *tsyuw* < **tju* 'island in a river'
(1579) 柳 *liǔ* < *ljuwX* < **C-rju?* 'willow'
(1580) 杻 *niǔ* < *nrjuwX* < **nrju?* 'privet'
(1581) 簋 *guǐ* < *kwijX* (III) < **k^{w}rju?* 'vessel'
(1582) 逵 *kuí* < *gwij* (III) < **g^{w}rju* 'thoroughfare'

We turn now to the reconstruction of the front-vowel **-iw* group.

10.2.13.2. The reconstruction of the *-iw *group*

The development of OC **-iw* is summarized in Table 10.97.[362]

Table 10.97. Development of **-iw*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-iw*	all	*-ew*	**-iôg*	**-iəgw*	**-ʲə́w*
**-riw*	all	*-æw*	**-ôg*	**-rəgw*	**-ʳə́w*
**-jiw*	grave	*-jiw*	**-i̯ŏg*	**-jiəgw*	**-ʲə̀w*
	acute	*-juw*	**-i̯ôg*	**-jəgw*	**-ə̀w*
**-rjiw*	grave	*-jiw*	**-i̯ŏg*	**-jiəgw*	**-ʲə̀w*
	acute	*-juw*	**-i̯ôg*	**-rjəgw*	**-ʳə̀w*

I assume that **-iw* and **-riw* became *-ew* and *-rew* by the change **hi > mid**, which lowered high vowels to mid height in syllables without **-j-* (see section 7.1.3). The final *-rew* < **-riw* eventually merged with original **-raw* and **-raw* < **-ru* as division-II MC *-æw*. If **-rew* and **-raw* were parallel to **-ren* and **-ran*, we would expect to find two division-II finals, with a final *-ɛw* alongside *-æw*, just as we have *-ɛn* alongside *-æn*; but if there was such a distinction, it was evidently lost by the time of the *Qièyùn*.

After acute initials, original **-jiw* changed to *-juw*, at least in the dialect represented in the *Qièyùn*:[363]

(1583) 秋 *qiū* < *tshjuw* < **tshjiw* 'autumn'.

(1584) 周 *zhōu* < *tsyuw* < **tjiw* 'encircle'

Note that the phonetic 周 *zhōu* generally indicates **-iw*, as in

(1585) 調 *tiáo* < *dew* < **diw* 'tune, adjust'

A change ****-jiw(k) > -juw(k)*** is quite natural; it essentially involves a shift of syllabicity.[364] As a result of this change, the distinction between **-jiw* and **-ju* in acute-initial syllables is lost in Middle Chinese, and must be reconstructed from rhyme and *xiéshēng* evidence.

After grave initials, however, the front vowel of **-jiw* was generally preserved in at least one of the phonological systems underlying the *Qièyùn*, though there is often vacillation in the Middle Chinese sources. Thus the *Guǎngyùn* gives the reading *kjuw* for

(1586) 丩 *jiū* < *kjiw* ~ *kjuw* < **k(r)jiw* 'to twist',

but gives the reading *kjiw* for its alternate form 弓. Similarly, the *Guǎngyùn* gives both *kjiw* and *kjuw*, along with *kæwX*, as readings for

(1587) 疚 *jiū* < *kjiw* ~ *kjuw* ~ *kæwX* < **k(r)jiw* ~ *kriw?* 'stomach pain',

which may be from the same root as 丩 **k(r)jiw* 'to twist'.

It is often difficult to decide whether to reconstruct MC *-jiw* as **-jiw* or **-rjiw*. MC *-jiw* is placed in division IV of the rhyme tables (as the *-ji-* combination of my Middle Chinese notation indicates), which usually seems to reflect OC **-j-* plus a front vowel, without medial **-r-*. But many cases of MC *-jiw* show clear indications of medial **-r-*. An example is

(1588) 樛 *jiū* < *kjiw* < **krjiw* 'down-curving'

whose phonetic is

(1589) 翏 *liù* < *ljuwH* < **C-rjiws* 'whistling of the wind'.

The reconstruction of a front vowel in this series is supported by the division-IV word

(1590) 蓼 *liǎo* < *lewX* < **C-riw?* 'Polygonum plant'.

In the same *xiéshēng* series we have also

(1591) 謬 *miù* < *mjiwH* < **mrjiws* 'lie, error'.

Many of the words in this series seem to represent a root meaning "twist" or "wind". (The meaning "lie, error" of 謬 *miù* is probably a metaphorical extension of "twisted"; compare English *wring* and *wrong*.) We also have the rhyming binome

(1592) 綢繆 *chóumóu* < *drjuw-mjiw* < **drjiw-mrjiw* 'be tied round' (Odes 118.1 and 155.2)

I suspect that this root is related to the following Tibetan word family, with OC **-w* corresponding to Tibetan **-l* (see Bodman 1980: 75–79):

'gril-ba 'be twisted or wrapped round'

sgril-ba 'to wind or wrap round; to roll, wrap, or wind up'

'dril-ba 'to be turned, rolled round, twisted into'

'khril-ba 'to wind or coil round, to embrace, to clasp round'

'khyil-ba 'to wind, to twist'.

At any rate, because of the clear evidence for **-r-* in some words of the form MC *Kjiw*, I reconstruct *Kjiw* < **K(r)jiw*. In a syllable like **Kjiw*, without **-r-*, we would normally expect the velar initial to palatalize, which appears to have happened in

(1593) 收 *shōu* < *syuw* < **xjiw* 'gather up, collect',

whose phonetic, according to the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 1361), is

(1594) 丩 *jiū* < *kjiw* < **k(r)jiw* 'to twist'.

But since we often find exceptions to our theory of palatalization, I am hesitant to reconstruct *-*r*- automatically in all cases where palatalization does not occur.

Additional examples of *-*iw*

Generally, *-*iw* is to be reconstructed in those words of this group which have *xiéshēng* connections to MC *-ew* or *-jiw*, and which rhyme with unambiguous *-*iw* words in the *Shījīng*. This includes *xiéshēng* characters with the phonetics 翏 *liù*, 秋 *qiū*, 丩 *jiū*, 周 *zhōu*, 幽 *yōu*, and 肅 *sù*. For example, I reconstruct

(1595) 膠 *jiāo* < *kæw* < **kriw* 'glue' (rhymes as *-*iw* in Odes 90.2A, 228.3A)

(1596) 秋 *qiū* < *tshjuw* < **tshjiw* 'autumn' (rhymes as *-*iw* in Ode 72.2A)

(1597) 瘳 *chōu* < *trhjuw* < **hrjiw* 'improve, cure' (rhymes as *-*iw* in Odes 90.2A, 264.1C).

The word

(1598) 裯 *chóu* < *drjuw* 'night gown' (?)

appears from its phonetic to be an *-*iw* word, but it rhymes with *-*u* in the Máo version of Ode 21.2B. However, other versions of the text read

(1599) 幬 *chóu* < *drjuw* < **drju* 'covering' or 'bed curtain'

instead of 裯 (Xiàng Xī 1986: 54); and 幬 has a regular *-*u* phonetic. Perhaps 裯 is a loan for 幬 **drju* here.

Other examples of *-*iw* include

(1600) 鳥 [*niǎo*] < *tewX* < **tiw?* 'bird'

(1601) 條 *tiáo* < *dew* < **liw* 'extending branches'

(1602) 調 *tiáo* < *dew* < **diw* 'to tune, adjust'

(1603) 幽 *yōu* < *ʔjiw(X)* < **ʔ(r)jiw(?)* 'dark, black'

(1604) 彪 *biāo* < *pjiw* < **p(r)jiw* '(proper noun)'

(1605) 幼 *yòu* < *ʔjiwH* < **ʔ(r)jiws* 'young'

10.2.13.3. The rhyming of *-iw *and* *-u

In an earlier paper (Baxter 1986b), I examined the rhyming distinction between **-iw* and **-u* using a chi-square analysis; here I reexamine the problem using the newer techniques developed in Chapter 3.

According to the reconstructions above, within the 幽 Yōu group, unambiguous cases of **-iw* and **-u* can be identified by the following criteria:

1. Syllables in MC *-aw*, *-uw*, and *-u*, and grave-initial syllables in MC *-juw*, *-ju*, and *-wij*, unambiguously reflect **-u*.
2. Syllables in MC *-ew* or *-jiw* unambiguously reflect **-iw*.

The occurrences of unambiguous **-iw* and **-u* words in the *Shījīng* are tabulated in Table 10.98. (The 0.96 confidence interval for **P**[**-iw*] in *píngshēng* extends from 6/85 = 0.071 to 18/85 = 0.212. In *shǎngshēng*, the 0.95 confidence interval for **P**[**-iw*] extends from 1/96 = 0.010 to 8/96 = 0.083. We will not be using **P**[**-iw*] in *qùshēng*.)

Table 10.98. Rhyme occurrences of unambiguous **-iw* and **-u* words

	píng	*shǎng*	*qù*
**-iw* tokens	12	4	1
**-u* tokens	73	92	30
total tokens	85	96	31
P[**-iw*]	0.141	0.042	0.032
P[**-u*]	0.859	0.958	0.968

The *Shījīng* rhyme sequences involving unambiguous **-iw* and **-u* words are tabulated in Table 10.99 by tone group and length of sequence.[365]

We see immediately from Table 10.99 that there are two mixed sequences in *píngshēng*. I believe these are artificial; they both involve the word

(1606) 觓 *qiú* < *gjiw* 'long and curved',

which is an unambiguous **-iw* word according to the criteria above because of its final *-jiw*; but this word rhymes with **-u* words, and not with **-iw* words, in both of its *Shījīng* rhyme occurrences. I conjecture that one word

Table 10.99. Rhyme sequences involving unambiguous **-iw* and **-u* words

tone	sequence length	total sequences	**-iw*	**-u*	mixed
píng	2	17	1	14	2
	3	3	0	3	0
	4	3	0	3	0
shǎng	2	25	2	23	0
	3	5	0	5	0
	4	3	0	3	0
qù	[none]				

has been mistaken for another here. Nevertheless, to avoid circularity, I treat it as an **-iw* word when performing the statistical tests.

Notice that in *shǎngshēng*, there are no mixed sequences involving phonologically unambiguous words, but there are two sequences involving unambiguous **-iw* words; thus we may use the method of section 3.2.6. The result is a probability of

$$\mathbf{P} = 0.000394$$

that the observed degree of separation would occur by chance under the null hypothesis. (**P** does not exceed 0.002 for any values of **P**[**-iw*] within the 0.95 confidence intervals.) The rhyming distinction is thus confirmed for phonologically unambiguous words.

10.2.13.4. Rhyme sequences in *-iw *and* *-u

The following sequences in the *Shījīng* involve words in **-iw* (cases apparently mixing **-iw* and **-u* are discussed separately below, and are thus omitted from this list): 69.2A (with **-iwk(s)*), 72.2A, 90.2A, 117.1B–2B, 137.3B, 143.1A (with **-ew*), 153.2B, 154.4A (with **-ew*), 155.4A (with **-ew*), 179.5B (with **-ong*?), 179.7A, 228.3A, 264.1C, 289.1A, and 291.1C (with **-ew*)

Note the tendency for **-iw* and **-ew* to be confused in rhyming; this is similar to the confusion of **-it* and **-et* found earlier (section 10.1.2).

The following *Shījīng* rhyme sequences involve **-u* (sequences apparently mixing **-iw* and **-u* are discussed below): 1.1A, 1.2A, 7.2B, 9.1A, 21.2B, 23.1B, 26.1A, 29.2A (with **-uks*), 31.4B, 34.2B, 35.4A, 35.5A, 39.4B, 46.1A, 54.1B, 59.4A, 64.1B, 64.2B, 64.3B, 65.1C, 65.2C, 65.3C, 67.2A (with **-aw*), 70.2A (with **-uk*), 75.2A, 77.2A, 78.3A, 79.3A (with **-uk*),

81.2A, 82.2B, 82.3C, 97.2A, 105.4A (with **-aw*), 114.3B, 115.2A, 120.2A, 123.1B–2B (with **-iks*), 123.2A, 127.1A, 128.2A, 133.1B, 135.2A, 136.3A, 143.2A, 154.6B, 154.7D, 154.8B, 157.3A, 164.2B, 165.2B, 166.6B, 167.2B, 170.1A, 170.2A, 170.3A, 172.4A, 174.2A, 175.3A, 176.4A, 178.4A, 179.2A, 180.1A, 189.1B, 191.8B, 192.12A (with **-aw*), 193.1A, 193.8B, 194.5B, 195.3A, 197.2A, 197.7A, 200.5A, 200.6B, 205.6A, 208.3A, 209.6C, 210.5A, 212.2A, 215.4A (with **-aw*), 217.3A, 218.3A, 220.4A (with **-aw*), 221.1B, 223.8A (with **-aw*), 224.1A–2A, 229.2A, 231.2A–4A, 231.4B, 233.3A, 234.4B, 235.7B, 238.1A (with **-o*), 240.3B (with **-aw*), 240.4B, 243.2A, 244.3B, 245.5A, 245.7A, 250.4B, 252.2A, 253.2A, 255.3B (with **-uks*), 256.3B (with **-aw*), 256.6B, 257.1A, 257.6D, 259.5B, 260.3A, 261.1B, 262.1A, 262.6A, 263.3A, 263.5B, 264.6B, 265.4A, 282.1C, 282.1G, 283.1B, 286.1A, 291.1D, 292.1A (with **-i*), 292.1B, 298.2A, 299.3A, 299.5B, 299.7A, and 304.4A.

The following rhyme sequences appear to mix **-iw* with **-u*: 39.4B, 54.1B, 59.4A, 116.2A, 123.2A, 128.1A , 215.4A, 267.1A, 292.1B, and 299.7A.

10.2.13.5. Additional notes

Some of the apparent irregularities in rhyming noted above may result from late character changes or substitutions in the text:

1. The three sequences 215.4A, 292.1B, and 299.7A are regular **-u* sequences except for the one word 觓 *qiú* < *gjiw* < **g(r)jiw* (?) 'long and curved'. As mentioned above, the Middle Chinese pronunciation of this word indicates **-iw*, but there are no examples of 觓 *qiú* rhyming with **-iw*. Perhaps the reading tradition is in error here, and we should reconstruct **g(r)ju* (as suggested by the phonetic element of 觓) rather than **g(r)jiw*.

2. Similarly, the sequences 39.4B and 54.1B are regular **-u* sequences except for the reduplicative

(1607) 悠悠 [*yōuyōu*] < *yuw-yuw* < **ljiw-ljiw* 'long-brooding (of thoughts); far away; long-trailing (of banners)',

whose phonetic indicates **-iw*. Similarly, the homophonous expression

(1608) 攸攸 *yōuyōu* < *yuw-yuw* < **ljiw-ljiw* (?) 'flowing on'

rhymes in 59.4A, otherwise a regular **-u* sequence. It is possible that there has been a late character substitution for some of these items. However, 悠 悠 *yōuyōu* seems to rhyme regularly with **-iw* in a line-internal rhyme in Ode 179.7A.

3. In Ode 116.2 we have the line

素衣朱繡
sù yī zhū XIÙ
'white robe and red EMBROIDERY',

where

(1609) 繡 *xiù* < *sjuwH* < **sjiw(k)s* 'embroidery'

rhymes unexpectedly with **-u* (and **-uk*). (I reconstruct **-iw* in 繡 *xiù* because of *xiéshēng* evidence; cf. the division-IV 蕭 *xiāo* < *sew* < **siw* 'artemisia; whistling'). I conjecture that perhaps 繡 *xiù* here is a loan for

(1610) 褎 *xiù* < *zjuwH* < **zjus* 'sleeve',

a regular **-u* word (cf. 120.2A, and a loan use in 245.5A). "White robe with red SLEEVES" would make a good parallel with the first stanza,

素衣朱襮
sù yī zhū BÓ
'white robe and red COLLAR'.

4. Finally, note that 267.1A may well not be intended as a rhyme, since it occurs in a poem of the *Zhōu sòng* section which otherwise does not rhyme at all, or else rhymes very irregularly.

For the remaining irregular sequences (123.2A and 128.1A) I have no explanations to offer. However, it is possible that the change of **-jiw* to *-juw* occurred early enough to affect *Shījīng* rhyming in some dialects (see Baxter 1986b).

10.2.14. The traditional 覺 Jué group

The Middle Chinese finals traditionally included in the 覺 Jué group are listed in Table 10.100.

Since this group includes both division-I *-owk* and division-IV *-ek*, according to the front-vowel hypothesis we must reconstruct it with a front-back contrast. I reconstruct **-uk* and **-iwk*, parallel to the **-u* and **-iw* of the traditional 幽 Yōu group.

Table 10.100. Middle Chinese finals of the traditional 覺 Jué group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-owk*	*-uok*	沃 Wò (ʔOwk)	(in part)
II	*-æwk*	*-ȧk*	覺 Jué (Kæwk)	(in part)
III	*-juwk*	*-i̯uk*	屋 Wū (ʔUwk)	(in part)
IV	*-ek*	*-iek*	錫 Xī (Sek)	(in part)

10.2.14.1. The reconstruction of the *-uk(s) *group*

The development of finals in ***-uk*** is summarized in Table 10.101.

Table 10.101. Development of ***-uk***

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
-uk	all	*-owk*	***-ôk***	***-əkw***	***-ə́k^{w}***
-ruk	all	*-æwk*	***-o̧k***	***-rəkw***	***-^{r}ə́k^{w}***
-(r)juk	all	*-juwk*	***-i̯ôk***	***-(r)jəkw***	***-(^{r})ə̀k^{w}***

OC ***-uks*** developed like ***-us*** (see section 10.2.13 above), with which it merged as a result of **final cluster simplification.**

Table 10.101 shows that ***-uk*** and ***-ruk*** are distinguished in Middle Chinese; I attribute this to the fact that the change ***-u(K) > -aw(K)***, which applied only to syllables without ***-j-***, preceded ***r*-color**: ***-ruk > *-rawk >** MC ***-æwk***. (This suggests that MC *-owk* should be analyzed as /-awk/ < ***-uk***, parallel to MC *-aw* < ***-u***.) Some examples:

(1611) 覺 *jué* < *kæwk* < ****kruk*** 'to awake' (also read *jiào* < *kæwH* < ****kruks***)

(1612) 學 *xué* < *hæwk* < ****fikruk*** 'learn; school; imitate'

These forms with ***-r-*** may be compared with

(1613) 告 *gào* < *kawH* < ****kuks*** 'announce, inform', also read *gù* < *kowk* < ****kuk***.

However, since ***-u(K) > -aw(K)*** did not apply to syllables with medial ***-j-***, ***r*-color** had no effect on words with the final ***-rjuk***. As a result, ***-rjuk*** and ***-juk*** are generally not distinguishable after grave initials. In

some cases, however, we can reconstruct **-rjuk* on the basis of evidence other than Middle Chinese, as in

(1614) 睦 *mù* < *mjuwk* < **mrjuk* 'concord, harmonious',

whose phonetic is

(1615) 坴 = 六 *liù* ~ *lù* < *ljuwk* < **C-rjuk* 'six'

Compare Tibeto-Burman **d-ruk* 'six' (Benedict 1972: 94).

Additional examples of OC **-uk(s)*

(1616) 毒 *dú* < *dowk* < **duk* 'poison'

Compare Tibeto-Burman **duk* ~ *tuk* (Coblin 1986: 120).

(1617) 宿 *sù* < *sjuwk* < **sjuk* 'to stay overnight, lodge'; also read *xiù* < *sjuwH* < **sjuks* 'positions in the sky (in which the moon is found on successive nights)'

(1618) 鞠 ~ 鞫 *jū* < *kjuwk* < **k(r)juk* 'exhausted, exhaustive'

(1619) 祝 *zhù* < *tsyuwk* < **tjuk* 'one who prays, invoker'; also read *zhòu* < *tsyuwH* < **tjuks* 'to curse'

(1620) 腹 *fù* < *pjuwk* < **p(r)juk* 'belly'

Compare Tibeto-Burman **pu·k* ~ *buk* 'cave; belly' (Coblin 1986: 53).

10.2.14.2. The reconstruction of the *-iwk(s) *group*

The development of **-iwk* is summarized in Table 10.102.

Table 10.102. Development of **-iwk*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-iwk*	all	*-ek*	**-iôk*	**-iəkw*	**-^{j}ə́k^{w}*
**-riwk*	all	*-æwk* (?)	**-r̂ôk*	**-rəkw*	**-^{r}ə́k^{w}*
**-(r)jiwk*	all	*-juwk*	**-i̯ôk*	**-(r)jəkw*	**-(^{r})ə̀k^{w}*

The final *-æwk* < **-riwk* is a theoretical possibility, but I know of no actual examples.

Original **-iwks* developed like **-iws* (section 10.2.13), with which it merged as a result of **final cluster simplification.**

Note that we must assume a change ****-wk* > *-k*** in order to account for the change of **-iwk* to MC *-ek* (see Appendix A). The Middle Chinese coda *-wk* is probably a separate development, for it often reflects OC **-k* rather than **-wk*.

Unlike the 幽 Yōu group, where **-(r)jiw* remained distinct from **-(r)ju* after grave initials in at least some dialects, **-(r)jiwk* seems to have merged completely with **-(r)juk* in this group. This means that **-uk* and **-iwk* can be distinguished in Middle Chinese only in syllables without medials **-r-* or **-j-*. There are thus relatively few unambiguous cases of **-uk* and **-iwk*. We can set up the following criteria:

1. All words in this group with MC **-owk* are unambiguously **-uk*.
2. All words in this group with MC *-ek* are unambiguously **-iwk*.

Unfortunately, by these criteria, only one *Shījīng* rhyme word can be unambiguously assigned to **-iwk*, namely

(1621) 迪 *dí* < *dek* < **liwk* 'advance'.

To make matters worse, it rhymes only once in the *Shījīng* (in 257.11A), and it rhymes there with the unambiguous **-uk* word 毒 *dú* < *dowk* < **duk* 'poison'. For this reason, I am unable to demonstrate a statistically significant rhyming distinction between **-iwk* and **-uk* in the *Shījīng*; the sample is too small and too irregular. The actual number of contacts between words I would reconstruct with **-uk* and words I would reconstruct with **-iwk* is rather small; such mixed rhymes appear only in 154.6A, 188.2A, 207.3A, 247.3B, and 257.11A. Moreover, some of these may be due to textual problems, and at any rate a number of them involve words or passages that are poorly understood. But this is still a large number out of the two dozen or so rhyme sequences involving **-uk* and **-iwk* words. It is unclear whether the source of the irregularities is textual corruption or dialect mixture, or simply inadequacies in the reconstruction. There are, however, traces of what I take to be the distinction between **-iwk* and **-uk* which support the basic correctness of the front-vowel hypothesis.

We may begin by noting that the *xiéshēng* series of

(1622) 叔 *shū* < *syuwk* < **stjiwk* 'junior'

(Karlgren 1957, item 1031) includes a number of words with the division-IV final *-ek* < **-iwk*, and this phonetic element can generally be taken as a

sign of **-iwk*. The initial consonants in this series are unusually diverse, which makes it even more challenging to reconstruct. Some examples are

(1623) 戚 *qī* < *tshek* < **Sthiwk* (?) 'anxiously thoughtful, solicitous'

(1624) 寂 *jì* < *dzek* < **Sdiwk* (?) 'repose, quiet'

Moreover, in bronze inscriptions, the word 叔 *shū* < **stjiwk* is written with the graph ancestral to

(1625) 弔 *diào* < *tewH* < **ti/ewks*, also read *dì* < *tek* < **ti/ewk*,

whose division-IV final indicates a front vowel (see Karlgren 1957, item 1165), and which rhymes with **-ew* in 149.2A.

When we turn to the *Shījīng* rhymes, we find other indications of a front vowel in characters with this phonetic. For example,

(1626) 淑 *shū* < *dzyuwk* < **djiwk* 'good'

rhymes in 69.2A and 257.5B. The sequence 69.2A is

修 *xiū* < *sjuw* < **sljiw* 'dried, withered'
歗 *xiào* < *sewH* < **siw(k)s* 'wail'
歗 *xiào* < *sewH* < **siw(k)s* 'wail'
淑 *shū* < *dzyuwk* < **djiwk* 'good'

The front vowel of 歗 *xiào* < *sewH* is confirmed by its division-IV final; and 修 *xiū* has the same phonetic as

(1627) 條 *tiáo* < *dew* < **liw* 'branch, twig'.

In sequence 257.5B we find rhyming between **-iwk* and **-ewk*, parallel to the **i/e* contacts we have found in other groups:

削 *xuē* < *sjak* < **s(l)jewk* 'scrape, destroy'
爵 *jué* < *tsjak* < **tsjewk* 'status, rank'
濯 *zhuó* < *dræwk* < **lrewk* 'moisten'
淑 *shū* < *dzyuwk* < **djiwk* 'good'
溺 *nì* < *nek* < **newk* 'sink, go under'

Each of the other four rhyme words shows evidence of a front vowel. The *xiéshēng* series of 削 *xuē* < *sjak* < **sjewk* 'scrape, destroy' generally seems to represent **-ew* or **-ewk*. 爵 *jué* < *tsjak* < **tsjewk* 'status, rank' rhymes with **-ewk* in 38.2B and 220.1F. 濯 *zhuó* < *dræwk* < **lrewk* 'moisten' is probably cognate to 滌 *dí* < *dek* < **liwk* 'wash', and has the division-IV phonetic 翟 *dí* < *dek* < **lewk* 'pheasant feather'. Finally, 溺 *nì* < *nek* < **newk* 'sink' is a division-IV word itself.

Since both the rhyme sequences just discussed involve some irregularities (**-iwk* rhyming with **-iw* or with **-ewk*), it is difficult to apply to them the statistical methods devised in Chapter 3; but it should be clear that the clustering of front-vowel forms together supports the front-vowel hypothesis, in spite of the irregularities found in other sequences.

Additional examples of **-iwk(s)*

(1628) 俶 *chù* < *tsyhuwk* < **thjiwk* 'start, begin'

(1629) 菽 *shū* < *syuwk* < **stjiwk* 'soybean'

(1630) 肅 *sù* < *sjuwk* < **sjiwk* 'solemn'

(1631) 蓫 [*zhú*] < *trhjuwk* < **hlrjiwk* 'Rumex'

(1632) 穆 *mù* < *mjuwk* < **mrjiwk* 'solemn, dignified' (rhymes as **-iwk* in 282.1B)

(1633) 穋 *lù* < *ljuwk* < **C-rjiwk* ~ **C-rjuk* (?) 'quickly or early ripening grain'

The phonetic of 穋 *lù* would seem to indicate **C-rjiwk* (see the discussion of the **-iw* group above), but an alternate graph has the phonetic 坴 = 六 *liù* < *ljuwk* < **C-rjuk* (Xiàng Xī 1986: 281). In fact, this word rhymes twice in the *Shījīng* (154.7B and 300.1B), both times with **-ik* words rather than with **-uk* or **-iwk*. Moreover, in both cases one of the other rhyme words is 麥 *mài* < *mɛk* < **mrik* 'wheat'. Perhaps a formula or stock phrase is involved which preserves an older stage of phonology (see discussion in section 10.1.8.6).

10.2.14.3. Rhyme sequences in *-uk(s) *and* *-iwk(s)

The following are regular **-uk(s)* sequences, or show contacts between **-uk* and groups other than **-iwk*: 35.5B, 53.3B, 56.3A, 70.2A, 79.3A, 101.3B, 116.2A (with **-u*; here I emend 繡 *xiù* to 褎 *xiù*, see section 10.2.13 above), 117.2A, 122.2A, 156.1C (with **-ok*), 159.3A, 202.4A, 209.5A (with **-iks*), 226.1A (with **-ok*), 245.1B (with **-ik*), 255.3B (with **-us*), and 256.2B (with **-ik*).

Of the remaining sequences, 154.6A, 188.2A, 207.3A, 247.3B, and 257.11A appear to mix **-iwk* and **-uk* words; 154.7B and 300.1B mix 穋 *lù* with **-ik* (see above); 69.2A and 257.5B involve only front-vowel finals

*-*iw*, *-*iwk(s)*, and *-*ewk*. The sequence 282.1B may be another regular *-*iwk* sequence, but we have too little information on the word 穆 *mù* to be sure. Sometimes a sequence involving 收 *shōu* < **xjiw* and 篤 *dǔ* < **tuk* is recognized in 267.1A, but this is from the *Zhōu sòng* section and probably not intended as a rhyme.

10.2.15. The traditional 冬 Dōng group

The Middle Chinese finals traditionally included in the 冬 Dōng group are listed in Table 10.103.

The 冬 Dōng group is traditionally regarded as the *yángshēng* group parallel to the *yīnshēng* 幽 Yōu group and the *rùshēng* 覺 Jué group, but unlike those groups it lacks a division-IV final. It is actually parallel only to the back-vowel portions of those groups, that is, to *-*u* and *-*uk*, but not to *-*iw* and *-*iwk*, which have no corresponding rhyme with a nasal coda. I reconstruct this group with *-*ung*.

Table 10.103. Middle Chinese finals of the traditional 冬 Dōng group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-owng*	*-uong*	冬 Dōng (Towng)	
II	*-æwng*	*-dng*	江 Jiāng (Kæwng)	(in part)
III	*-jɯwng*	*-i̯ung*	東 Dōng (Tuwng)	(in part)

10.2.15.1. The reconstruction of the *-ung *group*

The development of finals in *-*ung* is summarized in Table 10.104.

Table 10.104. Development of *-*ung*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
*-*ung*	all	*-owng*	*-*ông*	*-*əngw*	*-*ɔ́ŋ*^{w}
*-*rung*	all	*-æwng*	*-*ə̂ng*	*-*rəngw*	*-*^{r}*ɔ́ŋ*^{w}
-(r)jung*	all	*-jɯwng*	*-*i̯ông*	*-*(r)jəngw*	*-*(^{r})*ə̀ŋ*^{w}

As with *-*u* and *-*uk*, I assume that the change ***-u(K) > *-aw(K)*** affected *-*ung* and *-*rung*, but not *-*jung* or *-*rjung*. (This suggests that MC *-owng* should be analyzed as /-awŋ/, parallel to MC *-aw* < *-*u*.) The result is that ***r*-color** affected *-*rung* (which became *-*rawng* > *-*æwng*), but had no effect on *-*rjung*, which had a rounded vowel; thus *-*jung* and *-*rjung* apparently merged after grave initials. We have medial *-*r*- in this example:

(1634) 降 *jiàng* < *kæwngH* < **krungs* 'to come down', also read *xiáng* < *hæwng* < **fikrung* 'to submit, surrender'

Confirming the *-*r*-, we have in the same series

(1635) 隆 *lóng* < *ljuwng* < **C-rjung* 'high, eminent'.

Since my reconstruction of this group is consistent with the traditional analysis, there is no need to discuss its rhyming in detail. The 冬 Dōng rhyme shows occasional contacts in rhyming with the 侵 Qīn group, leading some scholars to reject the traditional distinction between them. In section 3.3.1, I showed that there is in fact a significant rhyming distinction between the two groups, so they cannot simply be regarded as one. The occasional rhyme contacts between them may be relics of an earlier phonological stage, or they could reflect a merger of original *-*m* and *-*ng* in some dialects. We will return to this issue when discussing the 侵 Qīn group below (section 10.3.3).

Additional examples of *-*ung*

(1636) 宗 *zōng* < *tsowng* < **tsung* 'ancestral temple'

(1637) 冬 *dōng* < *towng* < **tung* 'winter'

(1638) 終 *zhōng* < *tsyuwng* < **tjung* 'end' (probably cognate to 冬 **tung* 'winter', the end of the year)

(1639) 戎 *róng* < *nyuwng* < **njung* 'weapon; military'

(1640) 崇 *chóng* < *dzrjuwng* < **dzrjung* 'to pile high'

(1641) 中 *zhōng* < *trjuwng* < **k-ljung* 'middle'; compare Tibetan *gzhung* 'middle, midst' (Bodman 1980: 123)

This last is used in the Eastern Han work *Bái hǔ tōng yì* 白虎通義 as a sound gloss for

(1642) 宮 *gōng* < *kjuwng* < **k(r)jung* 'house' (Coblin 1983: 156).

10.2.16. The traditional 宵 Xiāo group

The Middle Chinese finals traditionally included in the 宵 Xiāo group are listed in Table 10.103.

Table 10.103. Middle Chinese finals of the traditional 宵 Xiāo group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-aw*	*-âu*	豪 Háo (Haw)	(in part)
II	*-æw*	*-au*	肴 Yáo (Hæw)	(in part)
III	*-j(i)ew*	*-i̯āu*	宵 Xiāo (Sjew)	
IV	*-ew*	*-ieu*	蕭 Xiāo (Sew)	(in part)

There are no *kāikǒu/hékǒu* contrasts in this group, but there are contrasts between division-I *-aw* and division-IV *-ew*, as in the following minimal pair:

(1643) 敖 *áo* < *ngaw* < **ngaw* 'amuse oneself'

(1644) 堯 *yáo* < *ngew* < **ngew* 'high; name of legendary emperor'

Thus, according to the front-vowel hypothesis, we must reconstruct both front and back vowels in this group. I reconstruct **-aw* and **-ew*.

10.2.16.1. The reconstruction of the *-aw *group*

The development of finals in **-aw* is summarized in Table 10.104.

Table 10.104. Development of **-aw*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-aw*	all	*-aw*	**-og*	**-agw*	**-áʁ*
**-raw*	all	*-æw*	**-ŏg*	**-ragw*	**-ʳáʁ*
**-jaw*	grave	*-jew* (III)	**-i̯og*	**-jagw*	**-àʁ*
	acute	*-jew*	**-i̯og*	**-jagw*	**-àʁ*
**-rjaw*	grave	*-jew* (III)	**-i̯og*	**-jagw*	**-ʳàʁ*
	acute	*-jew*	**-i̯og*	**-rjagw*	**-ʳàʁ*

The finals listed in Table 10.104 remained essentially unchanged in Middle Chinese except for the influence of medial **-r-* and **-j-*. Note that after grave initials, original **-jaw* and **-rjaw* are indistinguishable in Middle Chinese, merging as division-III *-jew*. (For this reason, I will usually write **-(r)jaw* as the source of MC *-jew*.) In this respect, the **-aw* group is similar to the **-aj* group (in the traditional 歌 Gē group), where **-jaj* and **-rjaj* evidently merged as division-III *-je* in Middle Chinese. Moreover, neither *-je* < **-jaj* nor *-jew* < **-jaw* induced the labiodentalization of a labial initial in Late Middle Chinese, unlike *-jon* < **-jan*; the result is that modern Mandarin has no syllables like *fao*. This can be accounted for if we assume that some process fronted the main vowel in syllables such as **-jaj* and **-jaw*, for I am working under the assumption that it is medial *-j-* followed by a back vowel that conditions **labiodentalization**. However, I leave this question open for now, as it concerns Middle Chinese more than Old Chinese.[366]

Examples of **-aw*

(1645) 高 *gāo* < *kaw* < **kaw* 'tall, high'

(1646) 刀 *dāo* < *taw* < **taw* 'knife'

(1647) 毛 *máo* < *maw* < **maw* 'hair, fur'

(1648) 到 *dào* < *tawH* < **taws* 'arrive'

(1649) 郊 *jiāo* < *kæw* < **kraw* 'suburbs'

(1650) 昭 *zhāo* < *tsyew* < **tjaw* 'bright, glorious'

(1651) 苗 *miáo* < *mjew* (III) < **m(r)jaw* 'shoots'

(1652) 朝 *zhāo* < *trjew* < **trjaw* 'morning'; also read *cháo* < *drjew* < **ɦtrjaw* 'have an audience at court'

(1653) 驕 *jiāo* < *kjew* (III) < **k(r)jaw* 'proud, arrogant, high' (probably related to 高 *gāo* < **kaw* 'tall')

(1654) 夭 *yāo* < *ʔjew* (III) < **ʔ(r)jaw* 'delicate, slender'

(1655) 鑣 *biāo* < *pjew* (III) < **p(r)jaw* 'horse's bit'

10.2.16.2. The reconstruction of the *-ew *group*

The development of finals in **-ew* is summarized in Table 10.105.

Table 10.105. Development of **-ew*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ew*	all	*-ew*	**-iog*	**-iagw*	**-^{j}áʁ*
**-rew*	all	*-æw*	**-ŏg*	**-ragw*	**-^{r}áʁ*
**-jew*	grave	*-jiew* (IV)	**-i̯og*	**-jiagw*	**-^{j}àʁ*
	acute	*-jew*	**-i̯og*	**-jagw*	**-àʁ*
**-rjew*	grave	*-jew* (III)	**-i̯og*	**-jagw*	**-(^{r})àʁ*
	acute	*-jew*	**-i̯og*	**-rjagw*	**-^{r}àʁ*

My assumptions predict that there could be cases of division-III *-jew* from OC **-rjew*, but I know of no clear examples of this.

Note that there are no double division-II rhymes in this group, like the contrast of *-æn* and *-ɛn* in the 元 Yuán group; evidently **-raw* and **-rew* merge as MC *-æw*. By Late Middle Chinese, all the double division-II rhymes appear to have merged, so perhaps this process simply began earlier in this group than in others.

Examples of **-ew*

(1656) 堯 *yáo* < *ngew* < **ngew* 'high; name of legendary emperor'

(1657) 嘵 *xiāo* < *xew* < **hngew* 'cry with alarm'

(1658) 皎 *jiǎo* < *kewX* < **kew?* 'bright'

(1659) 燒 *shāo* < *syew* < **hngjew* 'burn'

(1660) 小 *xiǎo* < *sjewX* < **s(l)jew?* 'small'

Words with 小 *xiǎo* as phonetic generally have **-ew*; cf. also

(1661) 悄 *qiǎo* < *tshjewX* < **tshjew?* 'grieved'

(1662) 漂 *piāo* < *phjiew* (IV) < **phjew* 'toss about'

Words in this *xiéshēng* series rhyme consistently as **-ew*; see Odes 26.4A, 85.2B, 149.2A, and compare

(1663) 摽 *biào* < *bjiewX* (IV) < **bjew?* 'drop'.

(1664) 要 *yāo* < *ʔjiew* (IV) < **ʔjew* 'waist'

(1665) 焦 *jiāo* < *tsjew* < **tsjew* 'roast, burn, scorch'

Words with 焦 *jiāo* as phonetic seem to have **-ew*. The same word, or at least the same root, is found in

(1666) 燋 *jiāo* < *tsjew* < **tsjew* '(of a tortoise shell:) to burn without oracular cracks appearing' (Morohashi 1955–1960, item 48860),

which according to the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 3126) is the original phonetic in

(1667) 秋 *qiū* < *tshjuw* < **tshjiw* 'autumn'.

This is another example of the common contacts between **-iw* and **-ew*.

10.2.16.3. The rhyming of *-aw *and* *-ew

According to our reconstruction, we can set up the following criteria for identifying unambiguous cases of **-aw* and **-ew*:

1. MC *-aw* unambiguously reflects OC **-aw*.
2. MC *-ew* and *-jiew* (IV) unambiguously reflect OC **-ew*.

The rhyme occurrences of phonologically unambiguous **-ew* and **-aw* words are summarized in Table 10.106.

Table 10.106. Rhyme occurrences of unambiguous **-ew* and **-aw* words

	píng	*shǎng*	*qù*
**-ew* tokens	11	4	1
**-aw* tokens	35	8	18
total tokens	46	12	19
P[**-ew*]	0.239	0.333	0.053
P[**-aw*]	0.761	0.667	0.947

(The 0.95 confidence interval for **P**[**-ew*] in *píngshēng* extends from 6/46 = 0.130 to 17/46 = 0.370. The 0.95 confidence interval for **P**[**-ew*] in *shǎngshēng* extends from 1/12 = 0.083 to 7/12 = 0.583. We will not be using **P**[**-ew*] in *qùshēng*.)

The *Shījīng* rhyme sequences involving unambiguous **-aw* and **-ew* words are tabulated in Table 10.107 by tone and length of sequence.[367]

Table 10.107. Rhyme sequences involving unambiguous **-aw* and **-ew* words

tone	sequence length	total sequences	**-ew*	**-aw*	mixed
píng	2	11	3	6	2
	3	3	0	1	2
shǎng	2	3	1	2	0
qù	[none]				

There are several mixed sequences of unambiguous words in *píngshēng*, and this portion of the sample by itself is not very strong evidence for the front-vowel hypothesis. However, there are no mixed sequences in *shǎngshēng*, and there is one sequence involving only the less frequent **-ew* words, so the method of section 3.2.6 applies. When the whole sample is evaluated, we get a probability of

$$\mathbf{P} = 0.0488$$

that such a sample would show this degree of separate rhyming by chance. This is a significant result, since it is under our criterion level of 0.05. However, there are values of **P**[**-ew*] for *píngshēng* and *shǎngshēng* within the 0.95 confidence intervals for which **P** is as high as 0.086. Thus, though there is evidence for separate rhyming here, it is somewhat weaker than in most of the other groups. But in any case, the front-vowel hypothesis is supported strongly by the evidence of other groups, and does not rest on the evidence of this one group alone.

Rhyme sequences in **-aw* and **-ew*

The 宵 Xiāo group includes a large proportion of phonologically ambiguous words, which on the basis of their Middle Chinese readings could be reconstructed with either **-aw* or **-ew*. Those words which rhyme often can usually be reconstructed on the basis of their rhymes, but the relatively large number of irregular rhymes in this group sometimes makes it difficult to do so with confidence. Some doubtful cases are discussed below.

The following rhymes appear to involve **-aw* but not **-ew*: 1.5A (with **-awk(s)*), 15.1B, 30.1A (with **-awks*), 32.1B, 53.1A, 57.3A, 58.5A, 58.5B (with **-awk(s)*), 61.2A, 64.2A, 65.1B, 67.2A (with **-u*), 100.1B, 102.1B, 105.4A (with **-u*), 109.1A, 113.3B, 127.3B, 143.3A, 146.1A, 153.4A, 168.2A, 179.3A, 181.3A, 186.1A, 192.11A (with **-awk*), 192.12A (with

*-*u*), 193.7A, 202.1A, 205.5A, [215.4A (with *-*u*?]), 218.2A, 218.3A (with *-*u*), 220.4A (with *-*u?*, 221.1A–3A, 223.2B, 227.1A, 232.1A, 239.5A, 240.3B (with *-*u*), 250.2B, 254.4A with *-*awk(s)*, 256.3B (with *-*u*), 256.11A (with *-*awk(s)*), 261.5A (with *-*awk(s)*), 290.1F, and 299.2A.

The following rhyme sequences involve *-*ew* but not *-*aw*: 26.4A, 143.1A, 149.2A (with *-*ewk(s)*), 154.4A (with *-*iw*), and 155.4A (with *-*iw*).

The following rhymes appear to mix *-*aw* and *-*ew*: 79.2A, 142.1A, 146.3A, 161.2A, 210.5B, 223.7A, 242.3A, and 254.3A. Some textual notes on these appear in the following section.

10.2.16.4. Additional notes

1. In Ode 223.8A, 髦 *máo* < *maw* 'name of barbarian group' rhymes with *-*u* words, but it in its present form it has the *-*aw* phonetic 毛 *máo* < *maw* < **maw* 'hair, fur'. However, it is also found written with the *-*u* phonetic 矛 [*máo*] < *muw* < *mjuw* < **m(r)ju* 'lance' (Xiàng Xī 1986: 291). On the basis of the rhyme and this latter character, we should probably reconstruct 髦 as **mu*, and consider this a regular *-*u* rhyme.

2. In 192.12A and 218.3A we have apparent rhymes between the *-*u* word

(1668) 酒 *jiǔ* < *tsjuwX* < **tsju?* 'wine'

and the *-*aw* word

(1669) 殽 [*yáo*] < *hæw* < **graw* 'viands'.

In view of these rhymes, we could reconstruct 殽 *yáo* as **gru(?)* instead, but it rhymes as *-*aw* in 109.1A. Another possibility is that 酒 *jiǔ* and 殽 *yáo*, like 懷 *huái* and 歸 *guī*, were a traditional rhyme pair which rhymed at some earlier stage, but no longer rhymed perfectly in *Shījīng* times (see discussion in section 10.1.8.6).

3. In 155.4A, we would normally reconstruct 搖 *yáo* < *yew* as **ljaw*; it rhymes as *-*aw* in 65.1B, in the line

中心搖搖
zhōng xīn yáo YÁO
'In the core of my heart I am (SHAKEN:) agitated'.

But in 155.4A, 搖 *yáo* rhymes with four other front-vowel words, and moreover it is part of the rhyming binome

(1670) 漂摇 *piāoyáo* < *phjiew-yew* < **phjew-ljew* 'tossed about',

where the first syllable 漂 *piāo* is an **-ew* word (as shown by its division-IV *chóngniǔ* final).

4. The sequence 146.3A may mix **-aw(k)s* and **-ewks*, for the word

(1671) 曜 *yào* < *yewH* < **lja/ewks* 'brilliant'

is in a *xiéshēng* series which generally indicates **-ewk* rather than **-awk*. We have the same situation in 242.3A, where other words from the same series rhyme with **-aw(k)s*.

5. In 161.2A, the reading tradition indicates a front vowel in

(1672) 恌 *tiāo* < *thew* < **hlew* 'be slighting, mean',

while the other four rhyme words are **-aw* words. Note, however, that the Máo commentary glosses 恌 *tiāo* here as

(1673) 愉 *yú* < *yu* < **ljo*,

normally "pleasant, enjoy", which has been interpreted here as equivalent to

(1674) 偷 *tōu* < *thuw* < **hlo* 'steal; rude; mean'.

This sound gloss of Máo's suggests that the front vowel in 恌 *tiāo* is an error; it seems more likely that **hlo* would be used as a sound gloss for **hlaw* than for **hlew*.

6. Sequence 210.5B has

(1675) 膋 *liáo* < *lew* < *C-rew 'lard'

rhyming with **-aw* words; perhaps this is an error for the graphically similar

(1676) 膏 *gāo* < *kaw* < **kaw* 'grease',

which would fit the context equally well, and makes a regular rhyme.

10.2.17. The traditional 藥 Yào group

The Middle Chinese finals traditionally included in the 藥 Yào group are listed in Table 10.108.

Table 10.108. Middle Chinese finals of the traditional 藥 Yào group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-ak*	*-âk*	鐸 Duó (Dak)	(in part)
	-owk	*-uok*	沃 Wò (ʔOwk)	(in part)
II	*-æwk*	*-âk*	覺 Jué (Kæwk)	(in part)
III	*-jak*	*-i̯ak*	藥 Yào (Yak)	(in part)
IV	*-ek*	*-iek*	錫 Xī (Sek)	(in part)

The division-I finals from this group fluctuate among *-ak, -owk,* and *-uwk,* as in the following item, for which the *Guǎngyùn* preserves three different readings:

(1677) 熇 *hè* < *xak* ~ *xowk* ~ *xuwk* < **xawk* 'blaze, flame'

The various readings probably reflect dialect mixture, with different treatments of final **-wk*. The main development is for **-wk* to merge with original **-k* (bya the change ***-wk* > *-k***) so that we have

(1678) 樂 *lè* < *lak* < **g-rawk* 'rejoice'

merging with

(1679) 落 *luò* < *lak* < **g-rak* 'to fall'[368]

and

(1680) 激 *jī* < *kek* < **kewk* 'dam up and cause to rush up (water)'

merging with

(1681) 擊 *jī* < *kek* < **kek* 'strike'.

The reflex *-owk* < **-awk* could represent a dialect in which this merger simply did not happen (at least not in this environment). (The final which I transcribe as *-owk* might be phonologically /-awk/ or /-ak^{w}/; see the parallel argument for the analysis of MC *-owng* in section 10.2.15 above.)

This group shows contrasts between division-I and division-IV finals, though minimal contrasts are rare; we have a contrast

(1682) 樂 *lè* < *lak* < **g-rawk* 'rejoice'

(1683) 櫟 *lì* < *lek* < **C-rewk* 'oak',

but note that the first character is the phonetic element in the second, and the two words rhyme in 132.2A.

Nevertheless, some *xiéshēng* series and some rhyme sequences seem to show front vowels consistently, so I will assume that we have both **-awk* and **-ewk* in this group.

10.2.17.1. The reconstruction of the *-awk(s) *group*

The development of OC **-awk* is summarized in Table 10.109.

Table 10.109. Development of **-awk*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-awk*	all	*-ak/-owk/-uwk*	**-ok*	**-akw*	**-áq*
**-rawk*	all	*-æwk*	**-ōk*	**-rakw*	**-ʳáq*
**-(r)jawk*	all	*-jak*	**-i̯ok*	**-(r)jakw*	**-(ʳ)àq*

Note that the distinction between **-rjawk* and **-jawk* leaves no trace in Middle Chinese after grave initials.

Original **-awks* developed like **-aws* (section 10.2.16.1), with which it merged by **final cluster simplification**.

Examples of **-awk(s)*

(1684) 樂 *lè* < *lak* < **g-rawk* 'rejoice'

(1685) 樂 *yuè* < *ngæwk* < **ngrawk* 'music', also read as *yào* < *ngæwH* < **ngrawks* 'to entertain' (*Jīngdiǎn shìwén* gives this as the pronunciation of 樂 in Ode 1.5.)

(1686) 藥 *yào* < *yak* < **rawk* 'medicine'

(1687) 褓 *bó* < *pak* ~ *powk* < **pawk* 'collar'

(1688) 虐 *nüè* < *ngjak* < **ng(r)jawk* 'cruel, oppress'

(1689) 謔 *xuè* < *xjak* < **hng(r)jawk* 'ridicule, jest'

10.2.17.2. The reconstruction of the *-ewk(s) *group*

The development of OC **-ewk* is summarized in Table 10.110.

Table 10.110. Development of **-ewk*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ewk*	all	*-ek*	**-iok*	**-iakw*	**-^{j}áq*
**-rewk*	all	*-æwk*	**-ōk*	**-rakw*	**-^{r}áq*
**-(r)jewk*	all	*-jak*	**-i̯ok*	**-(r)jakw*	**-(^{r})àq*

Original **-ewks* developed like **-ews* (section 10.2.16.2), with which it merged by **final cluster simplification.**

Examples of **-ewk(s)*

(1690) 激 *jī* < *kek* < **kewk* 'dam up and cause to rush up (water)', also read MC *kewH* < **kewks*

(1691) 溺 *nì* < *nek* < **newk* 'sink', also read *niào* < *newH* < **newks* 'urine'

(1692) 弱 *ruò* < *nyak* < **njewk* 'weak'

(1693) 的 *dì* < *tek* < **tewk* 'mark in a target'

(1694) 釣 *diào* < *tewH* < **tewks* 'to fish with a pole'

(1695) 灼 *zhuó* < *tsyak* < **tjewk* 'to pour or ladle into a cup'

(1696) 勺 *sháo* < *dzyak* < **fitjewk* 'ladle, cup'

(1697) 籥 *yuè* < *yak* < **ljewk* 'bamboo flute'

This is probably from the same etymon as

(1698) 笛 ~ 邃 *dí* < *dek* < **liwk* 'flute'.

(1699) 約 *yuē* < *ʔjak* < **ʔ(r)jewk* 'to bind', also read *ʔjiewH* (IV) < **ʔjewks*

Note the division-IV *chóngniǔ* final in the *qùshēng* reading, which confirms the front vowel **e*.

10.2.17.3. The rhyming of *-awk *and* *-ewk

We may identify unambiguous cases of **-awk* and **-ewk* by these criteria:

1. All words in MC *-ak* or *-owk* from this group unambiguously reflect **-awk*.
2. All words in MC *-ek* from this group unambiguously reflect **-ewk*.

Unfortunately, these phonologically unambiguous words are too infrequent to allow statistical testing: for example, there are only three occurrences of unambiguous **-ewk* words used as *Shījīng* rhymes. Nevertheless, it is possible to identify additional cases of **-ewk* from other evidence, and to see clear indications of a distinction.

For example, the word

(1700) 爵 *jué* < *tsjak* < **tsjewk* 'status, rank'

rhymes three times: in Odes 38.2B, 220.1F, and 257.5B. All three rhymes involve words with clear front-vowel connections. By chaining together such words, it is possible to separate **-awk* rhymes from **-ewk* rhymes in most cases.

The following sequences involve **-awk* words but not **-ewk* words: 1.5A, 30.1A (with **-aw*), 55.3B, 58.5B (with **-aws*), 95.1C–2C, 116.1A, 171.1A, 192.11A (with **-aw?*), 198.3B, 228.2A, 254.4, 256.11A (with **-aw*), and 261.5A (with **-aws*).

The following sequences involve **-ewk(s)* but not **-awk(s)*: 38.2B, 149.2A (with **-ew*), 220.1F, 257.5B (a five-word sequence).

The following sequences appear to mix **-awk(s)* and **-ewk(s)*: 132.2A, 146.3A, 242.3A, and 259.4B. The sequence 132.2A apparently rhymes 櫟 *lì* < **C-rewk* 'oak' with 樂 *lè* < **g-rawk* 'rejoice', as mentioned above. The remaining irregular sequences all involve phonologically ambiguous words with the phonetic 翟 *dí* < **lewk* which rhyme with **-awk* words.[369]

10.3. Syllables with labial codas

Syllables with labial codas are generally less frequent than syllables of other types; perhaps this is because some of them were lost early as a result of dissimilatory processes (Bodman 1980: 113–24). Any infrequent group of words tends to occur even less frequently in rhyming, since it is difficult to find rhymes for them, and there is probably also a tendency to loosen the usual rhyming standards for such words. The same is probably true also of the standards for phonetic similarity in *xiéshēng* series. It is thus not surprising that we are unable to find statistical support for our vowel system among the rhymes of these groups. However, various other kinds of evidence indicate that the full six-vowel system originally existed before labial codas. (The evidence of *qùshēng* words which originally had the coda **-p* is especially indicative.)

10.3.1. The traditional 談 Tán group

The Middle Chinese finals included in the traditional 談 Tán group are listed in Table 10.111.

Table 10.111. Middle Chinese finals of the traditional 談 Tán group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-am*	*-âm*	談 Tán (Dam)	
	-om	*-ậm*	覃 Tán (Dom)	(in part)
II	*-æm*	*-am*	銜 Xián (Hæm)	
	-ɛm	*-ăm*	咸 Xián (Hɛm)	(in part)
III	*-j(i)em*	*-i̯ăm*	鹽 Yán (Yem)	
	-jæm	*-i̯ɐm*	嚴 Yán (Ngjæm)	
	-jom	*-i̯wɐm*	凡 Fán (Bjom)	
IV	*-em*	*-iem*	添 Tiān (Them)	(in part)

As specified in Table 10.111, this group contains two contrasting division-I finals, *-am* and *-om,* which I reconstruct as OC **-am* and **-om*, as in the following minimal pair:

(1701) 酣 *hán* < *ham* < **gam* 'elated through wine, tipsy'

(1702) 函 *hán* < *hom* < **gom* 'envelop, contain'

Karlgren and Li Fang-kuei did not recognize this distinction within the 談 Tán group; instead, they assigned all cases of MC *-om* to the 侵 Qīn group and reconstructed them with **-əm*. But Dǒng Tónghé found reason to reconstruct two division-I finals in the 談 Tán group, as we shall see below.

There are also contrasts in this group between the division-I finals and a division-IV final, which I reconstruct as **-em*:

(1703) 談 *tán* < *dam* < **lam* 'speak'

(1704) 恬 *tián* < *dem* < **lem* 'calm, tranquillity'.

Thus I reconstruct a three-way distinction **-am* ≠ **-om* ≠ **-em* in this group, parallel in some ways to **-an* ≠ **-on* ≠ **-en* in the traditional 元 Yuán group.

Unfortunately, the *Shījīng* data are insufficient to establish these distinctions; there are in all no more than ten *Shījīng* rhyme sequences involving

words of this group. However, there are arguments from other evidence in support of the proposed reconstruction. Some of these were made by Dǒng Tónghé, who proposed a two-way subdivision of the traditional 談 Tán group.

One reason for recognizing both **-am* and **-om* in the Tán 談 group is that some words with MC *-om* rhyme in the *Shījīng* with finals like *-jæm* which normally indicate the 談 Tán group (see for example the sequence 145.3A). Dǒng Tónghé (1944 [1948]:108–12) argued on the basis of *xiéshēng* evidence that some words in *-om* belonged in the 談 Tán group. He found that this group can be divided into two subgroups with different patterns of *xiéshēng* connections. The first subgroup shows *xiéshēng* contacts among the following three *Qièyùn* rhymes:

談 Tán (Dam), MC *-am*
銜 Xián (Hæm), MC *-æm*
鹽 Yán (Yem), MC *-j(i)em*.

The second subgroup shows contacts among the following four rhymes:

覃 Tán (Dom), MC *-om*
咸 Xián (Hɛm), MC *-ɛm*
鹽 Yán (Yem), MC *-j(i)em*
添 Tiān (Them), MC *-em*

He reconstructed the former subgroup with **-âm* and **-am,* the latter subgroup with **-ê̂m* and **-ɐm*. (He made the same argument for syllables in **-p* as well.)

I reconstruct Dǒng's **-âm/-am* group with **-am*. It turns out that his **-ê̂m/-ɐm* group can be further split into two groups, which I reconstruct as **-om* and **-em*. It is striking that in his **-ê̂m/-ɐm* group, Dǒng cites no examples of *xiéshēng* contacts connecting all four of the *Qièyùn* rhymes above: there are contacts among 覃 Tán (Dom), 咸 Xián (Hɛm), and 鹽 Yán (Yem) on the one hand (which reflect my **-om*), and contacts among 咸 Xián (Hɛm), 鹽 Yán (Yem), and 添 Tiān (Them) on the other (which reflect my **-em*), but none which mix 覃 Tán (Dom) < **-om* and 添 Tiān (Them) < **-em*. Also, from a distributional point of view, it is odd that Dǒng's medial **-i-* should occur before **-ɐm* but not before **-am*. Both these patterns can be explained if we recognize a further split in Dǒng's **-ê̂m/*-ɐm* group: the words which show contacts with 添 Tiān (Them) are to be reconstructed with **-em*, and those which show contacts with 覃 Tán (Dom) are to be reconstructed with **-om*. The details of the reconstruction are summarized below.

10.3.1.1. The reconstruction of the *-am *group*

The development of OC **-am* is summarized in Table 10.112.

Table 10.112. Development of **-am*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-am*	all	*-am*	**-âm*	**-am*	**-ám*
**-ram*	all	*-æm*	**-am*	**-ram*	**-ʳám*
**-jam*	acute	*-jem*	**-i̯am*	**-jam*	**-àm*
	**K-*	*-jæm*	**-i̯ăm*	**-jam*	**-àm*
	**P-*	*-jom*	**-i̯wăm*	**-jam*	**-àm*
**-rjam*	acute	*-jem*	**-i̯am*	**-rjam*	**-ʳàm*
	grave	*-jem* (III) ~ *-jæm*?	**-i̯am*	**-jiam*	**ʲàm* (?)

The developments shown in Table 10.112 are largely analogous to those of **-an*, though a number of Middle Chinese distinctions are difficult to establish with certainty. MC *-jæm* and *-jom* are basically in complementary distribution, and *-jæm* and *-jem* are also difficult to distinguish in the Middle Chinese sources. It is possible that **-jam* and **-rjam* had already begun to merge after **K-* initials, as *-jon* < **-jan* and *-jen* (III) < **-rjan* eventually did in the 元 Yuán group.

Examples of **-am*

(1705) 甘 *gān* < *kam* < **kam* 'sweet'

(1706) 擔 *dān* < *tam* < **tam* or **k-lam* 'to carry on the shoulder'; also read *dàn* < *tamH* < **tams* or **k-lams* (?) 'burden'.

Compare Austroasiatic forms such as Khmu? *klam* 'to carry on the shoulder', cited by Bodman (1980: 112); but see also Written Burmese *thâm, ə-thâm* 'carry on shoulder' (Benedict 1976a: 54).

(1707) 瞻 *zhān* < *tsyem* < **tjam* 'see, look at'

(1708) 藍 *lán* < *lam* < **g-ram* 'indigo' (Compare Proto-Tai **gram*, Li 1977: 231)

(1709) 監 *jiān* < *kæm* < **kram* 'supervise'

(1710) 鹽 *yán* < *yem* < **r(j)am* 'salt'

Compare Tibetan *rgyam-tshwa* 'a kind of rock salt'.[370]

(1711) 炎 *yán* < *hjem* < ***filjam*** (?) 'blaze, blazing'

The Middle Chinese initial *hj-* is unusual here, if not irregular. Li Fang-kuei derives it from ***gwjam,*** which is possible, but the rest of the *xiéshēng* series, including words that are probably related, seems to indicate ***l-*:**

(1712) 惔 *tán* < *dam* < ***lam*** 'aflame; burning with grief' (Karlgren 1957, item 617k).

Bodman also cites Written Burmese *ə-hlyam* 'the coruscation of flame' (1980: 100).

10.3.1.2. The reconstruction of the *-em *group*

The development of OC ***-em*** is summarized in Table 10.113.

Table 10.113. Development of ***-em***

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
-em	all	*-em*	***-iam***	***-iam***	***^{j}ám***
-rem	all	*-ɛm*	***-ăm***	***-riam***	***^{r}ám***
-jem	acute	*-jem*	***-i̯am***	***-jam***	***-ȧ̀m***
	grave (*ʔ-* only?)	*-jiem* (IV)	***-i̯ăm***	***-jiam***	***^{j}àm***
-rjem	acute	*-jem*	***-i̯am***	***-rjam***	***^{r}àm***
	grave	*-jem* (III)	***-i̯am***	***-jiam***	***^{j}am*** (?)

The finals in ***-em*** remained essentially unchanged in Middle Chinese except for the effects of ***r*-color** and ***r*-loss**. We would expect ***-jem*** to become division-IV *-jiem* after all grave initials, but for reasons that are unclear, this final occurs only after the glottal stop initial in Middle Chinese, e.g.

(1713) 厭 *yàn* < *ʔjiemH* (IV) < ***ʔjems*** 'satiate, satisfy'.

The only unambiguous ***-em*** word that rhymes in the *Shījīng* is

(1714) 玷 [*diàn*] < *temX* < ***tem?*** 'flaw, defect';

it rhymes in Ode 265.3A with

(1715) 貶 *biǎn* < *pjemX* < ***prje/am?*** 'diminish'

which might for that reason be reconstructed with **-em*. However, in the same *xiéshēng* series with 貶 *biǎn* we have

(1716) 泛 *fá* < *bjop* < **bja/op* 'to lack',

which is unlikely to have had a front vowel since its initial consonant labiodentalizes.

The phonetic 占 can generally be taken as an indication of **-em*:

(1717) 占 *zhān* < *tsyem* < **tjem* 'prognosticate'

(1718) 點 *diǎn* < *demX* < **tem?* 'dot'

In the following *xiéshēng* series, we find both velar initials and MC *l-*; in my reconstruction system this is unexplained:

(1719) 兼 *jiān* < *kem* < **kem* 'combine, at the same time'

(1720) 廉 *lian* < *ljem* < **C-rjem* 'angle, angular; modest'

10.3.1.3. The reconstruction of the *-om *group*

The development of OC **-om* is summarized in Table 10.114.

Table 10.114. Development of **-om*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-om*	all	*-om*	**-əm*	**-əm*	**-ə́m*
**-rom*	all	*-ɛm*	**-ǎm*	**-riam*	**-ʳám*
**-jom*	acute	*-jem*	**-i̯ɛm*	**-jam*	**-àm*
	**K-*	*-jæm*	**-i̯ǎm*	**-jam*	**-àm*
	**P-*	*-jom*	**-i̯wǎm*	**-jam*	**-àm*
**-rjom*	acute	*-jem*	**-i̯ɛm*	**-rjam*	**-ʳàm*
	**K-*	*-jæm*	**-i̯ǎm*	**-jam*	**-àm* (?)
	**P-*	*-jom*	**-i̯wǎm*	**-jam*	**-àm* (?)

At some point between Old Chinese and Middle Chinese, rounding became nondistinctive in vowels before labial codas; whether this took the form of a dissimilation **-om* > [-ʌm] or of an assimilation in the other direction is unclear, and different dialects may have taken different routes. I call this change **labial neutralization**. Old Vietnamese loans (which were borrowed from Chinese into Vietnamese before the main Sino-Vietnamese stratum) often have rounded vowels corresponding to MC *-om* and *-op*, as in the

following examples, cited by Wáng Lì (1948 [1958]: 371), for which special characters were sometimes created in Vietnamese (called *chữ nôm* 'demotic characters'):

喃 *nôm* 'demotic, popular (language) [i.e. southern, as opposed to Chinese]', from 南 *nán* < *nom* < **nɨm* 'south' (compare with Sino-Vietnamese *nam*); compare also *nốm* 'southern (of wind)'.

椪 *hòm* 'locker, trunk, chest, coffer', from 函 *hán* < *hom* < **gom* 'to contain' (Sino-Vietnamese *hàm*)

納 *nộp* 'to deliver (criminal), submit (application) to the authorities; to pay (taxes, fine)', from 納 *nà* < *nop* < **nup* 'bring or send in' (Sino-Vietnamese *nạp*)

盒 *hộp* 'carton, case', from 盒 *hé* < *hop* < **gop* 'box'

The rounded vowels in these early Vietnamese loans suggest that the original Chinese items also had rounded vowels (at least in the dialect which was the source of the loans), irrespective of whether the vowel was rounded in Old Chinese or not; it appears that **labial neutralization** was an assimilatory process which added rounding to the vowel under the influence of the following labial. According to the sound changes I have assumed, we would expect **-um* and **-ɨm* to be lowered to **-om* and **-ʌm* respectively by **hi > mid**; as a result of **labial neutralization**, they would both merge with original **-om* as MC *-om*.

The reconstructions of the division-III finals are tentative. Probably we have **-om* ~ **-um* in the phonetic series

(1721) 凡 *fán* < *bjom* < **brjom* 'every, all'; compare proto-Tai **brɔm* (Haudricourt 1954a [1972]: 174)

which shows numerous indications of medial **-r-*. In syllables with unrounded vowels, the medial combination **-rj-* blocks **labiodentalization**, but if the vowel was rounded, then we would expect **-rjom* and **-jom* to merge.[371] Other examples are

(1722) 梵 *fàn* < *bjomH* < **brjoms* 'Brahma; Sanskrit, Pali, Indian' (from Indic *brahmā*)

(1723) 帆 [*fān*] < *bjom* < **brjom* 'sail'

We could also have **-r-* in

(1724) 風 *fēng* < *pjuwng* < **p(r)jɨ/um* 'wind'.

The dissimilation of final **-m* here is well-known. The vowel in 風 *fēng* is unclear, because of the general difficulty of distinguishing **-ɨm* from **-um* (see section 10.3.3 below); even if the original vowel were **ɨ*, it could have assimilated to **u* by the time ***r-color** applied, so that the main vowel was by then rounded and thus not affected. This word could be related to Proto-Tai **dlu̯om A2* 'wind' (Li 1977: 125, 273); note that Proto-Tai **dl-* corresponds to OC **pr-* also in

(1725) 剝 *bāo* ~ *bō* < *pæwk* < **prok* 'to cut up, flay, peel, pluck', compare Proto-Tai **dlɔk D2L* 'to skin, to peel', also **pɔk D1L* 'to peel' (Li 1977: 62, 125, 277).

Additional examples of **-om*

(1726) 菡萏 *hàndàn* < *homX-domX* < **gom?-(g-)lom?* 'lotus flower' (rhymes in Ode 145.3A)[372]

(1727) 涵 *hán* < **hom* < **gom* 'soak, overflow' (rhymes in Ode 198.2A)

(1728) 感 *gǎn* < *komX* < **kom?* 'to sense, feel, touch'

10.3.2. The traditional 盍 Hé group

This group is the *rùshēng* counterpart to the 談 Tán group. The Middle Chinese finals traditionally included in this group are listed in Table 10.115.

Table 10.115. Middle Chinese finals of the traditional 盍 Hé group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-ap*	*-âp*	盍 Hé (Hap)	
	-op	*-ập*	合 Hé (Hop)	
II	*-æp*	*-ap*	狎 Xiá (Hæp)	
	-ɛp	*-ăp*	洽 Qià (Hɛp)	(in part)
III	*-j(i)ep*	*-i̯ăp*	葉 Yè (Yep)	
	-jæp	*-i̯ɐp*	業 Yè (Ngjæp)	
	-jop	*-i̯wɒp*	乏 Fá (Bjop)	
	-ep	*-iep*	帖 Tiē (Thep)	(in part)

The arguments made for splitting the 談 Tán group apply to this group also, and my reconstructions are parallel: **-ap*, **-op*, and **-ep*. In this case there is even less rhyme data: there are only five rhyme sequences from the 盍 Hé group in the whole of the *Shījīng* (34.1A, 60.2A, 167.4C, 260.7A, and 304.7A), and as far as I can tell, all of them should be reconstructed with **-ap*.

In this group, however, the original vowel distinctions can often be inferred from **s*-suffixed forms in which **-ps* changed early to **-ts*; because of this change, such words evidently escaped **labial neutralization**, and their original rounding features were preserved. Here are some examples:[373]

(1729) 會 *huì* < *hwajH* < **gwats* < **gots* < **gops* 'collect, unite, assemble; jointly; combine'

I reconstruct this with **-op* because, on the one hand, the final developed like **-ots* (becoming *-wats* by **rounding diphthongization** and then *-wajH* by **final cluster simplification** and ***qùshēng* formation**); and on the other hand, this character has graphic and probably etymological connections with

(1730) 合 *hé* < *hop* < **gop* 'join, unite; collect; harmony'.

Earlier forms of 會 *huì* have 合 *hé* as phonetic, and 合 *hé* is used in the *Shuōwén* as a gloss (probably originally a sound gloss) for 會 *huì* (Dīng Fúbǎo 1928–1932 [1976]: 2226, Zhōu Fǎgāo et al. 1974a, item 0693). Karlgren's and Li's reconstructions fail to account for the connection between these two words: Karlgren reconstructed 會 *huì* as **g'wâd* (Karlgren 1957, item 321a), 合 *hé* as **g'əp* (item 675a); similarly, Li reconstructed **gwadh* and **gəp* (1971 [1980]: 43, 52).

On the other hand, we apparently have an unrounded vowel in

(1731) 蓋 *gài* < *kajH* < **kats* < **kaps* 'cover, conceal',

since this developed like **-ats*; this supports the reconstruction of **-ap*, not **-op*, here and in the cognate

(1732) 蓋 *hé* < *hap* < **fikap* 'to thatch, to cover'.

10.3.2.1. The reconstruction of the *-ap(s) *group*

The development of OC **-ap* is summarized in Table 10.116. Syllables in **-aps* developed as if from **-ats* (see section 10.1.2 above).

Examples of **-ap(s)*

(1733) 甲 *jiă* < *kæp* < **krap* 'shell; cyclical character' (compare Tibetan *khrab* 'shield, coat of mail, fish scales')

(1734) 法 *fă* < *pjop* < **pjap* 'law; model, imitate'

(1735) 廢 *fèi* < *pjojH* < **pjats* < **pjaps* 'disregard'

In early script, the character 灋, equivalent to 法 *fă* < **pjap*, was used as a loan character for this **pjaps*; see section 9.2 above.

Table 10.116. Development of **-ap*

	Baxter	initial type	MC	Karlgren	Li	Pulleyblank
I	**-ap*	all	*-ap*	**-âp*	**-ap*	**-áp*
II	**-rap*	all	*-æp*	**-ap*	**-rap*	**-ʳáp*
III	**-jap*	acute	*-jep*	**-i̯ap*	**-jap*	**-àp*
		**K-*	*-jæp*	**-i̯ăp*	**-jap*	**-àp*
		**P-*	*-jop*	**-i̯wăp*	**-jap*	**-àp*
	**-rjap*	acute	*-jep*	**-i̯ap*	**-rjap*	**-ʳàp*
		grave	*-jep* (III) ~ *-jæp*?	**-i̯ap*	**-jiap*	**-ʲàp* (?)

(1736) 葉 *yè* < *yep* < **ljap* 'leaf' (compare Tibeto-Burman **lap*).

In early script this is interchangeable with

(1737) 世 *shì* < *syejH* < **hljaps* 'generation'.

(1738) 接 *jiē* < *tsjep* < **tsjap* 'connect, contact'

Compare with Tibetan *chabs* 'together', Written Burmese *cap* 'join, unite, connect', Tibeto-Burman **tsyap* (Coblin 1986: 57), and with the related

(1739) 際 *jì* < *tsjejH* < **tsjaps* 'conjunction, connection'.

This word (written with the loan character 瘵) rhymes as **-ats* in 224.2B; see discussion in section 10.1.2.

(1740) 業 *yè* < *ngjæp* < **ng(r)jap* 'work, deed, achievement'

10.3.2.2. The reconstruction of the *-ep(s) *group*

The development of OC **-ep* is summarized in Table 10.117. Syllables in **-eps* merged with **-ets* by the change ****-ps > *-ts*** and thereafter developed like **-ets*; see section 10.1.2 above. As with the **-em* group, it is surprising that the division-IV *chóngniǔ* final *-jiep* is limited to the glottal stop initial, as in

(1741) 靨 *yè* < *ʔjiep* (IV) < **ʔjep* 'dimple'.

Table 10.117. Development of **-ep*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ep*	all	*-ep*	**-iap*	**-iap*	**-^{j}áp*
**-rep*	all	*-ɛp*	**-ăp*	**-riap*	**-^{r}áp*
**-jep*	acute	*-jep*	**-i̯ap*	**-jap*	**-ạ̀p*
	grave (*ʔ-* only?)	*-jiep* (IV)	**-i̯ăp*	**-jiap*	**-^{j}àp*
**-rjep*	acute	*-jep*	**-i̯ap*	**-rjap*	**-^{r}àp*
	grave	*-jep* (III)	**-i̯ap*	**-jiap*	**-^{j}ap* (?)

Additional examples of **-ep(s)*

(1742) 叶 *xié* < *hep* < **gep* 'in harmony, together'

The phonetic seems to be 十 *shí* < *dzyip* < **gjip* 'ten', showing apparent confusion of **i* and **e*. Although the *Shuōwén* does not say so (Dīng Fúbǎo 1928–1932 [1976]: 1002), I suspect that 十 **gjip* 'ten' is the phonetic element in

(1743) 計 *jì* < *kejH* < **keps* 'calculate'.

The vowel of 計 *jì* could be **i* or **e*, since these not infrequently show *xiéshēng* contacts. If 計 is **kips*, then it and 十 **gjip* 'ten' are probably from the same root. But I prefer to reconstruct **e* in 計 *jì* because it occurs in what appears to be an **e/o* binome 計會 *jìkuài* < **keps-kops*. The *Shuōwén*'s gloss for 計 *jì* is of interest:

會也; 筭也
kuài [sic] *yě; suàn yě*
'to calculate; to reckon'

Note the similarity of 計 *jì* < **keps* and 會 *kuài*:

(1744) 會 [*kuài*] < *kwajH* < **kops* 'accounting at the end of the year'

According to tradition, 計 *jì* < **keps* refers to accounting done at the end of the month, while 會 [*kuài*] < **kops* refers to accounting done at the end of the year (Morohashi 1955–1960, entries 14306.48, 35220.23). Both 會計 *kuàijì* < **kops-keps,* which became the modern term for "accounting", and 計會 *jìkuài* < **keps-kops* are found as terms for accounting or reckoning at least as early as the Zhànguó period (475–221 B.C.). The latter form is a typical **e/o* binome.

(1745) 夾 *jiā* < *kɛp* < **krep* 'be on both sides of'

(1746) 狹 *xiá* < *hɛp* < **fikrep* 'narrow'

This phonetic series also includes *ts-* initials which could come from **Sk-* clusters:

(1747) 挾 [*jiā*] < *hep* ~ *tsep* < **fikep* ~ **Skep* 'grasp, hold'

(1748) 聶 *niè* < *nrjep* < **nrjep* 'promise'

(1749) 攝 *shè* < *syep* < **hnjep* 'catch, hold, gather'

10.3.2.3. The reconstruction of the *-op(s) *group*

The development of OC **-op* is summarized in Table 10.118.

Table 10.118. Development of **-op*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-op*	all	*-op*	**-əp*	**-əp*	**-ə́p*
**-rop*	all	*-ɛp*	**-ăp*	**-riap*	**-ʳáp*
**-jop*	acute	*-jep*	**-i̯ɛp*	**-jap*	**-àp*
	**K-*	*-jæp*	**-i̯ăp*	**-jap*	**-àp*
	**P-*	*-jop*	**-i̯wăp*	**-jap*	**-àp*
**-rjop*	acute	*-jep*	**-i̯ɛp*	**-rjap*	**-ʳàp*
	**K-*	*-jæp*	**-i̯ăp*	**-jap*	**-àp* (?)
	**P-*	*-jop*	**-i̯wăp*	**-jap*	**-àp* (?)

Syllables in **-ops* merged with **-ots* and thereafter developed like original **-ots* (see section 10.1.2.3).

Examples of **-op(s)*

(1750) 舂 *chā* < *tsrhɛp* (< *tsrhjep*) < **tshrjop* 'to husk (grain) with a mortar and pestle'

(1751) 臻 *chuì* < *ts(r)hjwejH* < **tsh(r)jops* 'to pound'

Duàn Yùcái noticed the relationship between these two words. The *Shuōwén*, in its entry on the word

(1752) 臻 *cuì* < *tshjwejH* < **tshjots* (perhaps < **tshjops*?) 'a kind of sacrifice',

has the note

讀若舂麥爲臻之臻
dú ruò chōng mài wéi chuì zhī chuì
'read like *chuì* as in "to pound wheat [with a mortar and pestle] is *chuì*"'.[374]

Duàn Yùcái somehow recognized that 臻 *chuì* < *ts(r)hjwejH* < **tsh(r)jops* here was equivalent to 舂 *chā* < *tsrhɛp* < **tshrjop*, and described 舂 *chā* and 臻 *chuì* as *gǔ jīn zì* 古今字 'ancient and modern forms of the same character' (Dīng Fúbǎo 1928–1932 [1976]: 67, 3180).

See also 會 *huì* and 合 *hé*, cited above.

10.3.3. The traditional 侵 Qīn group

The Middle Chinese finals included in the traditional 侵 Qīn group are listed in Table 10.119.[375]

Table 10.119. Middle Chinese finals of the traditional 侵 Qīn group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-om*	*-âm*	覃 Tán (Dam)	
II	*-ɛm*	*-ăm*	咸 Xián (Hɛm)	(in part)
III	*-(j)im*	*-i̯əm*	侵 Qīn (Tshim)	
IV	*-em*	*-iem*	添 Tiān (Them)	(in part)

The 侵 Qīn group includes both division-I *-om* and division-IV *-em*, so according to the front-vowel hypothesis we must reconstruct both front and

back vowels. In addition, although there are no *kāikǒu/hékǒu* contrasts in this group, there is some evidence that we should reconstruct both **-im* and **-um*. I will discuss first the distinction between **-im* and **-um*, then the distinction between these and the front-vowel **-im*.

10.3.3.1. The distinction between *-im *and* *-um

The evidence for a distinction between **-im* and **-um* is that when words of the 侵 Qīn group rhyme irregularly with words in **-ng*, some words rhyme with **-ing*, and other words rhyme with **-ung*.[376] This suggests that the 侵 Qīn words which rhyme with **-ing* were **-im*, while those which rhyme with **-ung* were **-um*; the rhyming of **-m* with **-ng* can be regarded either as a dialect phenomenon or as poetic license. Such rhyming may have been a western dialect feature, for within the *Guó fēng* section, this phenomenon appears only in the *Qín fēng* 秦風 (128.2B and 128.3B) and *Bīn fēng* 豳風 (154.8A), both believed to be of western origin. These rhymes can be used as a guide to reconstructing the vowels of at least a few of the words of the 侵 Qīn group.

For example, within a single Ode (*Qín fēng* 秦風*: Xiǎo róng* 小戎, no. 128), we find the following rhyme sequences in stanzas 2 and 3 respectively:

Stanza 2:

中 *zhōng* < *trjuwng* < **k-ljung* 'center'
驂 *cān* < *tshom* < **srum* 'outside horses'

Stanza 3:

膺 *yīng* < *ʔing* < **ʔ(r)jing* 'breastplate'
弓 *gōng* < *kjuwng* < **k^{w}jing* 'bow'
縢 *téng* < *dong* < **ling* 'to bind, tie'
興 *xīng* < *xing* < **x(r)jing* 'rise'
音 *yīn* < *ʔim* < **ʔ(r)jim* 'fame'

Here the 侵 Qīn-group word 驂 *cān* rhymes with **-ung* in stanza 2, while another 侵 Qīn-group word 音 *yīn* rhymes with **-ing* in stanza 3. This suggests that we should reconstruct **-um* in 驂 *cān* and **-im* in 音 *yīn*.

If these rhymes had occurred in different poems, we could argue that both 驂 *cān* and 音 *yīn* should be reconstructed with the same rhyme (say, **-əm*, as in Karlgren's or Li's system) and that **-əm* rhymed with **-ing* in one dialect and **-ung* in another. But since they occur within the same poem,

such an explanation would require us to assume that different stanzas of the same poem were written in different dialects—not impossible, but unlikely.

I identify eleven *Shījīng* rhyme sequences in which 侵 Qīn-group words rhyme with words in final *-*ng*. The rhymes with *-*ung* are 128.2B, 154.6A, 240.3A, 250.4C, 255.1B, and 258.2A; the rhymes with *-*ing* are 128.3B, 236.7B,[377] 245.3B, 245.8A, and 300.5A. Based on the rhymes with *-*ung*, we would reconstruct the following words with *-*um*:

(1753) 驂 *cān* < *tshom* < **srum* 'three horses on a team; outside horses of a team' (128.2B)

I reconstruct *tsh-* < **sr-* here because of the related form

(1754) 參 *shēn* < *srim* < **srjum* 'the three stars of Orion's belt'.

Clearly, both are related to the numeral

(1755) 三 *sān* < [*sam*] < **sum* 'three'; compare with Tibetan *gsum* 'three', Tibeto-Burman **g-sum* (Coblin 1986: 149).

Note that the Middle Chinese reading *sam* is irregular, as has been long recognized; we would expect *som*.

(1756) 陰 *yīn* < *ʔim* < **ʔ(r)jum* 'shade, cloudiness' (154.8A, in the expression 凌陰 *líng yīn* 'ice-house')

With this item Coblin (1986: 60) compares Tibetan *rum* 'darkness, obscurity'.

(1757) 臨 *lín* < *lim* < **b-rjum* 'approach' (240.3A and 258.2A)

It is especially noteworthy that this word appears in two different rhymes with *-*ung*. Moreover, in Ode 241, the Hán *Shī* has 隆 *lóng* < *ljuwng* where the Máo *Shī* has 臨 *lín* (Xiàng Xī 1986: 274), further supporting the rounded vowel in 臨 *lín*.

(1758) 飲 *yìn* < *ʔimH* < **ʔ(r)jum(ʔ)s* 'to give to drink' (250.4C)

(1759) 諶 *chén* < *dzyim* < **Gjum* 'reliable, to trust' (255.1B)

The velar initial (capitalized because it palatalizes unexpectedly) is reconstructed because of velars elsewhere in this *xiéshēng* series, e.g.

(1760) 堪 *kān* < *khom* < **khum* 'able to bear, equal to'

(1761) 甚 *shèn* < *dzyimX* < **Gjumʔ* 'excessive' (258.2A)

Having reconstructed *-*um* in these words on the basis of rhymes with *-*ung*, can we extend the reconstruction of *-*um* to other words? I have

already assumed that the various forms of the root meaning "three" can be reconstructed with the same main vowel; this extends the reconstruction of **-um* on the basis of assumed etymological relationships. Similarly, we can probably assume that 飲 *yǐn* 'to drink' is **ʔ(r)jumʔ*, with **-um*, since its causative 飲 *yìn* 'to give to drink' has **-um* in Ode 250.4C.

We can also attempt to extend the reconstruction on the basis of *xiéshēng* evidence. For example, the last two items are in the same *xiéshēng* series; perhaps it is legitimate to reconstruct **-um* elsewhere in the series. This would give us

(1762) 椹 *zhēn* < *tsyim* < **Kjum* 'chopping-block',

which in turn is probably the same root as

(1763) 枕 *zhěn* < *tsyimx* < **Kjumʔ* 'block used as headrest; pillow'.

Both items can be compared with Tibeto-Burman **kum* (tone *A) 'block' (Coblin 1986: 118). But it should be remembered that not all *xiéshēng* characters are necessarily old enough to reflect Old Chinese phonology.

Turning now to the 侵 Qīn-group words that rhymed with **-ing*, we can probably reconstruct **-im* in the following items on the basis of their rhymes with **-ing*:

(1764) 音 *yīn* < *ʔim* < **ʔ(r)jim* 'sound' (128.3B)

(1765) 林 *lín* < *lim* < **C-rjim* 'forest' (236.7B, 245.3B)

(1766) 心 *xīn* < *sim* < **sjim* 'heart' (236.7B)

(1767) 歆 *xīn* < *xim* < **x(r)jim* 'enjoy, be elated' (245.8A)

(1768) 今 *jīn* < *kim* < **k(r)jim* 'now' (245.8A)[378]

(1769) 綅 *qīn* < *tshim* ~ *tsim* ~ *sjem* < **tshjim* (?) 'thread' (300.5A)

Although 綅 *qīn* rhymes with **-ing* in 300.5A, its phonetic suggests a reconstruction with **-im*, as we shall see below.

It is difficult to reconstruct this distinction for other words, however, largely because the distinction has been entirely wiped out by **labial neutralization**. As a result of this change, there are no syllables where the distinction between **-im* and **-um* can be unambiguously reconstructed from Middle Chinese pronunciation alone. The absence of phonologically ambiguous syllables makes it impossible to test for the **-im*/**-um* distinction using the statistical methods of Chapter 3. Even in *Shījīng* times, the distinction may not have been observed in all the varieties of Chinese

represented in the *Shījīng*; for example, in Ode 20.2A we find the rhyme sequence

三 *sān* < [*sam*] < **sum* 'three'
今 *jīn* < *kim* < **k(r)jim* 'now'

which seems to cross the boundary we tried to establish above. It is also quite possible that **labial neutralization** occurred early enough to affect the *xiéshēng* characters presently found in classical texts. For all these reasons, I will not attempt to recover the **-im*/*-um* distinction except in the words above which rhyme with **-ing* or **-ung*, and in words which seem to be etymologically related to them. (Even those reconstructions should be regarded as tentative.) When in doubt, I will write **-i*/*um* as a reminder that both possibilities should be considered. Further progress in pinning down this distinction may come from deeper studies of early Chinese dialect differences, from investigation of a larger corpus of rhymes, and from Sino-Tibetan comparison.

10.3.3.2. The reconstruction of the *-im *and* *-um *groups*

As the preceding discussion should have made clear, the reflexes of **-im* and **-um* are probably identical; they are summarized in Table 10.120.

Table 10.120. Development of **-im* and **-um*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-im*, **-um*	all	*-om*	**-əm*	**-əm*	**-ə́m*
**-rim*, **-rum*	all	*-ɛm*	**-ɛm*	**-rəm*	**-ʳə́m*
**-jim*, **-jum*	**K*^{w}-, **P-*	*-juwng*	**-i̯əm*	**-jəm*	**-ə̀m*
	**K-*	*-im* (III)	**-i̯əm*	**-jəm*	**-ə̀m*
	acute	*-im*	**-i̯əm*	**-jəm*	**-ə̀m*
**-rjim*, **-rjum*	**K*^{w}-, **P-*	*-juwng*	**-i̯əm*	**-jəm*	**-ə̀m*
	**K-*	*-im* (III)	**-i̯əm*	**-jəm*	**-ə̀m*
	acute	*-im*	**-i̯əm*	**-rjəm*	**-ʳə̀m*

Table 10.120 assumes that **labial neutralization** changed **-im* to **-um*, not the other way around, and that it preceded ***r-color**. With these assumptions, 風 *fēng* can be reconstructed as **prjum*, **prjim*, **pjum*, or **pjim*; all four would have rounded vowels at the time of ***r-color**, and all four would be unaffected by it. If **labial neutralization** followed ***r-color**, then **prjim* is eliminated as a possible reconstruction for 風 fēng (since it would then

have become MC *pim*), but **prjum* is still possible. Formulating **labial neutralization** differently will produce still other results.

Additional examples of **-im* and **-um*

Probably we have dissimilation parallel to that in 風 *fēng* in

(1770) 熊 *xióng* < *hjuwng* < **wj(r)i/um* 'bear'; compare Tibeto-Burman **d-wam* (tone *A), (Coblin 1986: 40).

Whether an **r* is possible in this item or not depends on the ordering and formulation of **labial neutralization.**

(1771) 禁 *jìn* < *kimH* < *krji/ums* 'prohibit'

The phonetic is 林 **C-rjim* 'forest'. Compare also

(1772) 森 *sēn* < *srim* < **srjim* 'forest',

where I reconstruct **-im* rather than **-um* because of assumed etymological connection with 林 *lín* < **C-rjim.*

(1773) 深 *shēn* < *syim* < **hljim* 'deep'

10.3.3.3. The reconstruction of Old Chinese *-im

We turn now to the Old Chinese final **-im*, which is required by the front-vowel hypothesis in order to account for words with the division-IV final *-em* and the rare division-IV *chóngniǔ* final *-jiem.* According to my assumptions, OC **-im* should develop as shown in Table 10.121.

Table 10.121. Development of **-im*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-im*	all	*-em*	**-iəm*	**-iəm*	**^{j}ə́m*
**-rim*	all	*-ɛm*	**-ɛm*	**-rəm*	**^{r}ə́m*
**-jim*	grave	*-jim* (IV)	**-i̯əm*	**-jiəm*	**^{j}ə̀m*
	acute	*-im*	**-i̯əm*	**-jəm*	**-ə̀m*
**-rjim*	grave	*-im* (III)	**-i̯əm*	**-j(i)əm*	**^{r}ə̀m*
	acute	*-im*	**-i̯əm*	**-rjəm*	**-ə̀m*

Note that, for reasons that are unclear, the division-IV *chóngniǔ* final *-jim* appears only with the glottal stop initial, as in

(1774) 愔 *yīn* < *ʔjim* (IV) < **ʔjim* 'mild, peaceful'.

There are not sufficient data to check the front-vowel hypothesis statistically in this group; although the 侵 Qīn group is the most frequently used of the rhyme groups with labial codas, very few words can unambiguously be assigned to **-im*. We can see what may be traces of a distinction, however. For instance, in 189.6A we have a rhyme sequence consisting of the division-IV word

(1775) 簟 *diàn* < *demX* < **limʔ* 'bamboo mat'

and the word

(1776) 寢 *qǐn* < *tshimX* < **tshjimʔ* 'sleep'.

Now it so happens that this last word and a few others in its *xiéshēng* series have possible Tibeto-Burman cognates in **-im*. With 寢 *qǐn*, compare Tibetan *gzim-pa* 'fall asleep', *gzim-gzim* and *tshim-tshim* 'eyes dazzled' (Coblin 1986: 134). Another example is

(1777) 侵 *qīn* < *tshim* < **tshjim* (< **Sthjim*?) 'invade, encroach'

with Tibetan *stim-pa* 'enter, penetrate, be absorbed in' (Bodman 1980: 57); the same root is probably present in

(1778) 浸 *jìn* < *tsimH* < **tsjims* (< **Stjims*?) 'overflow, soak'. (Coblin 1986: 73; Bodman 1980: 57)

Still another example is

(1779) 祲 *jìn* < *tsimH* < **tsjims* (< **Skjims*?) 'halo around the sun, vapor as prognostic'

with Tibetan *khyim* 'halo around the sun', *'khyims-pa* 'to be encircled with a halo' (Bodman 1980: 58; Coblin 1986: 90).

In 162.5A we have a sequence involving a different word of this series, where there is also evidence of **-im*. The sequence consists of

(1780) 駸 *qīn* < *tsrhim* < **tshrjim* 'gallop'

and

(1781) 諗 *shěn* < *syimX* < **hnjimʔ* 'remonstrate; report'.

Reconstructing **-im* in the latter is supported by the division-IV final in its phonetic

(1782) 念 *niàn* < *nemH* < **nims* 'think of'.

It is striking that words for which there is evidence of **-im* are clustered together this way in the *Shījīng* rhymes. But in three other sequences, words in MC *-em* seem to rhyme with **-im*:

1. In 208.4A, we have

(1783) 僭 *jiàn* < *tshemH* ~ *tsemH* ~ *tsrhim* < **tshims* ~ **tsims* ~ **tshrji/im* 'error; falsehood; disorder'

rhyming with **-i/um* (including the **-im* word 音 *yīn* < **ʔ(r)jim*).

2. In 257.9A, the word

(1784) 譖 *jiàn* < *tsemH* < **tsims* 'accuse, calumniate'

rhymes with the **-im* word 林 *lín* < **C-rjim*. (Some versions have 僭 *jiàn* instead of 譖 *jiàn* here.)

3. In 256.9B, 僭 *jiàn* (some versions have 譖 *jiàn* instead) rhymes with the **-im* word 心 *xīn* < **sjim*.

Finally, as mentioned earlier, 綅 *qīn*, in the same *xiéshēng* series with several likely examples of **-im*, rhymes with **-ing* in 300.5A. Perhaps in some dialects **-im* merged with **-im* (or at least was allowed to rhyme with it), or perhaps there is something unusual about the words 僭 *jiàn* and 譖 *jiàn* (whose *xiéshēng* series includes words in division-I *-om*). Unfortunately, the *Shījīng* data are insufficient to resolve these questions, and the reconstructions of this group also must remain tentative.

10.3.4. The traditional 緝 Qī group

The Middle Chinese finals traditionally included in the 緝 Qī group are listed in Table 10.122.

This group has contrasts between division-I *-op* and division-IV *-ep*, so according to the front-vowel hypothesis we must reconstruct contrast between front and nonfront vowels. Other evidence suggests that there was a rounding distinction among back vowels, so that I reconstruct **-ip*, **-up*, and **-ip*. There are only fourteen *Shījīng* rhyme sequences involving this group, none of which involve clear examples of **-ip*. But as in the 盍 Hé group, in this group we have additional evidence from **s*-suffixed *qùshēng* forms where the original vowel features are better preserved. I will summarize the proposed reconstructions, then cite examples below.

Table 10.122. Middle Chinese finals of the traditional 緝 Qī group

	MC	AC (Karlgren)	*Qièyùn* rhyme	comments
I	*-op*	*-ập*	合 Hé (Hop)	
II	*-ɛp*	*-ăp*	洽 Qià (Hɛp)	(in part)
III	*-(j)ip*	*-i̯əp*	緝 Qī (Tship)	
	-jep	*-i̯ăp*	葉 Yè (Yep)	
IV	*-ep*	*-iep*	帖 Tiē (Thep)	(in part)

10.3.4.1. The reconstruction of *-ip(s) *and* *-up(s)

Because of **labial neutralization**, the reflexes of unsuffixed **-ip* and **-up* are not distinguishable from each other. They are summarized in Table 10.123 below.

Table 10.123. Development of **-ip* and **-up*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ip, *-up*	all	*-op*	**-əp*	**-əp*	**-áp*
**-rip, *-rup*	all	*-ɛp*	**-ɛp*	**-rəp*	**-ʳáp*
**-jip, *-jup*	**K^w-, *P-*	*-juwk* (?)	**-i̯əp*	**-jəp*	**-àp*
	**K-*	*-ip* (III)	**-i̯əp*	**-jəp*	**-àp*
	acute	*-ip*	**-i̯əp*	**-jəp*	**-àp*
**-rjip, *-rjup*	**K^w-, *P-*	*-juwk* (?)	**-i̯əp*	**-jəp*	**-àp*
	**K-*	*-ip* (III)	**-i̯əp*	**-jəp*	**-àp*
	acute	*-ip*	**-i̯əp*	**-rjəp*	**-ʳàp*

The final *-juwk,* if it really belongs in this group, would be parallel to the *-juwng* of 風 *fēng* < **p(r)ji̯ə/um* 'wind' and 熊 *xióng* < **w(r)ji̯ə/um* 'bear'; it may occur in

(1785) 昱 *yù* < *yuwk* < **(w)rji̯ə/up* 'sunshine',

which the *Shuōwén* says has 立 *lì* < **C-rji̯əp* as phonetic. If we assume some kind of labial initial in 昱 *yù,* then we can account for its final by a dissimilation parallel to that found in 風 *fēng* and 熊 *xióng*. But the palatal initial *y-* is unexpected; from **wrji̯əp* or **wrjup* we would expect *hjuwk* (a syllable which does exist in Middle Chinese) rather than *yuwk*.

Note that **-up* and **-op* are distinguishable in Middle Chinese only in syllables with medial **-j-*, and we sometimes have to write **-o/up* when in doubt.

Although **-ip* and **-up* evidently merged unconditionally, **-ips* presumably developed like **-its*, and **-ups* developed like **-uts* because of the change ****-ps > *-ts***. This sometimes makes it possible to infer the vowel of the unsuffixed form. Here are some examples:

(1786) 內 *nèi* < *nwojH* < **nuts* < **nups* 'inside'

Here the *hékǒu* final *-wojH* indicates an original rounded vowel both in this form and in the following related forms from the same root:

(1787) 納 *nà* < *nop* < **nup* 'send or bring in'

In early script, the character 內 is used for both 內 *nèi* and 納 *nà*.

(1788) 入 *rù* < *nyip* < **njup* 'enter'

It is tempting to see the modern Mandarin *-u* vowel in 入 *rù* as somehow connected with the OC **u* of **njup*; the expected regular development of MC *nyip* in Mandarin would be *rì* (which survives as a literary reading of this character).

(1789) 退 *tuì* < *thwojH* < **hnuts* < **hnups* 'withdraw, retire' (i.e. go back into one's own territory?)

This character is written with 內 *nèi* as phonetic in the Mǎwángduī manuscripts and other early texts. With these various forms we may compare Tibeto-Burman **nup* 'descend' (Coblin 1986: 73).

(1790) 對 *duì* < *twojH* < **tuts* < **tups* < **k-lups* 'respond, answer'

(1791) 答 *dá* < *top* < **tup* < **k-lup* 'respond'

(1792) 萃 [*cuì*] < *dzwijH* < **dzjuts* < **dzjups* 'to collect, assemble'

The word 萃 *cuì* occurs with this meaning in Ode 141.2, where Máo glosses it as

(1793) 集 ~ 輯 *jí* < *dzip* < **dzjup* 'to come together, settle, perch [of birds]; collect, gather'

These are most likely forms of the same root (see discussion in section 9.2).

Probable cases of **-ip(s)* (also mentioned in section 9.2) include

(1794) 暨 *jì* < *gijH* (III) < **grjits* < **grjips* 'to reach to, bring with, concur with; together with, and',

which I suspect is an ***s***-suffixed form of the synonymous

(1795) 及 *jí* < *gip* (III) < **g(r)jɨp* 'to reach to, be equal to, succeed; together with, and'.

Both these words may be related to the following two forms (discussed already in section 10.1.7), although the initials are problematical; perhaps we have dialect confusion of **-r-* and **-l-*, or of their clusters:

(1796) 逮 *dài* < *dojH* < **lɨts* < **(g-)lɨps* 'come to, reach to'

(1797) 眾 *tà* < *dop* < **(g-)lɨp* 'to touch, reach; and, together with' (commonly found in bronze inscriptions)

As was pointed out earlier (section 10.1.7.5), the reading tradition preserves a variety of pronunciations for 逮 *dài* and its homonyms, including also *dejH* (with ***ɨ*-fronting** applying after ***-ps* > *-ts***) and *dwojH* (where perhaps **labial neutralization** has applied before ***-ps* > *-ts***). This may serve as an indication of the dialect diversity present in early China.

The following example could represent either **-ɨp* or **-ip*:

(1798) 執 *zhí* < *tsyip* < **tjiɨp* 'to hold, seize, take'

This has **s*-suffixed forms

(1799) 摯 *zhì* < *tsyijH* < **tjiɨps* 'to catch, seize'

and

(1800) 贄 *zhì* < *tsyijH* < **tjiɨps* 'ceremonial gift' (that which one holds?).

The pronunciation of

(1801) 位 *wèi* < *hwijH* < **(w)rjɨps* (?) 'standing, status, position'

is difficult to account for. In early script, this character was interchangeable with

(1802) 立 *lì* < *lip* < **C-rjɨp* 'stand' (compare Tibeto-Burman **g-ryap*, Coblin 1986: 140).

The **ɨ* vowel here is not certain, but the following word in the same *xié-shēng* series rhymes with 及 *jí* < **g(r)jɨp*, for which there is evidence of **-ɨp* (see above):

(1803) 泣 *qì* < *khip* < **khrjɨp* 'to weep' (compare Tibeto-Burman **krap*, Coblin 1986: 159)

The Tibeto-Burman comparisons also suggest that the main vowel was not rounded in "stand", and this supports an unrounded vowel for 位 *wèi* < *hwijH*. But if the main vowel of 位 *wèi* was not rounded, where does the Middle Chinese *-w-* come from? A **w-* prefix would account for it, but there is little support for such a prefix. One possibility is that MC *hwijH* reflects a dialect like that which produced the pronunciation *dwojH* for 逮—one in which **labial neutralization** changed **-ip* to **-up* before the change ****-ps* > **-ts***, so that **-ips* merged with **-ups*. The initial consonant is still something of a problem, though; perhaps we have **firjips*? (See Bodman 1980: 86 on the possibility that **fir-* may be one reflex of earlier **r-*.)

10.3.4.2. The reconstruction of *-ip

Finally, let us consider the evidence for OC **-ip*. If **-ip* existed, we would expect it to develop as shown in Table 10.124.

Table 10.124. Development of **-ip*

Baxter	initial type	MC	Karlgren	Li	Pulleyblank
**-ip*	all	*-ep*	**-iəp*	**-iəp*	**-ʲəp*
**-rip*	all	*-ɛp*	**-ɛp*	**-rəp*	**-ʳəp*
**-jip*	grave	*-jip* (IV)	**-i̯əp*	**-jiəp*	**-ʲə̀p*
	acute	*-ip*	**-i̯əp*	**-jəp*	**-ə̀p*
**-rjip*	grave	*-ip* (III)	**-i̯əp*	**-j(i)əp*	**-ʳə̀p*
	acute	*-ip*	**-i̯əp*	**-rjəp*	**-ə̀p*

Cases of **-ip* can be identified by their division-IV finals *-ep* < **-ip* or (in suffixed form) *-ejH* < **-its* < **-ips*. Unfortunately, such cases are rather few. We saw above that the phonetic of 計 *jì* < **keps* 'accounting, reckoning' may be

(1804) 十 *shí* < *dzyip* < **gjip* 'ten' (compare Tibeto-Burman **gip*, Coblin 1986: 147).

(Note the regular palatalization of **gj-* before a front vowel.) If so, then this supports a front vowel in 十 *shí* 'ten', which agrees also with evidence from Tibeto-Burman.

10.3.4.3. The rhyming of *-ɨp *and* *-up

If we distinguish *-*ɨp* and *-*up* words according to their *qùshēng* cognates, we can use these as diagnostic words to sort out the 緝 Qī-group rhymes of the *Shījīng* into an *-*ɨp* group and an *-*up* group. For example, on the assumption that 及 *jí* < *gip* 'reach; together, and' is related to 暨 *jì* 'reach; together, and', we can classify rhyme sequences in which 及 *jí* appears as *-*ɨp* rhymes. On the assumption that 集 and 輯 *jí* < *dzip* 'collect, gather' are related to 萃 *cuì* < *dzwijH* 'collect, gather', we classify rhyme sequences in which these words appear as *-*up* sequences. Unfortunately, there are no clear examples of rhymes in *-*ip*, though one or two of the rhymes listed below under *-*ɨp* might be classified as *-*ip*.

By these criteria, the following *Shījīng* rhyme sequences involve *-*ɨp*: 5.3A, 28.2C, 69.3A, 163.1B, 177.1B (with *-*ɨk*), 190.1B, 238.3A, and 260.7A (with *-*ap*).

The following *Shījīng* rhyme sequences involve *-*up*: 128.2C (with *-*op*), 164.7A (with *-*op*), 194.4A (with *-*uts*), 236.4A (with *-*op*), 240.4A (with *-*ɨk* ?), and 254.2C (with *-*op*). The rhyme sequence in 240.4A (式 *shì* < *syik* < **hljɨk* with 入 *rù* < *nyip* < **njup*) is surprising, but this whole ode has many irregularities.

10.4. Summary of rhyme groups

The foregoing examination of individual rhyme groups shows that there is ample basis for revising the traditional analysis of Old Chinese rhyming as suggested by the reconstruction system proposed here. We may summarize the results according to the type of coda involved.

The rhyming of groups with dental codas *-*n*, *-*t*, and *-*j* gives strong support to the proposed reconstruction. These groups are frequently used in rhyming, and they contain relatively large numbers of phonologically unambiguous words, whose vowels can be reconstructed purely on the basis of their Middle Chinese readings. Generally, our statistical tests show that in these groups, the finals reconstructed with distinct main vowels according to the front-vowel hypothesis and the rounded-vowel hypothesis rhyme separately to a degree which cannot be the result of chance. Thus the proposed reconstruction has made it possible to identify a number of rhyming distinctions which had been overlooked in the traditional analysis.

For words with zero and velar codas, the traditional analysis is already consistent with my reconstruction for the most part, and few revisions are

necessary. Exceptions are the traditional 幽 Yōu group, where we find a significant rhyming separation between **-u* and **-iw*, and the parallel *rùshēng* group 覺 Jué, where the data are too scanty to be statistically significant, but where traces of a separation can still be found. For the 宵 Xiāo group, with the labiovelar coda **-w*, the separation between **-aw* and **-ew* is on the borderline of significance; the results are significant as long as the initial estimates of frequency of **-aw* and **-ew* are assumed to reasonably accurate. The parallel *rùshēng* group 藥 Yào rhymes too infrequently to be statistically useful, though some traces of a distinction between **-awk* and **-ewk* can be found here too.

Words with labial codas **-m* and **-p* also fail to give statistically significant results, partly because they are infrequently used as rhymes, and partly because too few words can be reconstructed unambiguously from their Middle Chinese readings alone to make an independent statistical test possible. But there are clear traces of the original six-vowel system here also, which show up in irregular rhymes, in which **-m* rhymes with **-ng*, and in **s*-suffixed forms, where words with final **-ps* changed to **-ts* early enough to avoid the sweeping mergers which eventually affected vowels before labial codas.

This rhyme evidence confirms both the front-vowel hypothesis and the rounded-vowel hypothesis. In simple terms, these hypotheses state that there were no elements in Old Chinese phonology corresponding to Karlgren's "strong vocalic medial" **-i-* or to his medial **-w-*. One might argue that this is confirmed only for those rhyme groups where statistically significant results were found; but the results for, say, syllables with dental codas have clear implications for the entire phonological system. If no justification can be found for reconstructing medials **-i-* and **-w-* in words with dental or velar codas, where the data are most plentiful, it seems unlikely that they should be reconstructed in the other, less frequent groups.

The rhyme evidence also indirectly supports the theory of Old Chinese medials **-j-* and **-r-* proposed here, since it is only by the use of these that the vowel system reconstructed to account for Old Chinese rhyming can be transformed into the system we find in Middle Chinese.

Of course, many questions remain for further investigation. The reconstruction of initial consonants is the most tentative part of the system, and many puzzles remain unsolved in this area. And although the basic adequacy of the overall reconstruction of finals has been confirmed, it is often difficult to decide which reconstruction is best for a particular item. These questions must await further research, including Sino-Tibetan comparison.

For convenience, I summarize in Table 10.125 the relationship between the rhymes I reconstruct for Old Chinese and the traditional rhyme groups of the Qīng phonologists (as described in Table 4.1). Each box in the charts represents a traditional category, and is labeled with its traditional name; the reconstructed forms in each box are the rhymes into which the traditional category is to be divided according to the present reconstruction. Rhyme groups are arranged according to their codas, following the order of presentation in this chapter.

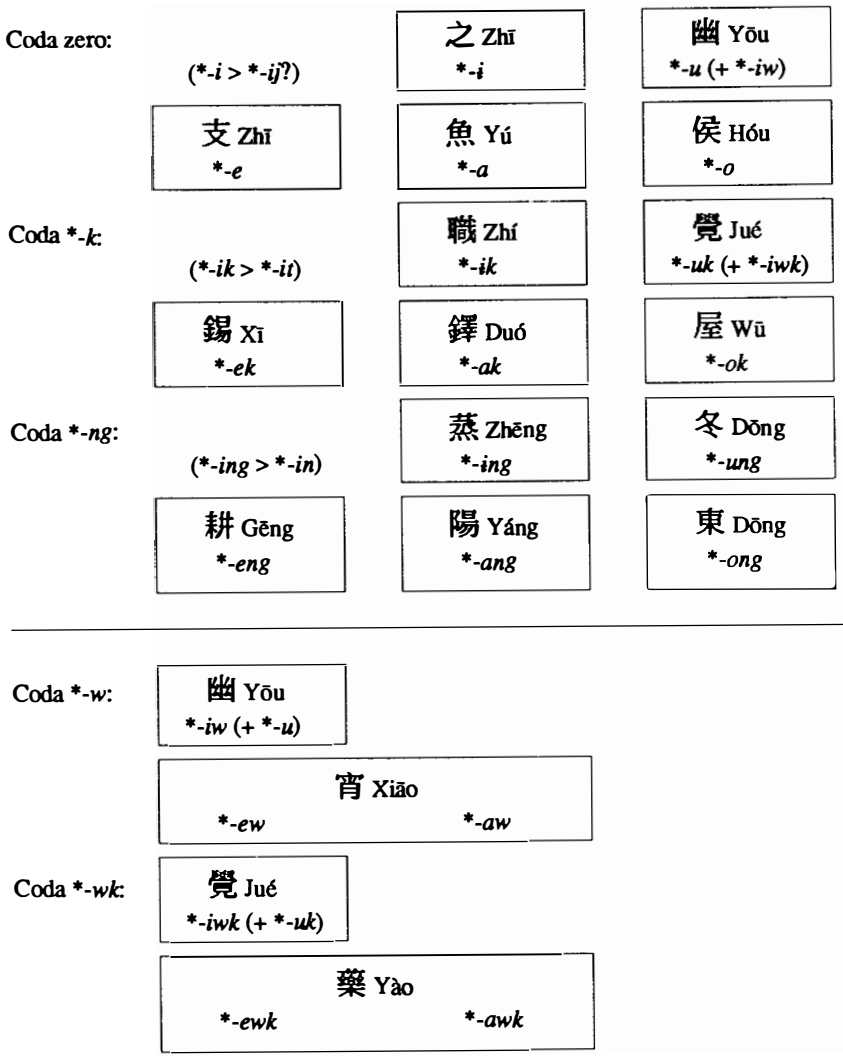
Post-codas *-*s* and *-*ʔ* are ignored in this summary; but it should be kept in mind that **final cluster simplification**, which caused stop codas to be lost before *-*s*, had the effect of moving *qùshēng* words from stop-final groups to open-syllable groups. Thus when *-*iks* changed to *-*is*, some words moved from the *-*ik* group to the *-*i* group. Some of these changes had probably already occurred by the time of the *Shījīng*.

Table 10.125. Summary of rhyme groups

Coda *-*n*:	真 Zhēn *-*in*	文 Wén *-in*	*-*un*
		元 Yuán	
	*-*en*	*-*an*	*-*on*
Coda *-*t*:	質 Zhì *-*it*	物 Wù *-*it*	*-*ut*
		月 Yuè /祭 Jì	
	*-*et*	*-*at*	*-*ot*
Coda *-*j*:	脂 Zhī *-*ij*	微 Wēi *-*ij*	*-*uj*
		歌 Gē	
	(*-*ej*?)	*-*aj*	*-*oj*

Continued on next page

Table 10.125, continued



Continued on next page

Table 10.125, continued

Coda *-*m*:	侵 Qīn		
	*-*im*	*-*im*	*-*um*
	談 Tán		
	*-*em*	*-*am*	*-*om*
Coda *-*p*:	緝 Qī		
	*-*ip*	*-*ip*	*-*up*
	盍 Hé		
	*-*ep*	*-*ap*	*-*op*

Appendix A

Phonological changes from Old to Middle Chinese

This appendix summarizes in roughly chronological order the major phonological changes by which the syllables of Old Chinese evolved into the Middle Chinese syllables of the *Qièyùn*. This is not an exhaustive list, and many details of this evolution remain unclear; but most of the major processes can be identified. The phonological changes are stated informally, but usually with enough precision that they could be reformulated into whatever feature system one prefers. Although the ordering of changes is roughly chronological, many of the changes cannot be dated precisely, and in many cases several orderings are possible. I include references to the text, where additional information and examples may be found.

A.1. **-ps* > **-ts*

The change ****-ps* > *-ts*** is an assimilation of the coda **-p* to a following post-coda **-s*; after the change, words in original **-ps* evolved like those in original **-ts*. An example is

(1805) 內 *nèi* < *nwojH* < **nuts* < **nups* 'inside',

which must be related to

(1806) 納 *nà* < *nop* < **nup* 'send in'

and

(1807) 入 *rù* < *nyip* < **njup* 'enter'.

This change evidently occurred in early Zhōu times, for original **-ps* and **-ts* appear to rhyme in the *Shījīng* in at least some cases (as possibly in Ode 257.13A). Paleographical research may help to place this change more precisely in time and space. By Hàn times, at least (206 B.C. to A.D. 220), some words in original **-ps* had come to be written with phonetic elements implying a coda **-t*. For example, the word

(1808) 萃 [*cuì*] < *dzwijH* < **dzjuts* < **dzjups* 'collect, assemble'

is probably an **s*-suffix form of

(1809) 集 *jí* < *dzip* < **dzjup* 'to come together, collect, gather',

but it is now written with the phonetic element

(1810) 卒 *zú* < *tswit* < **Stjut* 'to finish, end, exhaust'.

Since *Shījīng* rhymes and *xiéshēng* evidence often already reflect the change ****-ps* > *-ts***, final **-ps* can usually be reconstructed only in those cases where a *xiéshēng* or loan-graph

relationship with forms in **-p* is preserved (as with 內 *nèi* and 納 *nà*), or where forms which would otherwise be reconstructed with **-ts* have parallel forms in **-p* which may be morphologically related (as with 萃 *cuì* and 集 *jí*). See sections 8.2.2.1, 9.2, and 10.3 for further discussion and examples.

A.2. **P(r)o > *P(r)ɨ*

I assume that original labial-initial syllables of the form **P(r)o* became **P(r)ɨ* in some early dialects, including one or more dialects represented in the *Shījīng*. (Medial **-r-* is included in parentheses because the Old Chinese finals **-o* and **-ro* generally cannot be distinguished after grave initials; see section 10.2.10.) As a result, words of the form **P(r)o* typically rhyme as **-ɨ* in the *Shījīng*, and are traditionally included in the 之 Zhī rhyme group rather than the 侯 Hóu rhyme group:

(1811) 母 **m(r)ɨʔ* (in *Shījīng*) < **m(r)oʔ* 'mother'

However, the dialect directly ancestral to Middle Chinese was evidently unaffected by this change, since in Middle Chinese **P(r)o* became *Puw* as expected, not the *Pwoj* which would reflect original **Pɨ* (or the *Pɛj* which would reflect **Prɨ*):

(1812) 母 *mǔ* < *muwX* < **m(r)oʔ* 'mother'

Compare the following word with original **Pɨ*:

(1813) 每 *měi* < *mwojX* < **mɨʔ* 'every'

In spite of the *Shījīng* rhymes, the reconstruction of 母 *mǔ* with **-o* is supported not only by the Middle Chinese form *muwX*, but also by *xiéshēng* and loan characters where 母 *mǔ* is used as a phonetic for words in **-o*, e.g.

(1814) 侮 *wǔ* < *mjuX* < **mj(r)oʔ* 'offend, insult'

(1815) 毋 *wú* < *mju* < **m(r)jo* 'don't'.

But there are also *xiéshēng* characters which reflect the change ****P(r)o > *P(r)ɨ***; in this case, too, paleographic research may clarify the situation. For further discussion, see section 10.2.1.1.

A.3. Rounding diphthongization

The change **rounding diphthongization** changed original rounded vowels **u* and **o* to **wɨ* and **wa* respectively before the acute codas **-n*, **-t*, and **-j*, as in the examples below. (The sequences **-us* or **-os*, with the acute post-coda **-s*, were evidently not affected.)

(1816) 輪 *lún* < *lwin* < **(C-)rwjɨn* < **C-rjun* 'wheel'

(1817) 冠 *guān* < *kwan* < **kon* 'cap'

(1818) 吹 *chuī* < *tsyhwe* < **thjwaj* < **thjoj* 'blow'

(1819) 出 *chū* < *tsyhwit* < **thjwit* < **thjut* 'come out, go out'

As we have seen, Old Chinese had labiovelar and labiolaryngeal initials $*K^W$-, but no freely occurring medial *-*w*-. But **rounding diphthongization** created instances of medial *-*w*- after acute initials as well as grave initials:

(1820) 鍛 *duàn* < *twanH* < **tons* 'hammer'

As a result, an independent medial *-*w*- entered the phonological system, and original syllables of the form $*K^Wan$ were probably reanalyzed as **Kwan*, merging with **Kwan* < **Kon*. A minimal pair is

(1821) 元 *yuán* < *ngjwon* < **ngjon* (< **Nkjon* ?) 'head, principal, great'

(1822) 原 *yuán* < *ngjwon* < $*ng^Wjan$ 'plain, highland'.

After labial initials, the *-*w*- resulting from **rounding diphthongization** became non-contrastive through the change ***w*-neutralization** (discussed below), so that **Pwan* < **Pon* merged with **Pan* < **Pan*.

A few irregular rhymes in the *Shījīng* suggest that **rounding diphthongization** may have occurred early enough in some dialects to affect *Shījīng* rhyming—perhaps during the Spring and Autumn period (770–476 B.C.). By Hàn times, at any rate, rhymes between original rounded and unrounded vowels before acute codas became common. Further research on Hàn rhyming may reveal whether there were Hàn dialects where the original rounding distinction was preserved. For further discussion, see sections 7.1.1 and 10.1.

A.4. *w-neutralization

The change ***w*-neutralization** caused the medial *-*w*- resulting from **rounding diphthongization** to become nondistinctive after labial initials; for example, original **Pan* and **Pon* merged as MC *Pan*, and original **Pin* and **Pun* merged as MC *Pwon*. As these examples suggest, it is unclear whether such mergers involved the deletion of *-*w*- or its insertion; perhaps this differed from dialect to dialect or from one phonological environment to another. A near-minimal pair which illustrates the mergers due to ***w*-neutralization** is

(1823) 蠻 *mán* < *mæn* < **mran* < **mrwan* < **mron* 'southern barbarian' (rhymes as *-*on* in Ode 261.6A)

(1824) 慢 *màn* < *mænH* < **mrans* 'slow, negligent' (rhymes as *-*an(s)* in Ode 78.3B).

Since ***w*-neutralization** presumably did not affect rhyming, it is difficult to date, except of course that it must have followed **rounding diphthongization**, which produced *-*w*- in this environment in the first place.

A.5. Labial neutralization

Labial neutralization is the process which eliminated the contrasts between rounded and unrounded vowels before labial codas. As explained in section 10.3, there is evidence that all six Old Chinese vowels originally contrasted before labial codas; but many of these contrasts were lost by Middle Chinese times. As with ***w*-neutralization**, it is not always clear whether the mergers involved were assimilatory or dissimilatory; for example, the Middle Chinese final *-om*, which can reflect OC **-im*, **-um*, or **-om*, may have been phonetically [om] in some Middle Chinese dialects and [ʌm] in others.

Labial neutralization appears to have occurred after the change ****-ps* > *-ts***, for items in original **-ps* usually preserve the original rounding distinction (as a contrast between presence and absence of *-w-*):

(1825) 蓋 *gàiH* < *kajH* < **kats* < **kaps* 'cover' (unrounded vowel)

(1826) 會 *huìH* < *hwajH* < **gwats* < **gots* < **gops* 'come together' (rounded vowel)

But **labial neutralization** may have occurred earlier in some dialects; this would explain cases where the reading tradition seems to vacillate between *kāikǒu* and *hékǒu* readings in some words with original **-ps*:

(1827) 棣 *dìH* < *dejH* ~ *dojH* ~ *dwojH* < **lil/ups* 'wild plum'.

If this was originally **lips* (as I suspect), then the reading *dwojH* (preserved in the *Jīngdiǎn shìwén*'s note on Ode 164) could reflect a dialect in which **labial neutralization** changed original **i* to **u*, and preceded ****-ps* > *-ts***: **lips* > **lups* > **luts* > **lwits* > MC *dwojH*. If it was originally **lups*, then the reading *dojH* could reflect a dialect in which **labial neutralization** changed original **u* to **i*, and preceded ****-ps* > *-ts***: **lups* > **lips* > **lits* > MC *dojH*. See section 10.3.4 for further discussion.

A.6. Final cluster simplification

Final cluster simplification simplified final **-ks*, **-wks*, and **-ts* to **-s*, **-ws*, and **-js* respectively. (Original **-ps* had already become **-ts*.) The change of **-ks* to **-s* appears to have occurred early enough to affect *Shījīng* rhyming. For example,

(1828) 路 *lùH* < *luH* < **(g-)ras* < **g-raks* 'road; great'

rhymes with **-as* in Ode 241.2D.

Final cluster simplification seems to have preceded the change ****-ja* > *-jo***, which affected original **-jas* and **-jas* from **-jaks* the same way:

(1829) 絮 *xùH* < *sjoH* < **snjas* 'coarse raw silk, floss'

(1830) 據 *jùH* < *kjoH* < **k(r)jas* < **k(r)jaks* 'grasp, depend on'

Compare the following word with **-ak*, where ****-ja* > *-jo*** did not apply:

(1831) 膠 *juè* < *gjak* < **gjak* 'tongue (as food)'

The various parts of this change did not necessarily occur simultaneously; there seems to be no tendency in the *Shījīng* for **-ats* to be confused with **-ajs*, for example, so the change of **-ts* to **-js* may have been rather late. See section 8.2.2 for further discussion.

A.7. Dental palatalization

Dental palatalization may be summarized by the formula **Tj-* > *TSy-*; the original dental initials **t*, **th*, **d*, and **n* palatalized to MC *tsy-*, *tsyh-*, *dzy-*, and *ny-* respectively when directly followed by medial **-j-*:

(1832) 終 *zhōng* < *tsyuwng* < **tjung* 'end' (probably cognate to 冬 *dōng* < *towng* < **tung* 'winter').

This change probably occurred at some point during the Hàn period; Coblin (1983: 54–60) argues on the basis of sound glosses that by Eastern Hàn times, this change had affected some dialects but not others. See section 6.1.2 for further discussion and examples.

A.8. Velar palatalization

Old Chinese velar and laryngeal initials **K-* palatalized to Middle Chinese palatal affricates and fricatives *TSy-* under conditions which are not entirely clear and must have varied from dialect to dialect. The formulation which seems to cover the most cases (suggested by Pulleyblank 1962, in a slightly different form) is that velars palatalized when followed by medial **-j-* plus a front vowel:

(1833) 支 ~ 枝 *zhī* < *tsye* < **kje* 'branch'

(1834) 熱 *rè* < *nyet* < **ngjet* 'hot'

Palatalization was blocked by the combination **-rj-*, however:

(1835) 技 *jì* < *gjeX* (III) < **grjeʔ* 'ability, talent'

There are, however, numerous exceptions to this formulation which as yet have no satisfactory explanation. As a notational device, I capitalize those Old Chinese velar initials which palatalize unexpectedly:

(1836) 車 *chē* < **KHjA* 'vehicle' (also read *jū* < *kjo* < **k(r)ja*)

(1837) 鍼 *zhēn* < *tsyim* < **Kjɨm* 'needle'

Where **velar palatalization** unexpectedly fails to occur, I capitalize the following medial **-J-* instead:

(1838) 吉 *jí* < *kjit* (IV) < **kJit* 'auspicious, lucky'

Velar palatalization, like **dental palatalization**, evidently occurred at least as early as Hàn times in some dialects (Coblin 1983: 57–60). For further details and discussion, see section 6.1.5.

A.9. Rounding dissimilation

This is a minor change intended to account for the evolution of forms like these:

(1839) 逵 *kuí* < *gwij* (III) < $*g^{w}rjɨ$ < $*g^{w}rju$ 'thoroughfare'

(1840) 軌 *guǐ* < *kwijX* (III) < $*k^{w}rjɨʔ$ < $*k^{w}rjuʔ$ 'wheel-axle ends'

Such words rhyme as *-*u* in the *Shījīng* (see Odes 7.2B, 34.2B), but develop into Middle Chinese like words of the form $*K^{w}rjɨ$, such as

(1841) 龜 *guī* < *kwij* (III) < $*k^{w}rjɨ$ 'turtle; tortoise'.

I therefore assume that the rounded vowel *-*u* of words like 逵 *kuí* and 軌 *guǐ* dissimilated to *-*ɨ* under the influence of labiovelar initials: $*K^{w}(r)ju$ > $*K^{w}(r)jɨ$. For maximum generality, **rounding dissimilation** can be assumed to apply not only to syllables such as the examples above, which have medial *-*r*-, but also to syllables of the form $*K^{w}ju$ (e.g. 九 *jiǔ* < $*k^{w}juʔ$ 'nine'); but in the latter case the original dissimilation was soon reversed by the independently motivated change **rounding assimilation** (see below):

(1842) 九 *jiǔ* < *kjuwX* < $*k(^{w})juʔ$ < $*k^{w}jɨʔ$ < $*k^{w}juʔ$

Rounding dissimilation must have preceded ***r*-color** in order for this formulation to work. This change is reflected in rhyming already by Western Hàn (206 B.C. to A.D. 23; see Luó & Zhōu 1958: 13). For further discussion, see section 10.2.13.

A.10. *-*aj* monophthongization

There is considerable evidence that the words of the traditional 歌 Gē rhyme group originally had an acute coda of some kind, which I reconstruct as *-*j*. However, by Middle Chinese times this coda was gone in most dialects. This development is accounted for by the change ***-aj* monophthongization**:

(1843) 多 *duō* < *ta* < $*tæ$ < $*taj$ 'many'

(1844) 和 *hé* < *hwa* < $*gwæ$ < $*gwaj$ < $*goj$ 'harmonious'

The first stage of this monophthongization was probably a change of *-*aj* to a low front vowel [æ]; by Middle Chinese times, this [æ] had changed to [a]. But original *-*aj* cannot have merged generally with original *-*a*, for the Old Chinese finals *-*aj* and *-*a* remained distinct as MC *-a* and *-u* respectively. But by Eastern Hàn times (A.D. 25–220), there was a merger of original *-*aj* and *-*a* in those cases where *-*a* had been fronted to [æ] by other changes (see the discussion of ***-jA(k)* fronting** and ***r*-color** below). This suggests that we

should date the first stage of ***-aj* monophthongization** (**-aj* > [æ]) at some time before Eastern Hàn. Note, however, that the coda **-j* often remains in the Mǐn dialects (and sporadically elsewhere in the southeast), so these dialects were probably unaffected by ***-aj* monophthongization**. For further details, see sections 8.1.1 and 10.1.3.

A.11. **-jA(k)* fronting

The change ***-jA(k)* fronting** caused the vowels of original **-jA* and **-jAk* to be fronted, probably to a low front [æ]. As a result, we have MC *-jæ* < **-jA* and *-jek* (< *-jæk*) < **-jAk*. Examples include

(1845) 罝 *jiē* < *tsjæ* < **tsjA* 'rabbit net' (also read *jū* < *tsjo* < **tsja*)

(1846) 社 *shè* < *dzyæX* < **djA?* 'altar of the soil'

(1847) 車 *chē* < *tsyhæ* < **KHjA* 'vehicle' (also read *jū* < *kjo* < **k(r)ja*)

(1848) 石 *shí* < *dzyek* < **djAk* 'stone'

(1849) 舃 *xì* < *sjek* < **sjAk* 'slipper'

The capital **A* here is simply a notational device for distinguishing those cases of **-ja* and **-jak* which become front from those which do not; the exact conditions of the change are unclear, though only syllables with acute initials (at the time of the change) appear to be involved. The apparent irregularities are probably due to dialect mixture or textual problems or both. By Middle Chinese times, **-jAk* and original **-jek* had merged as MC *-jek*:

(1850) 易 *yì* < *yek* < **ljek* 'change'

(1851) 液 [*yè*] < *yek* < **(l)jAk* 'fluid, liquid'

However, **-jAks* and **-jeks* remained distinct in Middle Chinese, and are distinct even to the present day:

(1852) 易 *yì* < *yeH* < **ljeks* 'easy'

(1853) 夜 *yè* < *yæH* < **(l)jAks* 'night'

This probably indicates that the process of ***-jA(k)* fronting** took place in at least two stages: an early stage which affected **-jA*, **-jAk*, and **-jAks*, and a later stage which affected only **-jAk*.

In the colloquial layer of the Mǐn dialects, **-jAk* did not merge with **-jek* as in Middle Chinese; rather, **-jAk* has the same reflex as **-jak*. This is clear proof of the commonly-held belief that the Mǐn dialects cannot be descended from Middle Chinese. For further discussion, see sections 10.2.4 and 10.2.5.

A.12. **-ja > -jo*

The change ****-ja > -jo*** is part of a general rounding and raising process which applied to original **-a* before a zero coda. The other part is the change ****-a > -u***, described below. The precise phonetic details of these changes are elusive; the labels ****-ja > -jo*** and ****-a > -u*** are based on my Middle Chinese transcription of the resulting Middle Chinese finals. In fact, the vowels of MC *-jo* < **-ja* and *-u* < **-a* were probably the same in most Middle Chinese dialects, though dialects around the mouth of the Yangtze distinguished them in rhyming (Luó Chángpéi 1931a). Examples of ****-ja > -jo*** include

(1854) 魚 *yú* < *ngjo* < **ng(r)ja* 'fish'

(1855) 女 *nǚ* < *nrjoX* < **nrja?* 'female'.

After labial or labiovelar initials, **-(r)ja* became *-ju* rather than *-jo*:

(1856) 虞 *yú* < *ngju* < **ng^{w}(r)ja* 'anxious'

(1857) 雨 *yǔ* < *hjuX* < **w(r)ja?* 'rain'

(1858) 膚 *fū* < *pju* < **prja* 'human skin'

The reason for separating this rounding and raising process into two parts (****-ja > -jo*** and ****-a > -u***) is that **-ja* and **-a* were differently affected by a preceding medial **-r-*: **-rja* appears to have been unaffected (as in 膚 *fū* < **prja* above), while **-ra* was fronted to [ræ] and thus escaped the effects of ****-a > -u*** (discussed below). These facts can be accounted for by ordering ****-ja > -jo*** before ****r*-color** and ****-a > -u*** after ****r*-color**, and by assuming that ****r*-color** did not affect rounded vowels. See section 10.2.4 for further discussion.

A.13. **-u(K) > -aw(K)*

The change ****-u(K) > -aw(K)*** diphthongized original **-u* to **-aw* before velar codas and zero, when no medial **-j-* was present:

(1859) 道 *dào* < *dawX* < **lu?* 'way'

(1860) 包 *bāo* < *pæw* < **praw* < **pru* 'wrap, bundle'

(1861) 告 *gào* < *kawH* < **kuks* 'tell, report', also read *gù* < *kowk* < **kuk*

(1862) 冬 *dōng* < *towng* (/tawŋ/ ?) < **tung* 'winter'

This analysis suggests that the Middle Chinese finals I transcribe as *-owk* and *-owng* should be phonologically analyzed as /-awk/ and /-awŋ/.

Syllables with medial **-j-* were not affected by this change: original **-ju, *-juk, *-jung* became MC *-juw, -juw, -juwng*.

It is likely that ****-u(K) > *-aw(K)*** actually occurred in more than one stage, perhaps **-u(K)* > **-iw(K)* > *-aw(K)*. Original **-u* came to rhyme generally with original **-aw* by the Wèi-Jìn period (A.D. 220–420; see Ting Pang-hsin 1975: 238), but *shāngshēng *-u?* had already

begun to rhyme with **-aw?* in Hàn times (Luó & Zhōu 1958: 19–20). Also, since I assume that ***r-color** did not affect rounded vowels, it is easiest to account for items like 包 *bāo* < *pæw* < **pru* if we assume that the change ****-u(K) > -aw(K)*** preceded ***r-color**. For further discussion, see sections 10.2.13, 10.2.14, and 10.2.15.

A.14. **-o(K) > -uw(K)*

The change ****-o(K) > -uw(K)*** changed original **-o-* to *-uw-* in syllables with velar or zero codas. The exact phonetic details are unclear:

(1863) 斗 *dǒu* < *tuwX* < **to?* 'ladle, dipper'

(1864) 東 *dōng* < *tuwng* < **tong* 'east'

(1865) 速 *sù* < *suwk* < **s(t)ok* 'rapid, quick'

Like the change ****-u(K) > -aw(K)***, ****-o(K) > -uw(K)*** was limited to syllables without medial **-j-*; the finals **-jo*, **-jong*, and **-jok* became MC *-ju*, *-jowng*, and *-jowk* respectively.

I assume that this change may have applied differently to open syllables than to syllables with the velar codas **-ng* and **-k*. Original **-rong* and **-rok* gave rise to the division-II finals *-æwng* and *-æwk*; this suggests that these finals at the time ***r-color** applied, *-ong* and *-ok* had perhaps become [ʌwng] and [ʌwk], with unrounded main vowels, and were thus subject to ***r-color**:

(1866) 江 *jiāng* < *kæwng* < **krong* '(Yangtze) river'

(1867) 角 *jiǎo* < *kæwk* < **krok* 'horn'

But there are no division-II syllables in the open-syllable 侯 *Hóu* rhyme group, suggesting that syllables like **Kro* simply merged with original **Ko*, perhaps because such syllables still had a rounded main vowel and were thus not affected by ***r-color**. Thus after grave initials it is usually impossible to distinguish the finals **-o* and **-ro*:

(1868) 口 *kǒu* < *khuwX* < **kh(r)o?* 'mouth'.

It would appear that original **-roks* developed like **-ros*, not like **-rok*, suggesting that the relevant stages of ****-o(K) > -uw(K)*** followed ***final cluster simplification***:

(1869) 渥 *wò* < *ʔæwk* < **ʔrok* 'moisten, smear', also read *ʔawH* < **ʔroks* 'soak'.

A.15. **r-color*

I use the name "***r-color**" for a far-reaching change by which a medial **-r-* influenced the pronunciation of a following main vowel. As I formulate this change, it applied only to unrounded vowels, and caused them to become front and (in at least some cases) lax. The full phonological consequences of ***r-color** did not appear until medial **-r-* was lost,

around A.D. 500; as long as the **-r-* was still present, the features it contributed to the following vowel were usually subphonemic. I assume that an item like

(1870) 姦 *jiān* < *kæn* (/kæn/) < *kræn* (/kran/) < **kran* 'wicked'

was probably pronounced with a front [æ] as early as Hàn times; but until medial **-r-* was lost, this [æ] was just an allophone of /a/. This is supported (though not proved conclusively; see Chapter 3) by the fact that words with MC *-æn* and *-an* rhymed with each other through the Wèi-Jìn period (Ting Pang-hsin 1975: 246). I assume that [æ] and [a] became separate phonemes as a result of ***r-loss** (see below).

In some cases, however, ***r-color** had earlier phonological consequences. For example, by Eastern Hàn, **-ra* had separated in rhyming from **-a* and rhymed instead with **-aj* and **-raj* (see ***-aj-diphthongization** above). This and other evidence suggests that we should date ***r-color** to some time in the Western Hàn period (206 B.C to A.D. 23). For further discussion, see sections 7.2 and 7.3.

A.16. Acute fronting

Acute fronting fronted the main vowel in acute-initial syllables with medial **-j-* and nonback codas. An example is

(1871) 然 *rán* < *nyen* < **njan* 'like that'.

Words such as 然 *rán* which were affected by **acute fronting** rhymed as **-an* in the *Shījīng*, but by the Wèi-Jìn period, original **-an* and **-jan* belonged to different rhyme categories (Ting Pang-hsin 1975: 246). This probably indicates that **-jan* had already become **-jen*. (The change from **-jan* to **-jen* should perhaps be factored into a fronting **-jan* > *-jæn* and a raising *-jæn* > *-jen*; perhaps this latter step is to be identified with ***a-raising**, described below.)

Middle Chinese reflexes make it appear that **acute fronting** did not affect syllables with grave initials; the Middle Chinese vowel in items such as the following was probably back:

(1872) 言 *yán* < *ngjon* ([ngjʌn]) < **ngjan* 'speak; words'.

Similarly, with high vowels we have Middle Chinese contrasts such as these:

(1873) 忍 *rěn* < *nyinX* < **njin?* 'be unfeeling' (front vowel)

(1874) 垠 *yín* < *ngjin* < **ngjin* 'raised border, dyke' (back vowel)

The Middle Chinese finals *-jon* and *-jin* are restricted to syllables with grave initials. I account for this by assuming that **acute fronting** applied only to syllables with acute initials, at least in the dialect(s) ancestral to Middle Chinese. On the other hand, words in Middle Chinese *-jon* and *-jin* appear to rhyme with front vowels during the Wèi-Jìn period; this rhyming practice could represent a dialect where **acute fronting** applied more generally. Notice that ***i-fronting** (described below) is similar to **acute fronting**, but has a

slightly different environment; the relationship between these two processes probably differed from dialect to dialect.

I argue in Chapter 9 that **acute fronting** (and possibly ***a*-raising**) created many cases where [a] and [e] occurred in the same *xiéshēng* series, weakening the conditions for "*xiéshēng* similarity" in characters of late origin; see Chapter 9 for further discussion.

A.17. Rounding assimilation

This change rounded the vowel of the final **-jɨ* after labial and labiovelar initials in syllables without medial **-r-* which have a velar or zero coda:

(1875) 福 *fú* < *pjuwk* < **pjɨk* 'good fortune'

(1876) 弓 *gōng* < *kjuwng* < **kʷjɨng* '(archer's) bow'

As a result of this change, some words of the traditional 之 Zhī rhyme group came to have the final *-juw* in Middle Chinese:

(1877) 久 *jiǔ* < *kjuwX* < **kʷjɨʔ* 'long time'

(1878) 有 *yǒu* < *hjuwX* < **wjɨʔ* 'have'

(1879) 謀 *móu* < *muw* < *mjuw* < **mjɨ* 'to plan'

If the **-u* in items like 九 *jiǔ* < **kʷjuʔ* 'nine' was unrounded to **ɨ* by the earlier change **rounding dissimilation** (see above), then we can assume that **rounding assimilation** changed it back to **-u*. But note that **rounding assimilation**, unlike **rounding dissimilation**, is blocked by medial **-r-*, so that the vowel was not rounded in items like

(1880) 龜 *guī* < *kwij* (III) < **kʷrjɨ* 'turtle, tortoise'

(1881) 逵 *kuí* < *gwij* (III) < **gʷrjɨ* < **gʷrju* 'thoroughfare'.

We can account for this by assuming that **rounding dissimilation** preceded ***r*-color**, while **rounding assimilation** followed it. See section 10.2.1.2 and 10.2.13.1, and the discussion of **rounding dissimilation** above.

A.18. **-a* > *-u*

This is the second part of the rounding and raising process which applied to final **-a* (see discussion under ****-ja* > *-jo*** above):

(1882) 五 *wǔ* < *nguX* < **ngaʔ* 'five'

This process doubtless occurred in several steps: [a] > [ɔ] > [o] > [u]. It is possible that the Middle Chinese final I transcribe as *-u* was still phonetically [o] in Early or even Late Middle Chinese. For further discussion, see section 10.2.4.

A.19. Labial dissimilation

The change **labial dissimilation** is a dissimilation of labial codas to velars under the influence of labial or labialized initials. Examples include

(1883) 風 *fēng* < *pjuwng* < **p(r)jɨ/um* 'wind'

(1884) 熊 *xióng* < *hjuwng* < **wj(r)ɨ/um* 'bear'.

The exact conditions of this change are not clear, however, for Middle Chinese still has some syllables with labials in both initial and coda positions:

(1884) 凡 *fán* < *bjom* < **brjom* 'every, all'

Labial dissimilation had evidently occurred in some dialects in the Eastern Hàn period (Coblin 1983: 119). See sections 8.1.2, 10.3.1.3, 10.3.3.2, and 10.3.4.1 for discussion.

A.20. Denasalization

The change **denasalization** changed initial voiceless nasals to other consonants:

**hm-* > *x(w)-*
**hn-* > *th-*
**hng-* > *x-*
**hng*^{w}- > *xw-*

These changes (which did not necessarily all occur simultaneously) had probably occurred in some dialects by the Eastern Hàn period (Coblin 1983: 43–76). See sections 5.2, 6.1, and 9.2 for discussion and examples.

A.21. **-wk* > *-k*

Original Old Chinese **-wk* normally became *-k* in Middle Chinese; thus OC **-ewk* merged with original **-ek*, and **-awk* generally merged with original **-ak*:

(1885) 的 *dì* < *tek* < **tewk* 'mark in a target'

(1886) 鶴 *hè* < *hak* < **gawk* 'crane'

(1887) 藥 *yào* < *yak* < **rawk* 'to give medicine; cure'

Note that Middle Chinese also probably had a coda *-wk*, but Middle Chinese *-wk* does not usually reflect Old Chinese **-wk*; rather, MC *-wk* arose in syllables where original rounded vowels diphthongized as a result of the changes ***-u(K)** > **-aw(K)*** and ***-o(K)** > **-uw(K)***:

(1888) 毒 *dú* < *dowk* (/dawk/ ?) < **duk* 'poison'

(1889) 族 *zú* < *dzuwk* < **dzok* 'clan'

Either these cases of *-wk* developed after the change ***-wk* > *-k***, or else ***-wk* > *-k*** was restricted in such a way as not to apply to them. In any case, these developments must have differed in different dialects, for OC **-awk* sometimes shows up as MC *-owk* or *-uwk* in addition to the usual *-ak*. For further discussion, see sections 10.2.14 and 10.2.17.

A.22. **-jiw(k) > -juw(k)*

This change accounts for the development of MC *-juw* and *-juwk* from OC **-jiw* and **-jiwk* respectively:

(1890) 秋 *qiū* < *tshjuw* < **tshjiw* 'autumn'

(1891) 淑 *shū* < *dzyuwk* < **djiwk* 'good'

In the Middle Chinese of the *Qièyùn*, this change applied generally to OC **-jiwk*, but **-jiw* was affected only in syllables with acute initials; **-jiw* after grave initials remained (in at least some cases) as MC *-jiw*. But MC *-jiw* and *-juw* are often confused, so there were probably dialects where this change applied more generally, and perhaps some in which it did not occur at all. Some *Shījīng* rhymes appear to show words in **-jiw* rhyming with **-u*; these could reflect dialects where ****-jiw* > *-juw*** occurred very early. See sections 10.2.13.2 and 10.2.14.2 for further discussion and examples.

A.23. **i*-fronting

This change fronted original **i* to *i* in syllables where both initial and coda were acute. In syllables with no medial **-j-*, [i] was lowered to [e] by the change **hi > mid** (see below). Examples include

(1892) 先 *xiān* < *sen* < **sin* < **sin* 'first'

(1893) 晨 *chén* < *dzyin* < **djin* < **djin* 'morning'

(1894) 妻 *qī* < *tshej* < **tshij* < **tshij* 'wife'

Syllables with grave initials were not affected:

(1895) 根 *gēn* < *kon* < **kin* 'root'

(1896) 開 *kāi* < *khoj* < **khij* 'open'

This change had certainly happened by the Wèi-Jìn period; it may have happened somewhat earlier, but it is difficult to judge from the rhyme data, for during the Hàn period the rhyme groups 文 Wén and 微 Wēi (which include **-in* and **-ij* respectively) became confused generally with the 真 Zhēn and 脂 Zhī groups (my **-in* and **-ij*). For further discussion, see sections 7.1.3, 10.1.5, and 10.1.8.

A.24. Hi > mid

The change **hi > mid** lowered high vowels to mid height in syllables without medial *-*j*-. When *-*i* lowered, it merged with *-*e*; thus *-*in* and *-*en* merged as MC *-en*, *-*iw* and *-*ew* merged as MC *-ew*, and so forth:

(1897) 堅 *jiān* < *ken* < **kin* 'hard, solid, firm'

(1898) 肩 *jiān* < *ken* < **ken* 'shoulder'

(1899) 蓼 *liǎo* < *lewX* < **C-riw?* 'Polygonum plant'

(1900) 暸 *liǎo* < *lewX* < **C-rew?* 'clear-eyed'

These changes were reflected in rhyming by the Wèi-Jìn period (Ting Pang-hsin 1975: 238, 246). In syllables with medial *-*j*-, on the other hand, these vowels remained distinct; **-jin* and **-jen* remained as MC *-(j)in* and *-j(i)en*, for example.

The lowering of *-*i* to mid height produced a mid unrounded [ʌ] which may have begun as an allophone of /i/, but eventually became a separate phoneme; at any rate, by the Jìn period (A.D. 265–420), original *-*in* had ceased to rhyme with *-*jin*, and original *-*ing* had ceased to rhyme with *-*jing* (Ting Pang-hsin 1975: 244, 246). This change plays a role in explaining how words in MC *-on* < *-*in* (the *Qièyùn*'s 痕 Hén rhyme) came to rhyme in Early Middle Chinese with words in MC *-jon* < *-*jan* (the *Qièyùn*'s 元 Yuán rhyme); see ***a*-raising** below. For further discussion of the change **hi > mid**, see Chapter 7.

A.25. *Qùshēng* formation

***Qùshēng* formation** is the name I give to the process by which the post-coda *-*s* was lost and replaced by a distinctive tone. It is difficult to date this process precisely. Pulleyblank (1973a, 1984: 223–24) argues that the final *-s* of *qùshēng* remained until the early sixth century in some southern dialects. See section 8.2 for further discussion.

A.26. *j*-insertion

The change ***j*-insertion** inserted a coda *-j* after mid unrounded vowels [e], [ʌ], and [ɛ] in syllables with zero coda. As a result, original *-*e* merged with *-ej* (from original *-*ij* by **hi > mid**); and [-ʌ] (from original *-*i* by **hi > mid**) merged with [-ʌj] (from original *-*ij*). For example, the word

(1901) 雞 *jī* < *kej* < **ke* 'chicken'

became a homonym of

(1902) 稽 *jī* < *kej* < **kej* < **kəj* 'search, examine',

and

(1903) 梅 *méi* < *mwoj* [m(w)ʌj] < [m(w)ʌ] < ***mɨ*** 'Prunus mume'

became a homonym of

(1904) 枚 *méi* < *mwoj* [m(w)ʌj] < ***mɨj*** 'branch, board'.

Similarly, ***-rɨ*** merged with ***-rɨj***:

(1905) 埋 *mái* < *mɛj* < [mrɛj] < [mrɛ] < [mrɪ] < ***mrɨ*** 'bury'

This has the same Middle Chinese final as

(1906) 排 *pái* < *bɛj* < [brɛj] < [brɪj] < ***brɨj*** 'push away'.

These mergers due to ***j*-insertion** are reflected in rhyming by the time of the Nán-běi cháo period (A.D. 420–581; see Ting Pang-hsin 1975: 238, 240).

The development of original ***-re*** probably differed according to dialect. We would expect ***-re*** > [rɛ] (***r*-color**) > [rɛj] (***j*-insertion**) > MC ***-ɛj*** (***r*-loss**), merging with original ***-rɨj***, ***-rɨj***, and ***-rɨ***, and this probably did happen in some dialects; but in other dialects, perhaps ***-re*** merged early with original ***-raj*** and ***-ra***, becoming MC ***-æ***. (This would happen in a dialect where ***r*-color** changed ***re*** to [ræ] rather than [rɛ].) The *Qièyùn* treats ***-ɛɨ*** < ***-re*** as separate from both ***-æ*** and ***-ɛj***, but this could be a dialect compromise on the part of the *Qièyùn* authors; in modern dialects, ***-ɛɨ*** has developed like MC ***-æ*** in some cases, and like MC ***-ɛj*** in others. For further discussion, see sections 10.2.1.3 and 10.2.7.1.

A.27. **a*-raising

The change ***a*-raising** is the raising of original ***a*** to a mid [ʌ] between medial ***-j-*** and an acute coda, in items such as

(1907) 言 *yán* < *ngjon* [ŋjʌn] < ***ngjan*** 'speak; words'.

This change is necessary to explain why words like 言 *yán* < ***ngjan*** stopped rhyming with words in original ***-an*** (like 干 *gān* < *kan* < ***kan*** 'shield') and came to rhyme instead with words in original ***-ɨn*** (like 痕 *hén* < *hon* < ***gɨn*** 'scar'), as they did by Early Middle Chinese times. This feature of Early Middle Chinese rhyming is a long-standing puzzle; we can explain it by assuming that the change **hi > mid**, discussed above, lowered original ***-ɨn*** to [ʌn], while ***a*-raising** raised original ***-jan*** to [jʌn]. This sequence of events was probably limited to certain dialects, however. See section 7.3.3 for discussion.

A.28. **j*-backing

The change ***j*-backing** may be assumed in the approach which attributes the Middle Chinese *chóngniǔ* distinctions to a distinction in the medial position. According to this analysis, original medial ***-j-*** became [+ back] (i.e. [j̠]) in two environments: (1) when

preceded by medial **-r-*, or (2) when followed by a back vowel. See section 7.3.3 for discussion.

A.29. **r*-loss

The change ****r*-loss** caused medial **-r-* to be lost in syllables with grave initials. In syllables with acute initials, medial **-r-* remained as a feature of retroflexion, perhaps reanalyzed as part of the initial consonant. As a result of ****r*-loss**, the special vowel features which resulted from the earlier change ****r*-color** were phonologized; low front [æ] and mid front lax [ɛ], which had hitherto been allophones of /a/ and /e/ conditioned by medial **-r-*, became independent phonemes:

(1908) 干 *gān* < *kan* < **kan* 'shield'

(1909) 姦 *jiān* < *kæn* < [kræn] (/kran/) < **kran* 'wicked'

(1910) 肩 *jiān* < *ken* < **ken* 'shoulder'

(1911) 間 *jiān* < *kɛn* < [krɛn] (/kren/) < **kren* 'between'

These changes are reflected in rhyming by the Nán-běi cháo period, when the division-II finals of Middle Chinese become separate rhyme categories.

The details of how ****r*-loss** applied in syllables with medial **-rj-* are unclear. I assume that such syllables are the major source of the so-called division-III *chóngniǔ* syllables, but as pointed out in section 7.3.3, the *chóngniǔ* distinctions can be accounted for in at least two ways: a medial solution, which attributes the contrast to the medial position, and a main-vowel solution, which attributes it to the main vowel. See sections 7.2 and 7.3 for further discussion of medial **-r-* and its development in various contexts.

A.30. **-jɨ(K) > -ɨ(K)*

The minor change ****-jɨ(K) > -ɨ(K)*** is intended to account for the fact that syllables of the forms **Kjɨ*, **Kjɨng*, and **Kjɨk* merged in Middle Chinese with **Krjɨ*, **Krjɨng*, and **Krjɨk* respectively. This could result from a general fronting of those cases of [ɨ] which remained after the change **hi > mid**. See sections 10.2.1, 10.2.2, and 10.2.3 for further discussion.

A.31. *TSrj- > TSr-*

The change ***TSrj- > TSr-***, which probably occurred during or just before the Early Middle Chinese period, caused medial *-j-* to be lost after retroflex initials *TSr-*:

(1912) 生 *shēng* < *sræng* < *srjæng* < **srjeng* 'live, be born'

(1913) 産 [*chǎn*] < *srɛnX* < *srjenX* < **sngrjanʔ* 'breed, bear'

The result was that syllables with initials of type *TSr-* which originally had medial **-j-* subsequently tended to be treated as having division-II finals rather than division-III finals. Dǒng Tónghé noticed this distribution, and attributed the development of retroflexion to the presence of a distinctive division-II vocalism; in the present analysis, it is rather medial **-r-* (which produced retroflexion) which gives rise to the division-II final. This analysis accounts for the Middle Chinese reading 生 *sræng* from an original front vowel (treated as irregular in other reconstructions) and for the development of division-II *-ɛn* (which normally represents **-ren*, **-rin*, or **-rin*) in some syllables which originally had OC **-an*. See sections 7.2.3 and 7.3.1.3 for further discussion.

A.32. *jɛ > je*

This is a minor change assumed in one analysis of the development of the *chóngniǔ* finals; for discussion see section 7.3.3.

A.33. *mjuw(K) > muw(K)*

This is a minor change which deleted medial *-j-* from syllables beginning with the sequence *mjuw-*. It took place during the Middle Chinese period, and gives rise to a number of apparent irregularities. For example, the *Guǎngyùn* gives the reading *muwH* for

(1914) 貿 [*mào*] < *muwH* < *mjuwH* < **m(r)jus* 'barter, exchange'.

Normally, the Middle Chinese division-I final *-uwH* would reflect OC **-(r)o(k)s*; but the reconstruction of **u* in this word is supported by the rhyming of other words in the same phonetic series, such as

(1915) 卯 *mǎo* < *mæwX* < **mruʔ* 'cyclical sign (4th earthly branch)',

which rhymes as **-uʔ* in Ode 193.1A.

A.34. Labiodentalization

Labiodentalization occurred between the Early Middle Chinese and Late Middle Chinese stages. Following Y. R. Chao (1941), I formulate this change as applying to labial initials which were followed by medial *-j-* before a back vowel:

(1916) 方 *fāng* < LMC *faǎŋ* < EMC *pjang* < **pjang* 'square; quarter, region'

(1917) 非 *fēi* < LMC *fji* < EMC *pjïj* < **pjïj* 'is not'

See section 6.1.1 for further discussion.

As emphasized at the beginning of this appendix, the changes just sketched provide only a partial and tentative account of the developments intervening between Old Chinese and Middle Chinese. However, most of these changes will have their counterparts in any version of the phonological history of this period. A fully adequate account would no doubt have to deal with the divergent developments of the various dialects of the Early Middle Chinese period, a topic which is still poorly understood.

Appendix B

The rhymes of the *Shījīng*

The rhyme sequences of the *Shījīng* are listed below by ode and stanza. Distinct rhyme sequences within a stanza are distinguished by capital letters A, B, C, etc. Forms assumed to be irregular are enclosed in square brackets. Irregular or doubtful rhyme sequences are not commented on here; cases which are relevant to the proposed reconstruction are discussed in Chapter 10.

1 *Zhōu nán* 周南: *Guān jū* 關雎

1.1	鳩	*jiū*	< *kjuw*	< **k(r)ju*	A
	洲	*zhōu*	< *tsyuw*	< **tju*	A
	逑	*qiú*	< *gjuw*	< **g(r)ju*	A
1.2	流	*liú*	< *ljuw*	< **C-rju*	A
	求	*qiú*	< *gjuw*	< **grju*	A
1.3	得	*dé*	< *tok*	< **tik*	A
	服	*fú*	< *bjuwk*	< **bjik*	A
	側	[*cè*]	< *tsrik*	< **tsrjik*	A
1.4	采	*cǎi*	< *tshojX*	< **sri(k)?*	A
	友	*yǒu*	< *hjuwX*	< **wji?*	A
1.5	芼	*mào*	< *mawH*	< **maw(k)s*	A
	樂	*lè*	< *lak*	< **g-rawk*	A

2 *Zhōu nán* 周南: *Gé tán* 葛覃

2.1	谷	*gǔ*	< *kuwk*	< **kok*	A
	萋	*qī*	< *tshej*	< **tshij*	B
	飛	*fēi*	< *pjij*	< **pjij*	B
	木	*mù*	< *muwk*	< **mok*	A
	喈	*jiē*	< *kɛj*	< **krij*	B
2.2	莫	*mò*	< *mak*	< **mak*	A
	濩	*huò*	< *hwak*	< **wak*	A
	綌	[*xì*]	< *khjæk*	< **khrjak*	A
	斁	*yì*	< *yek*	< **ljAk*	A

2.3	歸	*guī*	< *kjwɨj*	< **kʷjɨj*	A
	私	*sī*	< *sij*	< **sjɨj*	A
	衣	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	否	*fǒu*	< *pjuwX*	< **pjɨʔ*	B
	母	*mǔ*	< *muwX*	< **m(r)olɨʔ*	B

3 *Zhōu nán* 周南: *Juǎn ěr* 卷耳

3.1	筐	*kuāng*	< *khjwang*	< **kʷhjang*	A
	行	*xíng*	< *hæng*	< **grang*	A
3.2	崔	[*cuī*]	< *dzwoj*	< **Sduj*	A
	嵬	*wéi*	< *ngwoj*	< **nguj*	A
	虺	*huī*	< *xwoj*	< **xuj*	A
	隤	*tuí*	< *dwoj*	< **luj*	A
	罍	*léi*	< *lwoj*	< **C-ruj*	A
	懷	*huái*	< *hwɛj*	< **gruj*	A
3.3	岡	*gāng*	< *kang*	< **kang*	A
	黃	*huáng*	< *hwang*	< **gʷang*	A
	觥	*gōng*	< *kwæng*	< **kʷrang*	A
	傷	*shāng*	< *syang*	< **hljang*	A
3.4	砠	[*jū*]	< *tshjo*	< **tshja*	A
	瘏	*tú*	< *du*	< **da*	A
	痡	[*pū*]	< *phju*	< **ph(r)ja*	A
	吁	*xū*	< *xju*	< **hw(r)ja*	A

4 *Zhōu nán* 周南: *Jiū mù* 樛木

4.1	纍	*léi*	< *lwij*	< **C-rjuj*	A
	綏	[*suí*]	< *swij*	< **snjuj*	A
4.2	荒	*huāng*	< *xwang*	< **hmang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A
4.3	縈	[*yíng*]	< *ʔjwieng*	< **ʔʷjeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A

5 *Zhōu nán* 周南: *Zhōng sī* 螽斯

5.1	詵	*shēn*	< *srin*	< **srjɨn*	A
	振	*zhēn*	< *tsyin*	< **tjɨn*	A

5.2	薨	*hōng*	< *xwong*	< **hmiŋ*	A
	繩	*shéng*	< *zyĭng*	< **fijɨŋ*	A
5.3	揖	*jí*	< *tsip*	< **tsjip*	A
	蟄	[*zhé*]	< *tsyhip*	< **thjip*	A

6 *Zhōu nán* 周南: *Táo yāo* 桃夭

6.1	華	*huā*	< *xwæ*	< **hwra*	A
	家	*jiā*	< *kæ*	< **kra*	A
6.2	實	*shí*	< *zyit*	< **Ljit*	A
	室	*shì*	< *syit*	< **stjit*	A
6.3	蓁	*zhēn*	< *tsrin*	< **tsrjin*	A
	人	*rén*	< *nyin*	< **njin*	A

7 *Zhōu nán* 周南: *Tù jiē* 兔罝

7.1	罝	*jiē*	< *tsjæ/o*	< **tsjA/a*	A
	丁	*zhēng*	< *trɛng*	< **treng*	B
	夫	*fū*	< *pju*	< **p(r)ja*	A
	城	*chéng*	< *dzyeng*	< **djeng*	B
7.2	罝	*jiē*	< *tsjæ/o*	< **tsjA/a*	A
	逵	*kuí*	< *gwij*	< **g^{w}rju*	B
	夫	*fū*	< *pju*	< **p(r)ja*	A
	仇	*qiú*	< *gjuw*	< **g(r)ju*	B
7.3	罝	*jiē*	< *tsjæ/o*	< **tsjA/a*	A
	林	*lín*	< *lim*	< **C-rjɨm*	B
	夫	*fū*	< *pju*	< **p(r)ja*	A
	心	*xīn*	< *sim*	< **sjɨm*	B

8 *Zhōu nán* 周南: *Fóu yǐ* 芣苢

8.1	采	*cǎi*	< *tshojX*	< **srɨ(k)?*	A
	有	*yǒu*	< *hjuwX*	< **wjɨ?*	A
8.2	掇	*duō*	< *twat*	< **tot*	A
	捋	*luō*	< *lwat*	< **C-rot*	A
8.3	袺	*jié*	< *ket*	< **kit*	A
	襭	*xié*	< *het*	< **git*	A

9 *Zhōu nán* 周南: *Hàn guǎng* 漢廣

9.1	休	*xiū*	< *xjuw*	< **x(r)ju*	A
	求	*qiú*	< *gjuw*	< **grju*	A
	廣	*guǎng*	< *kwangX*	< **k^{w}ang?*	B
	泳	[*yǒng*]	< *hjwængH*	< **wrjangs*	C
	永	*yǒng*	< *hjwængX*	< **wrjang?*	B
	方	*fāng*	< *pjang*	< **pjang*	C
9.2	楚	*chǔ*	< *tsrhjoX*	< **tsrhja?*	A
	馬	*mǎ*	< *mæX*	< **mra?*	A
	廣	*guǎng*	< *kwangX*	< **k^{w}ang?*	B
	泳	[*yǒng*]	< *hjwængH*	< **wrjangs*	C
	永	*yǒng*	< *hjwængX*	< **wrjang?*	B
	方	*fāng*	< *pjang*	< **pjang*	C
9.3	蒌	[*lóu*]	< *lju*	< **C-rjo*	A
	駒	*jū*	< *kju*	< **k(r)jo*	A
	廣	*guǎng*	< *kwangX*	< **k^{w}ang?*	B
	泳	[*yǒng*]	< *hjwængH*	< **wrjangs*	C
	永	*yǒng*	< *hjwængX*	< **wrjang?*	B
	方	*fāng*	< *pjang*	< **pjang*	C

10 *Zhōu nán* 周南: *Rǔ fén* 汝墳

10.1	枚	*méi*	< *mwoj*	< **mɨj*	A
	飢	*jī*	< *kij*	< **krɨj*	A
10.2	肄	*yì*	< *yijH*	< **ljɨps*	A
	棄	*qì*	< *khjijH*	< **khjɨts*	A
10.3	尾	*wěi*	< *mjijX*	< **mjɨj?*	A
	燬	*huǐ*	< *xjweX*	< **hm(r)jaj?*	A
	燬	*huǐ*	< *xjweX*	< **hm(r)jaj?*	A
	遰	*ěr*	< *nyeX*	< **njɨj?*	A

11 *Zhōu nán* 周南: *Lín zhīzhǐ* 麟之趾

11.1	趾	*zhǐ*	< *tsyiX*	< **tjɨ?*	A
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	A
11.2	定	*dìng*	< *tengH*	< **tengs*	A
	姓	*xìng*	< *sjengH*	< **sjengs*	A

11.3	角	*jiǎo*	< *kæwk*	< **krok*	A
	族	*zú*	< *dzuwk*	< **dzok*	A

12 *Shào nán* 召南: *Què cháo* 鵲巢

12.1	居	*jū*	< *kjo*	< **k(r)ja*	A
	御	*yà*	< *ngæH*	< **ngra(k)s*	A
12.2	方	*fāng*	< *pjang*	< **pjang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A
12.3	盈	*yíng*	< *yeng*	< **(l)jeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A

13 *Shào nán* 召南: *Cǎi fán* 采蘩

13.1	沚	*zhǐ*	< *tsyiX*	< **tjiʔ*	A
	事	*shì*	< *dziH*	< **fisrjɨʔ(s)*	A
13.2	中	*zhōng*	< *trjuwng*	< **k-ljung*	A
	宮	*gōng*	< *kjuwng*	< **k(r)jung*	A
13.3	僮	*tóng*	< *duwng*	< **dong*	A
	公	*gōng*	< *kuwng*	< **kong*	A
	祁	*qí*	< *gij*	< **grjɨj*	B
	歸	*guī*	< *kjwij*	< **k^{w}jɨj*	B

14 *Shào nán* 召南: *Cǎo chóng* 草蟲

14.1	蟲	*chóng*	< *drjuwng*	< **lrjung*	A
	叔	*zhōng*	< *tsyuwng*	< **tjung*	A
	忡	*chōng*	< *trhjuwng*	< **kh-ljung*	A
	降	*xiáng*	< *hæwng*	< **fikrung*	A
14.2	蕨	*jué*	< *kjwot*	< **kjot*	A
	惙	[*chuò*]	< *trjwet*	< **trjot*	A
	說	*yuè*	< *ywet*	< **ljot*	A
14.3	薇	[*wēi*]	< *mjɨj*	< **mjɨj*	A
	悲	*bēi*	< *pij*	< **prjɨj*	A
	夷	*yí*	< *yij*	< **ljɨj*	A

15 *Shào nán* 召南: *Cǎi pín* 采蘋

15.1	蘋	*pín*	< *bjin*	< **bjin*	A
	濱	*bīn*	< *pjin*	< **pjin*	A
	藻	*zǎo*	< *tsawX*	< **tsaw?*	B
	潦	*lǎo*	< *lawX*	< **C-raw?*	B
15.2	筥	*jǔ*	< *kjoX*	< **krja?*	A
	釜	[*fǔ*]	< *bjuX*	< **b(r)ja?*	A
15.3	下	*xià*	< *hæX*	< **gra?*	A
	女	*nǚ*	< *nrjoX*	< **nrja?*	A

16 *Shào nán* 召南: *Gān táng* 甘棠

16.1	伐	*fá*	< *bjot*	< **bjat*	A
	茇	[*bá*]	< *bat*	< **bat*	A
16.2	敗	*bài*	< *pæjH*	< **prats*	A
	憩	*qì*	< *khjejH*	< **khrjats*	A
16.3	拜	*bài*	< *pɛjH*	< **prots*	A
	說	*shuì*	< *sywejH*	< **hljots*	A

17 *Shào nán* 召南: *Háng lù* 行露

17.1	露	*lù*	< *luH*	< **g-raks*	A
	夜	*yè*	< *yæH*	< **(l)jAks*	A
	露	*lù*	< *luH*	< **g-raks*	A
17.2	角	*jiǎo*	< *kæwk*	< **krok*	A
	屋	*wū*	< *ʔuwk*	< **ʔok*	A
	獄	*yù*	< *ngjowk*	< **ng(r)jok*	A
	獄	*yù*	< *ngjowk*	< **ng(r)jok*	A
	足	*zú*	< *tsjowk*	< **tsjok*	A
17.3	牙	*yá*	< *ngæ*	< **ngra*	A
	墉	[*yōng*]	< *yowng*	< **ljong*	B
	家	*jiā*	< *kæ*	< **kra*	A
	訟	*sòng*	< *zjowngH*	< **sgjongs*	B
	訟	*sòng*	< *zjowngH*	< **sgjongs*	B
	從	*cóng*	< *dzjowng*	< **dzjong*	B

18 *Shào nán* 召南: *Gāo yáng* 羔羊

18.1	皮	*pí*	< *bje*	< **b(r)jaj*	A
	𩵦	*tuó*	< *da*	< **laj*	A
	蛇	*yí*	< *ye*	< **ljaj*	A
18.2	革	*gé*	< *kɐk*	< **krɨk*	A
	緎	*yù*	< *hwik*	< **wrjɨk*	A
	食	*shí*	< *zyik*	< **Ljɨk*	A
18.3	縫	*féng*	< *bjowng*	< **b(r)jong*	A
	總	*zǒng*	< *tsuwng*	< **tsong*	A
	公	*gōng*	< *kuwng*	< **kong*	A

19 *Shào nán* 召南: *Yīn qí léi* 殷其雷

19.1	陽	*yáng*	< *yang*	< **ljang*	A
	遑	*huáng*	< *hwang*	< **wang*	A
19.2	側	[*cè*]	< *tsrik*	< **tsrjɨk*	A
	息	*xī*	< *sik*	< **sjɨk*	A
19.3	下	*xià*	< *hæX*	< **graʔ*	A
	處	*chǔ*	< *tsyhoX*	< **KHjaʔ*	A

20 *Shào nán* 召南: *Biào yǒu méi* 摽有梅

20.1	七	*qī*	< *tshit*	< **tshjɨt*	A
	吉	*jí*	< *kjit*	< **kJɨt*	A
20.2	三	*sān*	< [*sam*]	< **sum*	A
	今	*jīn*	< *kim*	< **k(r)jɨm*	A
20.3	迨	*xì*	< *xɨjH*	< **xjɨts*	A
	謂	*wèi*	< *hjwɨjH*	< **wjɨts*	A

21 *Shào nán* 召南: *Xiǎo xīng* 小星

21.1	星	*xīng*	< *seng*	< **seng*	A
	東	*dōng*	< *tuwng*	< **tong*	B
	征	*zhēng*	< *tsyeng*	< **tjeng*	A
	公	*gōng*	< *kuwng*	< **kong*	B
	同	*tóng*	< *duwng*	< **dong*	B

21.2	星	*xīng*	< *seng*	< **seng*	A
	昴	*mǎo*	< *mæwX*	< **mruʔ*	B
	征	*zhēng*	< *tsyeng*	< **tjeng*	A
	裯	*chóu*	< *drjuw*	< **drju*	B
	猶	*yóu*	< *yuw*	< **ju*	B

22 *Shào nán* 召南: *Jiāng yǒu sì* 江有汜

22.1	汜	*sì*	< *ziX*	< **zjiʔ*	A
	以	*yǐ*	< *yiX*	< **ljiʔ*	A
	以	*yǐ*	< *yiX*	< **ljiʔ*	A
	悔	*huǐ*	< *xwojX*	< **hɯniʔ*	A
22.2	渚	*zhǔ*	< *tsyoX*	< **tjaʔ*	A
	與	*yǔ*	< *yoX*	< **ljaʔ*	A
	與	*yǔ*	< *yoX*	< **ljaʔ*	A
	處	*chǔ*	< *tsyhoX*	< **KHjaʔ*	A
22.3	沱	*tuó*	< *da*	< **laj*	A
	過	*guō*	< *kwa*	< **k*^{w}*aj*	A
	過	*guō*	< *kwa*	< **k*^{w}*aj*	A
	歌	*gē*	< *ka*	< **kaj*	A

23 *Shào nán* 召南: *Yě yǒu sǐ jūn* 野有死麕

23.1	麕	*jūn*	< *kwin*	< **krjun*	A
	包	*bāo*	< *pæw*	< **pru*	B
	春	*chūn*	< *tsyhwin*	< **thjun*	A
	誘	[*yòu*]	< *yuwX*	< **ljuʔ*	B
23.2	懷	*sù*	< *suwk*	< **sok*	A
	鹿	*lù*	< *luwk*	< **C-rok*	A
	束	*shù*	< *syowk*	< **hjok*	A
	玉	*yù*	< *ngjowk*	< **ng(r)jok*	A
23.3	脫	[*tuō*]	< *thwajH*	< **hlots*	A
	帨	*shuì*	< *sywejH*	< **hljots*	A
	吠	*fèi*	< *bjojH*	< **bjots*	A

24 *Shào nán* 召南: *Hé bǐ nóng yí* 何彼襛矣

24.1	華	*huā*	< *xwæ*	< **hwra*	A
	車	*jū*	< *kjo*	< **k(r)ja*	A

24.2	李	*lǐ*	< *liX*	< **C-rjɨʔ*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
24.3	緡	*mín*	< *min*	< **mrjun*	A
	孫	*sūn*	< *swon*	< **sun*	A

25 *Shào nán* 召南: *Zōu yú* 騶虞

25.1	葭	*jiā*	< *kæ*	< **kra*	A
	豝	*bā*	< *pæ*	< **pra*	A
	虞	*yú*	< *ngju*	< **ng^{w}(r)ja*	A
25.2	蓬	*péng*	< *buwng*	< **bong*	A
	豵	*zōng*	< *tsuwng*	< **tsong*	A

26 *Bèi fēng* 邶風: *Bǎi zhōu* 柏舟

26.1	舟	*zhōu*	< *tsyuw*	< **tju*	A
	流	*liú*	< *ljuw*	< **C-rju*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsjuʔ*	A
	遊	*yóu*	< *yuw*	< **ju*	A
26.2	茹	[*rú*]	< *nyoH*	< **njas*	A
	據	*jù*	< *kjoH*	< **k(r)jaks*	A
	愬	*sù*	< *suH*	< **sngaks*	A
	怒	[*nù*]	< *nuX*	< **naʔ*	A
26.3	石	*shí*	< *dzyek*	< **djAk*	A
	轉	*zhuǎn*	< *trjwenX*	< **trjonʔ*	B
	席	*xí*	< *zjek*	< **zljAk*	A
	卷	*juǎn*	< *kjwenX*	< **krjonʔ*	B
	選	*xuǎn*	< *sjwenX*	< **sjonʔ*	B
26.4	悄	*qiǎo*	< *tshjewX*	< **tshjewʔ*	A
	小	*xiǎo*	< *sjewX*	< **s(l)jewʔ*	A
	少	*shǎo*	< *syewX*	< **h(l)jewʔ*	A
	摽	*biào*	< *bjiewX*	< **bjewʔ*	A
26.5	微	[*wēi*]	< *mjɨj*	< **mjɨj*	A
	衣	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	飛	*fēi*	< *pjɨj*	< **pjɨj*	A

27 *Bèi fēng* 邶風: *Lǜ yī* 綠衣

27.1	裏	*lǐ*	< *lix*	< **C-rjɨʔ*	A
	已	*yǐ*	< *yix*	< **ljɨʔ*	A
27.2	裳	*cháng*	< *dzyang*	< **djang*	A
	亡	*wáng*	< *mjang*	< **mjang*	A
27.3	絲	*sī*	< *si*	< **sjɨ*	A
	治	*chí*	< *dri*	< **lrjɨ*	A
	訧	*yóu*	< *hjuw*	< **wjɨ*	A
27.4	風	*fēng*	< *pjuwng*	< **p(r)jɨ/um*	A
	心	*xīn*	< *sim*	< **sjɨm*	A

28 *Bèi fēng* 邶風: *Yàn yàn* 燕燕

28.1	飛	*fēi*	< *pjɨj*	< **pjɨj*	A
	羽	*yǔ*	< *hjuX*	< **w(r)jaʔ*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	A
	野	*yě*	< *yæX*	< **ljAʔ*	B
	雨	*yǔ*	< *hjuX*	< **w(r)jaʔ*	B
28.2	飛	*fēi*	< *pjɨj*	< **pjɨj*	A
	頏	*háng*	< *hang*	< **gang*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	B
	及	*jí*	< *gip*	< **g(r)jɨp*	C
	泣	*qì*	< *khip*	< **khrjɨp*	C
28.3	飛	*fēi*	< *pjɨj*	< **pjɨj*	A
	音	*yīn*	< *ʔim*	< **ʔ(r)jɨm*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	A
	南	*nán*	< *nom*	< **nɨm*	B
	心	*xīn*	< *sim*	< **sjɨm*	B
28.4	淵	*yuān*	< *ʔwen*	< **ʔ^{w}in*	A
	身	*shēn*	< *syin*	< **hljin*	A
	人	*rén*	< *nyin*	< **njin*	A

29 *Bèi fēng* 邶風: *Rì yuè* 日月

29.1	土	*tǔ*	< *thuX*	< **hlaʔ*	A
	處	*chù*	< *tsyhoH*	< **KHjas*	A
	顧	*gù*	< *kuH*	< **kaʔ(s)*	A

29.2	冒	*mào*	< *mawH*	< **muks*	A
	好	*hào*	< *xawH*	< **xu(?)s*	A
	報	*bào*	< *pawH*	< **pus*	A
29.3	方	*fāng*	< *pjang*	< **pjang*	A
	良	*liáng*	< *ljang*	< **C-rjang*	A
	忘	*wàng*	< *mjang(H)*	< **mjang*	A
29.4	出	*chū*	< *tsyhwit*	< **thjut*	A
	卒	*zú*	< *tswit*	< **Stjut*	A
	述	*shù*	< *zywit*	< **Ljut*	A

30 *Bèi fēng* 邶風: *Zhōng fēng* 終風

30.1	暴	*bào*	< *bawH*	< **bawks*	A
	笑	*xiào*	< *sjewH*	< **sjaws*	A
	敖	*ào*	< *ngawH*	< **ngaws*	A
	悼	*dào*	< *dawH*	< **dawks*	A
30.2	霾	*mái*	< *mɛj*	< **mrɨ*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	思	*sī*	< *si*	< **sjɨ*	A
30.3	噎	*yì*	< *ʔejH*	< **ʔits*	A
	噎	*yì*	< *ʔejH*	< **ʔits*	A
	寐	*mèi*	< *mjijH*	< **mjits*	A
	噦	[*tì*]	< *tejH*	< **tits*	A
30.4	曇	*léi*	< *lwoj*	< **C-ruj*	A
	懷	*huái*	< *hwɛj*	< **gruj*	A

31 *Bèi fēng* 邶風: *Jī gǔ* 擊鼓

31.1	鐣	*tāng*	< *thang*	< **thang*	A
	兵	*bīng*	< *pjæng*	< **prjang*	A
	行	*xíng*	< *hæng*	< **grang*	A
31.2	仲	*zhòng*	< *drjuwngH*	< **g-ljungs*	A
	宋	*sòng*	< *sowngH*	< **sungs*	A
	忡	*chōng*	< *trhjuwng*	< **kh-ljung*	A
31.3	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
	馬	*mǎ*	< *mæX*	< **mra?*	A
	下	*xià*	< *hæX*	< **gra?*	A

31.4	闊	*kuò*	< *khwat*	< **khot*	A
	説	*yuè*	< *ywet*	< **ljot*	A
	手	*shǒu*	< *syuwX*	< **hju?*	B
	老	*lǎo*	< *lawX*	< **C-ru?*	B
31.5	闊	*kuò*	< *khwat*	< **khot*	A
	活	*huó*	< *hwat*	< **g^{w}at*	A
	洵	[*xún*]	< *xwen*	< **hwin*	B
	信	[*xìn*]	< *syin*	< **hnjin*	B

32 *Bèi fēng* 邶風: *Kǎi fēng* 凱風

32.1	南	*nán*	< *nom*	< **nɨm*	A
	心	*xīn*	< *sim*	< **sjɨm*	A
	夭	*yāo*	< *ʔjew*	< **ʔ(r)jaw*	B
	勞	*láo*	< *law*	< **C-raw*	B
32.2	薪	*xīn*	< *sin*	< **sjin(g)*	A
	人	*rén*	< *nyin*	< **njin*	A
32.3	下	*xià*	< *hæX*	< **gra?*	A
	苦	*kǔ*	< *khuX*	< **kha?*	A
32.4	音	*yīn*	< *ʔim*	< **ʔ(r)jɨm*	A
	心	*xīn*	< *sim*	< **sjɨm*	A

33 *Bèi fēng* 邶風: *Xióng zhì* 雄雉

33.1	羽	*yǔ*	< *hjuX*	< **w(r)ja?*	A
	阻	*zǔ*	< *tsrjoX*	< **tsrja?*	A
33.2	音	*yīn*	< *ʔim*	< **ʔ(r)jɨm*	A
	心	*xīn*	< *sim*	< **sjɨm*	A
33.3	思	*sī*	< *si*	< **sjɨ*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
33.4	行	[*xíng*]	< *hængH*	< **grangs*	A
	臧	*zāng*	< *tsang*	< **tsang*	A

34 *Bèi fēng* 邶風: *Páo yǒu kǔ yè* 匏有苦葉

34.1	葉	*yè*	< *yep*	< **ljap*	A
	涉	*shè*	< *dzyep*	< **djap*	A

	厲	*lì*	< *ljejH*	< **C-rjats*	B
	揭	*qì*	< *khjejH*	< **khrjats*	B
34.2	盈	*yíng*	< *yeng*	< **(l)jeng*	A
	鳴	*míng*	< *mjæng*	< **mrjeng*	A
	軌	*guǐ*	< *kwijX*	< **k^{w}rju?*	B
	牡	*mǔ*	< *muwX*	< **m(r)ju?*	B
34.3	厲	*yàn*	< *ngænH*	< **ngrans*	A
	旦	*dàn*	< *tanH*	< **tans*	A
	泮	*pàn*	< *phanH*	< **phans*	A
34.4	子	*zǐ*	< *tsiX*	< **tsjɨ?*	A
	否	*fǒu*	< *pjuwX*	< **pjɨ?*	A
	否	*fǒu*	< *pjuwX*	< **pjɨ?*	A
	友	*yǒu*	< *hjuwX*	< **wjɨ?*	A

35 *Bèi fēng* 邶風: *Gǔ fēng* 谷風

35.1	風	*fēng*	< *pjuwng*	< **p(r)jɨ/um*	A
	雨	*yǔ*	< *hjuX*	< **w(r)ja?*	B
	心	*xīn*	< *sim*	< **sjɨm*	A
	怒	[*nù*]	< *nuX*	< **na?*	B
	菲	*fěi*	< *phjɨjX*	< **phjɨj?*	C
	體	*tǐ*	< *thejX*	< **hrij?*	D
	違	*wéi*	< *hjwɨj*	< **wjɨj*	C
	死	*sǐ*	< *sijX*	< **sjij?*	D
35.2	遲	*chí*	< *drij*	< **drjɨj*	A
	違	*wéi*	< *hjwɨj*	< **wjɨj*	A
	畿	[*jī*]	< *gjɨj*	< **gjɨj*	A
	薺	*jì*	< *dzejX*	< **dzij?*	B
	弟	*dì*	< *dejX*	< **dɨ/lij?*	B
35.3	止	*zhǐ*	< *tsyiX*	< **tjɨ?*	A
	以	*yǐ*	< *yiX*	< **ljɨ?*	A
	茍	*gǒu*	< *kuwX*	< **k(r)o?*	B
	後	*hòu*	< *huwX*	< **ɦ(r)o?*	B
35.4	舟	*zhōu*	< *tsyuw*	< **tju*	A
	游	*yóu*	< *yuw*	< **ju*	A
	亡	*wáng*	< *mjang*	< **mjang*	B
	求	*qiú*	< *gjuw*	< **grju*	A
	喪	*sàng*	< *sangH*	< **smang(s)*	B
	救	*jiù*	< *kjuwH*	< **k(r)jus*	A

35.5	雛	*chóu*	< *dzyuw*	< **Gju*	A
	售	*shòu*	< *dzyuwH*	< **djus*	A
	鞠	*jū*	< *kjuwk*	< **k(r)juk*	B
	覆	*fù*	< *phjuwk*	< **ph(r)juk*	B
	育	*yù*	< *yuwk*	< **ljuk*	B
	毒	*dú*	< *dowk*	< **duk*	B
35.6	冬	*dōng*	< *towng*	< **tung*	A
	窮	*qióng*	< *gjuwng*	< **g(r)jung*	A
	潰	[*kuì*]	< *hwojH*	< **guts*	B
	肆	*yì*	< *yijH*	< **ljips*	B
	墜	*xì*	< *xjijH*	< **xjits*	B

36 *Bèi fēng* 邶風: *Shì wēi* 式微

36.1	微	[*wēi*]	< *mjij*	< **mjij*	A
	歸	*guī*	< *kjwij*	< **k^{w}jij*	A
	故	*gù*	< *kuH*	< **kaʔ(s)*	B
	露	*lù*	< *luH*	< **g-raks*	B
36.2	微	[*wēi*]	< *mjij*	< **mjij*	A
	歸	*guī*	< *kjwij*	< **k^{w}jij*	A
	躬	*gōng*	< *kjuwng*	< **k(r)jung*	B
	中	*zhōng*	< *trjuwng*	< **k-ljung*	B

37 *Bèi fēng* 邶風: *Máo qiū* 旄丘

37.1	節	*jié*	< *tset*	< **tsik*	A
	日	*rì*	< *nyit*	< **njit*	A
37.2	處	*chǔ*	< *tsyhoX*	< **KHjaʔ*	A
	與	*yǔ*	< *yoX*	< **ljaʔ*	A
	久	*jiǔ*	< *kjuwX*	< **k^{w}jiʔ*	B
	以	*yǐ*	< *yiX*	< **ljiʔ*	B
37.3	戎	*róng*	< *nyuwng*	< **njung*	A
	東	*dōng*	< *tuwng*	< **tong*	A
	同	*tóng*	< *duwng*	< **dong*	A
37.4	子	*zǐ*	< *tsiX*	< **tsjiʔ*	A
	耳	*ěr*	< *nyiX*	< **njiʔ*	A

38 *Bèi fēng* 邶風: *Jiǎn xī* 簡兮

38.1	舞	*wǔ*	< *mjuX*	< **m(r)ja?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
	俣	*yǔ*	< *ngjuX*	< **ng^{w}(r)ja?*	A
	舞	*wǔ*	< *mjuX*	< **m(r)ja?*	A
38.2	虎	*hǔ*	< *xuX*	< **xa?* (?)	A
	組	*zǔ*	< *tsuX*	< **tsa?*	A
	簹	*yuè*	< *yak*	< **ljewk*	B
	翟	*dí*	< *dek*	< **lewk*	B
	爵	*jué*	< *tsjak*	< **tsjewk*	B
38.3	榛	*zhēn*	< *tsrin*	< **tsrjin*	A
	苓	*líng*	< *leng*	< **C-ring*	A
	人	*rén*	< *nyin*	< **njin*	A
	人	*rén*	< *nyin*	< **njin*	A
	人	*rén*	< *nyin*	< **njin*	A

39 *Bèi fēng* 邶風: *Quán shuǐ* 泉水

39.1	淇	*qí*	< *gi*	< **g(r)jɨ*	A
	思	*sī*	< *si*	< **sjɨ*	A
	姬	*jī*	< *ki*	< **k(r)jɨ*	A
	謀	*móu*	< *mjuw*	< **mjɨ*	A
39.2	泲	*jǐ*	< *tsejX*	< **tsij?*	A
	禰	*nǐ*	< *nejX*	< **nij?*	A
	弟	*dì*	< *dejX*	< **dɨ/ij?*	A
	姊	*zǐ*	< *tsijX*	< **tsjij?*	A
39.3	干	*gān*	< *kan*	< **kan*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
	犖	*xiá*	< *hæt*	< **grat*	B
	邁	*mài*	< *mæjH*	< **mrats*	B
	衛	*wèi*	< *hjwejH*	< **wrjats*	B
	害	*hài*	< *hajH*	< **fikat(s)*	B
39.4	泉	*quán*	< *dzjwen*	< **Sg^{w}jan*	A
	歎	*tàn*	< *thanH*	< **hnans*	A
	漕	*cáo*	< *dzaw*	< **dzu*	B
	悠	[*yōu*]	< *yuw*	< **ljiw*	B
	遊	*yóu*	< *yuw*	< **ju*	B
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	B

40 *Bèifēng* 邶風: *Běi mén* 北門

40.1	門	*mén*	< *mwon*	< **min*	A
	殷	*yīn*	< *ʔjɨn*	< **ʔjɨn*	A
	貧	*pín*	< *bin*	< **brjɨn*	A
	艱	*jiān*	< *kɛn*	< **krɨn*	A
40.2	適	*shì*	< *syek*	< **stjek*	A
	益	*yì*	< *ʔjiek*	< **ʔjek*	A
	謫	*zhé*	< *drɛk*	< **drek*	A
40.3	敦	*duī*	< *twoj*	< **tuj*	A
	遺	*wèi*	< *ywijH*	< **ljujs*	A
	摧	[*cuī*]	< *dzwoj*	< **dzuj*	A

41 *Bèifēng* 邶風: *Běifēng* 北風

41.1	涼	*liáng*	< *ljang*	< **g-rjang*	A
	雱	[*páng*]	< *phang*	< **phang*	A
	行	*xíng*	< *hæng*	< **grang*	A
	邪	*xú*	< *zjo*	< **z(ng)ja*	B
	且	*jū*	< *tsjo*	< **tsja*	B
41.2	喈	*jiē*	< *kɛj*	< **krɨj*	A
	霏	*fēi*	< *phjɨj*	< **phjɨj*	A
	歸	*guī*	< *kjwij*	< **k^{w}jɨj*	A
	邪	*xú*	< *zjo*	< **z(ng)ja*	B
	且	*jū*	< *tsjo*	< **tsja*	B
41.3	狐	*hú*	< *hu*	< **g^{w}a*	A
	烏	*wū*	< *ʔu*	< **ʔa*	A
	車	*jū*	< *kjo*	< **k(r)ja*	A
	邪	*xú*	< *zjo*	< **z(ng)ja*	B
	且	*jū*	< *tsjo*	< **tsja*	B

42 *Bèifēng* 邶風: *Jìng nǚ* 靜女

42.1	姝	[*shū*]	< *tsyhu*	< **thjo*	A
	隅	*yú*	< *ngju*	< **ng(r)jo*	A
	踟	*chú*	< *drju*	< **drjo*	A
42.2	孌	[*luán*]	< *ljwenX*	< **b-rjonʔ*	A
	管	*guǎn*	< *kwanX*	< **konʔ*	A
	煒	*wěi*	< *hjwɨjX*	< **wjɨjʔ*	B
	美	*měi*	< *mɨjX*	< **mrjɨjʔ*	B

42.3	薺	*tí*	< *dej*	< **lij*	A
	異	*yì*	< *yiH*	< **ljiks*	B
	美	*měi*	< *mijX*	< **mrjij?*	A
	貽	*yí*	< *yi*	< **lji*	B

43 *Bèi fēng* 邶風: *Xīn tái* 新臺

43.1	泚	*cǐ*	< *tshjeX*	< **tshjej?*	A
	瀰	*mǐ*	< *mjieX*	< **mjej?*	A
	鮮	*xiǎn*	< *sjenX*	< **sjen?*	A
43.2	洒	*xǐ*	< *sejX*	< **sij?*	A
	浼	*měi*	< *mwojX*	< **mij?*	A
	殄	[*tiǎn*]	< *denX*	< **din?*	A
43.3	離	*lí*	< *lje*	< **C-rjaj*	A
	施	*shī*	< *sye*	< **hljaj*	A

44 *Bèi fēng* 邶風: *Èr zǐ chéng zhōu* 二子乘舟

44.1	景	*jǐng*	< *kjængX*	< **krjang?*	A
	養	*yǎng*	< *yangX*	< **(l)jang?*	A
44.2	逝	*shì*	< *dzyejH*	< **djats*	A
	害	*hài*	< *hajH*	< **fikat(s)*	A

45 *Yōng fēng* 鄘風: *Bǎi zhōu* 柏舟

45.1	河	*hé*	< *ha*	< **gaj*	A
	儀	*yí*	< *ngje*	< **ng(r)jaj*	A
	它	[*tā*]	< *tha*	< **hlaj*	A
	天	*tiān*	< *then*	< **hlin*	B
	人	*rén*	< *nyin*	< **njin*	B
45.2	側	[*cè*]	< *tsrik*	< **tsrjik*	A
	特	[*tè*]	< *dok*	< **dik*	A
	慝	*tè*	< *thok*	< **hnik*	A
	天	*tiān*	< *then*	< **hlin*	B
	人	*rén*	< *nyin*	< **njin*	B

46 *Yōng fēng* 鄘風: *Qiáng yǒu cí* 牆有茨

46.1	埽	*sǎo*	< *sawX*	< **su?*	A
	道	*dào*	< *dawX*	< **lu?*	A
	道	*dào*	< *dawX*	< **lu?*	A
	醜	*chǒu*	< *tsyhuwX*	< **thju?*	A
46.2	襄	*xiāng*	< *sjang*	< **snjang*	A
	詳	*xiáng*	< *zjang*	< **z(l)jang*	A
	詳	*xiáng*	< *zjang*	< **z(l)jang*	A
	長	*cháng*	< *drjang*	< **fitrjang*	A
46.3	束	*shù*	< *syowk*	< **hjok*	A
	讀	*dú*	< *duwk*	< **lok*	A
	讀	*dú*	< *duwk*	< **lok*	A
	辱	*rǔ*	< *nyowk*	< **njok*	A

47 *Yōng fēng* 鄘風: *Jūnzǐ xié lǎo* 君子偕老

47.1	珈	*jiā*	< *kæ*	< **kraj*	A
	佗	*tuó*	< *da*	< **laj*	A
	河	*hé*	< *ha*	< **gaj*	A
	宜	*yí*	< *ngje*	< **ng(r)jaj*	A
	何	*hé*	< *ha*	< **gaj*	A
47.2	翟	*dí*	< *dek*	< **lewk*	A
	髢	[*dí*]	< *dejH*	< **le(k)s*	A
	掃	*tì*	< *thejH*	< **theks*	A
	皙	*xī*	< *sek*	< **sek*	A
	帝	*dì*	< *tejH*	< **teks*	A
47.3	展	[*zhǎn*]	< *trjenH*	< **trjan(?)s*	A
	袢	*fán*	< *bjon*	< **bjan*	A
	顏	*yán*	< *ngæn*	< **ngran*	A
	媛	*yuàn*	< *hjwenH*	< **wrjans*	A

48 *Yōng fēng* 鄘風: *Sāng zhōng* 桑中

48.1	唐	*táng*	< *dang*	< **g-lang*	A
	鄉	*xiāng*	< *xjang*	< **xjang*	A
	姜	*jiāng*	< *kjang*	< **k(l)jang*	A
	中	*zhōng*	< *trjuwng*	< **k-ljung*	B
	宮	*gōng*	< *kjuwng*	< **k(r)jung*	B

48.2	麥	*mài*	< *mɐk*	< **mrik*	A
	北	*běi*	< *pok*	< **pik*	A
	弋	*yì*	< *yik*	< **ljik*	A
	中	*zhōng*	< *trjuwng*	< **k-ljung*	B
	宮	*gōng*	< *kjuwng*	< **k(r)jung*	B
48.3	葑	*fēng*	< *phjowng*	< **ph(r)jong*	A
	東	*dōng*	< *tuwng*	< **tong*	A
	庸	[*yōng*]	< *yowng*	< **ljong*	A
	中	*zhōng*	< *trjuwng*	< **k-ljung*	B
	宮	*gōng*	< *kjuwng*	< **k(r)jung*	B

49 *Yōng fēng* 鄘風: *Chún zhī bēn bēn* 鶉之奔奔

49.1	鶉	*chún*	< *dzywin*	< **djun*	A
	奔	*bēn*	< *pwon*	< **pun*	A
	彊	*jiāng*	< *kjang*	< **kjang*	B
	良	*liáng*	< *ljang*	< **C-rjang*	B
	兄	*xiōng*	< *xjwæng*	< **hwrjang*	B
49.2	彊	*jiāng*	< *kjang*	< **kjang*	A
	鶉	*chún*	< *dzywin*	< **djun*	B
	奔	*bēn*	< *pwon*	< **pun*	B
	良	*liáng*	< *ljang*	< **C-rjang*	A
	君	*jūn*	< *kjun*	< **kjun*	B

50 *Yōng fēng* 鄘風: *Dìng zhī fāng zhōng* 定之方中

50.1	中	*zhōng*	< *trjuwng*	< **k-ljung*	A
	宮	*gōng*	< *kjuwng*	< **k(r)jung*	A
	日	*rì*	< *nyit*	< **njit*	B
	室	*shì*	< *syit*	< **stjit*	B
	栗	*lì*	< *lit*	< **C-rjit*	B
	漆	*qī*	< *tshit*	< **tshjit*	B
	瑟	*sè*	< *srit*	< **sprjit*	B
50.2	虛	[*xū*]	< *khjo*	< **kh(r)ja*	A
	楚	*chǔ*	< *tsrhjoX*	< **tsrhja?*	A
	堂	*táng*	< *dang*	< **dang*	B
	京	*jīng*	< *kjæng*	< **krjang*	B
	桑	*sāng*	< *sang*	< **sang*	B
	臧	*zāng*	< *tsang*	< **tsang*	B

50.3	零	*líng*	< *leng*	< **C-ring*	A
	人	*rén*	< *nyin*	< **njin*	A
	田	*tián*	< *den*	< **din*	A
	人	*rén*	< *nyin*	< **njin*	A
	淵	*yuān*	< *ʔwen*	< **ʔʷin*	A
	千	*qiān*	< *tshen*	< **snin*	A

51 *Yōng fēng* 鄘風: *Dì dōng* 蝃蝀

51.1	蝀	[*dōng*]	< *tuwngX*	< **tongʔ*	A
	東	*dōng*	< *tuwng*	< **tong*	A
	指	*zhǐ*	< *tsyijX*	< **kjijʔ*	B
	弟	*dì*	< *dejX*	< **dɨ/ijʔ*	B
51.2	隮	*jī*	< *tsej*	< **tsɨj*	A
	西	*xī*	< *sej*	< **sɨj*	A
	雨	*yǔ*	< *hjuX*	< **w(r)jaʔ*	B
	母	*mǔ*	< *muwX*	< **m(r)o/ɨʔ*	B
51.3	人	*rén*	< *nyin*	< **njin*	A
	姻	*yīn*	< *ʔjin*	< **ʔjin*	A
	信	*xìn*	< *sinH*	< **snjins*	A
	命	*mìng*	< *mjængH*	< **mrjing(s)*	A

52 *Yōng fēng* 鄘風: *Xiàng shǔ* 相鼠

52.1	皮	*pí*	< *bje*	< ** (r)jaj*	A
	儀	*yí*	< *ngje*	< **ng(r)jaj*	A
	儀	*yí*	< *ngje*	< **ng(r)jaj*	A
	爲	*wéi*	< *hjwe*	< **w(r)jaj*	A
52.2	齒	*chǐ*	< *tsyhiX*	< **thjɨʔ*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	俟	*sì*	< *zriX*	< **zrjɨʔ*	A
52.3	體	*tǐ*	< *thejX*	< **hrijʔ*	A
	禮	*lǐ*	< *lejX*	< **C-rijʔ*	A
	禮	*lǐ*	< *lejX*	< **C-rijʔ*	A
	死	*sǐ*	< *sijX*	< **sjijʔ*	A

53 *Yōng fēng* 鄘風: *Gān máo* 干旄

53.1	旄	*máo*	< *maw*	< **maw*	A
	郊	*jiāo*	< *kæw*	< **kraw*	A
	紕	[*pī*]	< *bjijH*	< **bjijs*	B
	四	*sì*	< *sijH*	< **s(p)jij/ts*	B
	畀	*bì*	< *pjijH*	< **pjits*	B
53.2	旗	*yú*	< *yo*	< **lja*	A
	都	*dū*	< *tu*	< **ta*	A
	組	*zǔ*	< *tsuX*	< **tsaʔ*	B
	五	*wǔ*	< *nguX*	< **ngaʔ*	B
	予	*yǔ*	< *yoX*	< **ljaʔ*	B
53.3	旌	*jīng*	< *tsjeng*	< **tsjeng*	A
	城	*chéng*	< *dzyeng*	< **djeng*	A
	祝	*zhù*	< *tsyuwk*	< **tjuk*	B
	六	*liù*	< *ljuwk*	< **C-rjuk*	B
	告	*gù*	< *kowk*	< **kuk*	B

54 *Yōng fēng* 鄘風: *Zài chí* 載馳

54.1	驅	*qū*	< *khju*	< **kh(r)jo*	A
	侯	*hóu*	< *huw*	< **g(r)o*	A
	悠	[*yōu*]	< *yuw*	< **ljiw*	B
	漕	*cáo*	< *dzaw*	< **dzu*	B
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	B
54.2	反	*fǎn*	< *pjonX*	< **pjanʔ*	A
	遠	*yuàn*	< *hjwonH*	< **wjans*	A
	濟	*jì*	< *tsejH*	< **tsɨjs*	B
	閟	*bì*	< *pijH*	< **prjits*	B
54.3	巟	*méng*	< *mæng*	< **mrang*	A
	行	*xíng*	< *hæng*	< **grang*	A
	狂	*kuáng*	< *gjwang*	< **g^{w}jang*	A
54.4	麥	*mài*	< *mɛk*	< **mrɨk*	A
	極	*jí*	< *gik*	< **g(r)jik*	A
	尤	*yóu*	< *hjuw*	< **wjɨ*	B
	思	*sī*	< *si*	< **sjɨ*	B
	之	*zhī*	< *tsyi*	< **tjɨ*	B

55 *Wèifēng* 衛風: *Qíyù* 淇奧

55.1	猗	*yī*	< *ʔje*	< **ʔ(r)jaj*	A
	磋	*cuō*	< *tsha*	< **tshaj*	A
	磨	*mó*	< *ma*	< **maj*	A
	僩	*xiàn*	< *hænX*	< **gran?*	B
	咺	[*xuān*]	< *xjwonX*	< **hwjan?*	B
	諼	*xuān*	< *xjwon*	< **hwjan*	B
55.2	青	[*qīng*]	< *tseng*	< **tseng*	A
	瑩	*yíng*	< *hjwæng*	< **wrjeng*	A
	星	*xīng*	< *seng*	< **seng*	A
	僩	*xiàn*	< *hænX*	< **gran?*	B
	咺	[*xuān*]	< *xjwonX*	< **hwjan?*	B
	諼	*xuān*	< *xjwon*	< **hwjan*	B
55.3	簀	*zé*	< *tsrɛk*	< **tsr(j)ek*	A
	錫	*xī*	< *sek*	< **slek*	A
	璧	*bì*	< *pjiek*	< **pjek*	A
	綽	*chuò*	< *tsyhak*	< **thjawk*	B
	較	*jué*	< *kæwk*	< **krawk*	B
	謔	*xuè*	< *xjak*	< **hng(r)jawk*	B
	虐	*nüè*	< *ngjak*	< **ng(r)jawk*	B

56 *Wèifēng* 衛風: *Kǎo pán* 考槃

56.1	澗	*jiàn*	< *kænH*	< **krans*	A
	寬	*kuān*	< *khwan*	< **k^{w}han*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
	諼	*xuān*	< *xjwon*	< **hwjan*	A
56.2	阿	*ē*	< *ʔa*	< **ʔaj*	A
	邁	*kē*	< *khwa*	< **k^{w}haj*	A
	歌	*gē*	< *ka*	< **kaj*	A
	過	*guō*	< *kwa*	< **k^{w}aj*	A
56.3	陸	*lù*	< *ljuwk*	< **C-rjuk*	A
	軸	*zhóu*	< *drjuwk*	< **lrjuk*	A
	宿	*sù*	< *sjuwk*	< **sjuk*	A
	告	*gào*	< *kawH*	< **kuks*	A

57 *Wèi fēng* 衛風: *Shuò rén* 碩人

57.1	頎	*qí*	< *gjɨj*	< **gjɨj*	A
	衣	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	妻	*qī*	< *tshej*	< **tshɨj*	A
	姨	*yí*	< *yij*	< **ljɨj*	A
	私	*sī*	< *sij*	< **sjɨj*	A
57.2	羙	*tí*	< *dej*	< **lɨj*	A
	脂	*zhī*	< *tsyij*	< **kjij*	A
	蠐	*qí*	< *dzej*	< **dzɨj*	A
	犀	*xī*	< *sej*	< **sɨj*	A
	眉	*méi*	< *mij*	< **mrjɨj*	A
	倩	*qiàn*	< *tshenH*	< **tshins*	B
	盼	*pàn*	< *phɛnH*	< **phrins*	B
57.3	敖	*áo*	< *ngaw*	< **ngaw*	A
	郊	*jiāo*	< *kæw*	< **kraw*	A
	驕	*[jiāo]*	< *khjew*	< **kh(r)jaw*	A
	鑣	*biāo*	< *pjew*	< **p(r)jaw*	A
	朝	*cháo*	< *drjew*	< **ɬitrjaw*	A
	勞	*láo*	< *law*	< **C-raw*	A
57.4	活	*guō*	< *kwat*	< **k^{w}at*	A
	濊	*huò*	< *xwat*	< **hwat*	A
	發	*bō*	< *pat*	< **pat*	A
	揭	*jiē*	< *kjot*	< **kjat*	A
	孽	*niè*	< *ngjet*	< **ngrjat*	A
	朅	*qiè*	< *khjet*	< **khrjat*	A

58 *Wèi fēng* 衛風: *Méng* 氓

58.1	蚩	*chī*	< *tsyhi*	< **thjɨ*	A
	絲	*sī*	< *si*	< **sjɨ*	A
	絲	*sī*	< *si*	< **sjɨ*	A
	謀	*móu*	< *mjuw*	< **mjɨ*	A
	淇	*qí*	< *gi*	< **g(r)jɨ*	A
	丘	*qiū*	< *khjuw*	< **k^{w}hjɨ*	A
	期	*[qī]*	< *gi*	< **g(r)jɨ*	A
	媒	*méi*	< *mwoj*	< **mɨ*	A
	期	*[qī]*	< *gi*	< **g(r)jɨ*	A
58.2	垣	*yuán*	< *hjwon*	< **wjan*	A
	關	*guān*	< *kwæn*	< **kron*	A
	關	*guān*	< *kwæn*	< **kron*	A

	漣	*lián*	< *ljen*	< **C-rjan*	A
	關	*guān*	< *kwæn*	< **kron*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
	遷	*qiān*	< *tshjen*	< **tshjan*	A
58.3	落	*luò*	< *lak*	< **g-rak*	A
	若	*ruò*	< *nyak*	< **njak*	A
	甚	*shèn*	< *zyimX*	< **sGjum?* (?)	B
	耽	*dān*	< *tom*	< **tum*	B
	耽	*dān*	< *tom*	< **tum*	C
	說	*shuō*	< *sywet*	< **hljot*	D
	耽	*dān*	< *tom*	< **tum*	C
	說	*shuō*	< *sywet*	< **hljot*	D
58.4	隕	*yǔn*	< *hwinX*	< **wrjin(?)*	A
	貧	*pín*	< *bin*	< **brjin*	A
	湯	*shāng*	< *syang*	< **hljang*	B
	裳	*cháng*	< *dzyang*	< **djang*	B
	爽	*shuǎng*	< *srjangX*	< **srjang?*	B
	行	[*xíng*]	< *hængH*	< **grangs*	B
	極	*jí*	< *gik*	< **g(r)jik*	C
	德	*dé*	< *tok*	< **tik*	C
58.5	勞	*láo*	< *law*	< **C-raw*	A
	朝	*zhāo*	< *trjew*	< **trjaw*	A
	暴	*bào*	< *bawH*	< **bawks*	B
	笑	*xiào*	< *sjewH*	< **sjaws*	B
	悼	*dào*	< *dawH*	< **dawks*	B
58.6	怨	*yuàn*	< *ʔjwonH*	< **ʔjons*	A
	岸	*àn*	< *nganH*	< **ngans*	A
	泮	*pàn*	< *phanH*	< **phans*	A
	宴	*yàn*	< *ʔenH*	< **ʔens*	A
	晏	*yàn*	< *ʔænH*	< **ʔrans*	A
	旦	*dàn*	< *tanH*	< **tans*	A
	反	*fǎn*	< *pjonX*	< **pjan?*	A
	思	*sī*	< *si*	< **sji*	B
	哉	*zāi*	< *tsoj*	< **tsi*	B

59 *Wèi fēng* 衛風: *Zhú gān* 竹竿

59.1	淇	*qí*	< *gi*	< **g(r)ji*	A
	思	*sī*	< *si*	< **sji*	A
	之	*zhī*	< *tsyi*	< **tji*	A

59.2	右	*yòu*	< *hjuwX/H*	< **wjiʔ(s)*	A
	母	*mǔ*	< *muwX*	< **m(r)o/iʔ*	A
59.3	左	*zuǒ*	< *tsaX*	< **tsajʔ*	A
	瑳	[*cuō*]	< *tshaX*	< **tshajʔ*	A
	儺	[*nuó*]	< *naX*	< **najʔ*	A
59.4	悠	*yóu*	< *yuw*	< **ljiw*	A
	舟	*zhōu*	< *tsyuw*	< **tju*	A
	遊	*yóu*	< *yuw*	< **ju*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	A

60 *Wèi fēng* 衛風: *Wán lán* 芄蘭

60.1	支	*zhī*	< *tsye*	< **kje*	A
	觿	*xī*	< *xjwie*	< **hwje*	A
	觿	*xī*	< *xjwie*	< **hwje*	A
	知	*zhī*	< *trje*	< **trje*	A
	遂	*suì*	< *zwijH*	< **zjuts*	B
	悸	*jì*	< *gjwijH*	< **g^{w}jits*	B
60.2	葉	*yè*	< *yep*	< **ljap*	A
	韘	*shè*	< *syep*	< **hljap*	A
	韘	*shè*	< *syep*	< **hljap*	A
	甲	*jiǎ*	< *kæp*	< **krap*	A
	遂	*suì*	< *zwijH*	< **zjuts*	B
	悸	*jì*	< *gjwijH*	< **g^{w}jits*	B

61 *Wèi fēng* 衛風: *Hé guǎng* 河廣

61.1	杭	*háng*	< *hang*	< **gang*	A
	望	*wàng*	< *mjangH*	< **mjangs*	A
61.2	刀	*dāo*	< *taw*	< **taw*	A
	朝	*zhāo*	< *trjew*	< **trjaw*	A

62 *Wèi fēng* 衛風: *Bó xī* 伯兮

62.1	揭	*qiè*	< *khjet*	< **khrjat*	A
	桀	*jié*	< *gjet*	< **grjat*	A
	殳	[*shū*]	< *dzyu*	< **djo*	B
	驅	*qū*	< *khju*	< **kh(r)jo*	B

62.2	東	*dōng*	< *tuwng*	< **tong*	A
	蓬	*péng*	< *buwng*	< **bong*	A
	容	*róng*	< *yowng*	< **(l)jong*	A
62.3	日	*rì*	< *nyit*	< **njit*	A
	疾	*jí*	< *dzit*	< **dzjit*	A
62.4	背	*bèi*	< *bwojH*	< **fipiks*	A
	痗	*mèi*	< *mwojH*	< **miks*	A

63 *Wèi fēng* 衛風: *Yǒu hú* 有狐

63.1	梁	*liáng*	< *ljang*	< **C-rjang*	A
	裳	*cháng*	< *dzyang*	< **djang*	A
63.2	厲	*lì*	< *ljejH*	< **C-rjats*	A
	帶	*dài*	< *tajH*	< **tats*	A
63.3	側	[*cè*]	< *tsrik*	< **tsrjik*	A
	服	*fú*	< *bjuwk*	< **bjik*	A

64 *Wèi fēng* 衛風: *Mù guā* 木瓜

64.1	瓜	*guā*	< *kwæ*	< **k^{w}ra*	A
	琚	*jū*	< *kjo*	< **k(r)ja*	A
	報	*bào*	< *pawH*	< **pus*	B
	好	*hào*	< *xawH*	< **xu(ʔ)s*	B
64.2	桃	*táo*	< *daw*	< **g-law*	A
	瑤	*yáo*	< *yew*	< **ljaw*	A
	報	*bào*	< *pawH*	< **pus*	B
	好	*hào*	< *xawH*	< **xu(ʔ)s*	B
64.3	李	*lǐ*	< *liX*	< **C-rjiʔ*	A
	玖	*jiǔ*	< *kjuwX*	< **k^{w}jiʔ*	A
	報	*bào*	< *pawH*	< **pus*	B
	好	*hào*	< *xawH*	< **xu(ʔ)s*	B

65 *Wáng fēng* 王風: *Shǔ lí* 黍離

65.1	離	*lí*	< *lje*	< **C-rjaj*	A
	苗	*miáo*	< *mjew*	< **m(r)jaw*	B
	靡	*mǐ*	< *mjeX*	< **m(r)jajʔ*	A
	搖	*yáo*	< *yew*	< **ljaw*	B

	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	C
	求	*qiú*	< *gjuw*	< **grju*	C
	天	*tiān*	< *then*	< **hlin*	D
	人	*rén*	< *nyin*	< **njin*	D
65.2	離	*lí*	< *lje*	< **C-rjaj*	A
	穗	*suì*	< *zwijH*	< **ɦswjids* (?)	B
	靡	*mǐ*	< *mjeX*	< **m(r)jaj?*	A
	醉	*zuì*	< *tswijH*	< **tsjuds*	B
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	C
	求	*qiú*	< *gjuw*	< **grju*	C
	天	*tiān*	< *then*	< **hlin*	D
	人	*rén*	< *nyin*	< **njin*	D
65.3	離	*lí*	< *lje*	< **C-rjaj*	A
	實	*shí*	< *zyit*	< **Ljit*	B
	靡	*mǐ*	< *mjeX*	< **m(r)jaj?*	A
	噎	*yē*	< *ʔet*	< **ʔit*	B
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	C
	求	*qiú*	< *gjuw*	< **grju*	C
	天	*tiān*	< *then*	< **hlin*	D
	人	*rén*	< *nyin*	< **njin*	D

66 *Wáng fēng* 王風: *Jūnzǐ yú yì* 君子于役

66.1	期	[*qī*]	< *gi*	< **g(r)jɨ*	A
	哉	*zāi*	< *tsoj*	< **tsɨ*	A
	塒	*shí*	< *dzyi*	< **djɨ*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	思	*sī*	< *si*	< **sjɨ*	A
66.2	月	*yuè*	< *ngjwot*	< **ng^{w}jat*	A
	佸	*huó*	< *hwat*	< **g^{w}at*	A
	桀	*jié*	< *gjet*	< **grjat*	A
	括	[*kuò*]	< *kwat*	< **k^{w}at*	A
	渴	*kě*	< *khat*	< **khat*	A

67 *Wáng fēng* 王風: *Jūnzǐ yáng yáng* 君子陽陽

67.1	陽	*yáng*	< *yang*	< **ljang*	A
	簧	*huáng*	< *hwang*	< **g^{w}ang*	A
	房	*fáng*	< *bjang*	< **bjang*	A

67.2	陶	*yáo*	< *[yew]*	< **lju*	A
	翿	*[dào]*	< *daw*	< **du*	A
	敖	*áo*	< *ngaw*	< **ngaw*	A

68 *Wáng fēng* 王風: *Yáng zhī shuǐ* 揚之水

68.1	薪	*xīn*	< *sin*	< **sjin(g)*	A
	申	*shēn*	< *syin*	< **hljin*	A
	懷	*huái*	< *hwɛj*	< **gruj*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	B
68.2	楚	*chǔ*	< *tsrhjoX*	< **tsrhja?*	A
	甫	*fǔ*	< *pjuX*	< **p(r)ja?*	A
	懷	*huái*	< *hwɛj*	< **gruj*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	B
68.3	蒲	*pú*	< *bu*	< **ba*	A
	許	*xǔ*	< *xjoX*	< **hng(r)ja?*	A
	懷	*huái*	< *hwɛj*	< **gruj*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	B

69 *Wángfēng* 王風: *Zhōng gǔ yǒu tuī* 中谷有蓷

69.1	乾	*gān*	< *kan*	< **kan*	A
	嘆	*[tàn]*	< *than*	< **hnan*	A
	嘆	*[tàn]*	< *than*	< **hnan*	A
	難	*nán*	< *nan*	< **nan*	A
69.2	脩	*xiū*	< *sjuw*	< **sljɨw*	A
	歗	*xiào*	< *sewH*	< **siw(k)s*	A
	歗	*xiào*	< *sewH*	< **siw(k)s*	A
	淑	*shū*	< *dzyuwk*	< **djɨwk*	A
69.3	溼	*shī*	< *syip*	< **hjɨ/lup*	A
	泣	*qì*	< *khip*	< **khrjɨp*	A
	泣	*qì*	< *khip*	< **khrjɨp*	A
	及	*jí*	< *gip*	< **g(r)jɨp*	A

70 *Wángfēng* 王風: *Tù yuán* 兔爰

70.1	羅	*luó*	< *la*	< **C-raj*	A
	爲	*wéi*	< *hjwe*	< **w(r)jaj*	A

	罹	*lí*	< *lje*	< **C-rjaj*	A
	吪	*é*	< *ngwa*	< **ng^{w}aj*	A
70.2	罕	[*fú*]	< [*phju*]	< **ph(r)ju*	A
	造	*zào*	< *dzawX*	< **dzu?*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	A
	覺	*jué*	< *kæwk*	< **kruk*	A
70.3	曫	[*tóng*]	< *tsyhowng*	< **thjong*	A
	庸	[*yōng*]	< *yowng*	< **ljong*	A
	凶	*xiōng*	< *xjowng*	< **x(r)jong*	A
	聰	*cōng*	< *tshuwng*	< **tshong*	A

71 *Wáng fēng* 王風: *Gé lěi* 葛藟

71.1	藟	*lěi*	< *lwijX*	< **C-rjuj?*	A
	涘	*hǔ*	< *xuX*	< **hnga?*	B
	弟	*dì*	< *dejX*	< **dil/ij?*	A
	父	*fù*	< *bjuX*	< **b(r)ja?*	B
	父	*fù*	< *bjuX*	< **b(r)ja?*	B
	顧	*gù*	< *kuH*	< **kaʔ(s)*	B
71.2	藟	*lěi*	< *lwijX*	< **C-rjuj?*	A
	涘	*sì*	< *zriX*	< **zrji?*	B
	弟	*dì*	< *dejX*	< **dil/ij?*	A
	母	*mǔ*	< *muwX*	< **m(r)o/i?*	B
	母	*mǔ*	< *muwX*	< **m(r)o/i?*	B
	有	*yǒu*	< *ɦjuwX*	< **wji?*	B
71.3	藟	*lěi*	< *lwijX*	< **C-rjuj?*	A
	漘	*chún*	< *zywin*	< **fistjun* (?)	B
	弟	*dì*	< *dejX*	< **dil/ij?*	A
	昆	[*kūn*]	< *kwon*	< **kun*	B
	昆	[*kūn*]	< *kwon*	< **kun*	B
	聞	*wén*	< *mjun*	< **mjun*	B

72 *Wáng fēng* 王風: *Cǎi gé* 采葛

72.1	葛	*gé*	< *kat*	< **kat*	A
	月	*yuè*	< *ngjwot*	< **ng^{w}jat*	A
72.2	蕭	*xiāo*	< *sew*	< **siw*	A
	秋	*qiū*	< *tshjuw*	< **tshjiw*	A

72.3	艾	*ài*	< *ngajH*	< **ngats*	A
	歲	*suì*	< *sjwejH*	< **swjat(s)*	A

73 *Wáng fēng* 王風: *Dà jū* 大車

73.1	檻	[*kǎn*]	< *hamX*	< **gam?*	A
	菼	*tǎn*	< *thamX*	< **hlam?*	A
	敢	*gǎn*	< *kamX*	< **kam?*	A
73.2	啍	*tūn*	< *thwon*	< **thun*	A
	瑞	*mén*	< *mwon*	< **mun*	A
	奔	*bēn*	< *pwon*	< **pun*	A
73.3	室	*shì*	< *syit*	< **stjit*	A
	穴	*xué*	< *hwet*	< **wit*	A
	日	*rì*	< *nyit*	< **njit*	A

74 *Wáng fēng* 王風: *Qiū zhōng yǒu má* 丘中有麻

74.1	麻	*má*	< *mæ*	< **mraj*	A
	嗟	*jiē*	< *tsjæ*	< **tsjAj*	A
	嗟	*jiē*	< *tsjæ*	< **tsjAj*	A
	施	*shī*	< *sye*	< **hljaj*	A
74.2	麥	*mài*	< *mɛk*	< **mrɨk*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	A
	食	*shí*	< *zyik*	< **Ljɨk*	A
74.3	李	*lǐ*	< *liX*	< **C-rjɨ?*	A
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	A
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	A
	玖	*jiǔ*	< *kjuwX*	< **k^{w}jɨ?*	A

75 *Zhèng fēng* 鄭風: *Zī yī* 緇衣

75.1	宜	*yí*	< *ngje*	< **ng(r)jaj*	A
	爲	*wéi*	< *hjwe*	< **w(r)jaj*	A
	館	[*guǎn*]	< *kwanH*	< **kons*	B
	粲	*càn*	< *tshanH*	< **tshans*	B
75.2	好	*hǎo*	< *xawX*	< **xu?*	A
	造	*zào*	< *dzawX*	< **dzu?*	A

	館	[*guǎn*]	< *kwanH*	< **kons*	B
	粲	*càn*	< *tshanH*	< **tshans*	B
75.3	蓆	*xí*	< *zjek*	< **zljAk*	A
	作	*zuò*	< *tsak*	< **tsak*	A
	館	[*guǎn*]	< *kwanH*	< **kons*	B
	粲	*càn*	< *tshanH*	< **tshans*	B

76 *Zhèng fēng* 鄭風: *Qiāng zhòng zǐ* 將仲子

76.1	里	*lǐ*	< *liX*	< **C-rjɨʔ*	A
	杞	*qǐ*	< *khiX*	< **kh(r)jɨʔ*	A
	母	*mǔ*	< *muwX*	< **m(r)oləʔ*	A
	懷	*huái*	< *hwɛj*	< **gruj*	B
	畏	*wèi*	< *ʔjwijH*	< **ʔjuj(s)*	B
76.2	牆	*qiáng*	< *dzjang*	< **dzjang*	A
	桑	*sāng*	< *sang*	< **sang*	A
	兄	*xiōng*	< *xjwæng*	< **hwrjang*	A
	懷	*huái*	< *hwɛj*	< **gruj*	B
	畏	*wèi*	< *ʔjwijH*	< **ʔjuj(s)*	B
76.3	園	*yuán*	< *hjwon*	< **wjan*	A
	檀	*tán*	< *dan*	< **dan*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
	懷	*huái*	< *hwɛj*	< **gruj*	B
	畏	*wèi*	< *ʔjwijH*	< **ʔjuj(s)*	B

77 *Zhèng fēng* 鄭風: *Shū yú tián* 叔于田

77.1	田	*tián*	< *den*	< **din*	A
	人	*rén*	< *nyin*	< **njin*	A
	人	*rén*	< *nyin*	< **njin*	A
	仁	*rén*	< *nyin*	< **njin*	A
77.2	狩	*shòu*	< *syuwH*	< **stjus*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsjuʔ*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsjuʔ*	A
	好	*hǎo*	< *xawX*	< **xuʔ*	A
77.3	野	*yě*	< *yæX*	< **ljAʔ*	A
	馬	*mǎ*	< *mæX*	< **mraʔ*	A
	馬	*mǎ*	< *mæX*	< **mraʔ*	A
	武	*wǔ*	< *mjuX*	< **Np(r)jaʔ*	A

78 *Zhèng fēng* 鄭風: *Dà shū yú tián* 大叔于田

78.1	馬	*mǎ*	< *mæX*	< **mra?*	A
	組	*zǔ*	< *tsuX*	< **tsa?*	A
	舞	*wǔ*	< *mjuX*	< **m(r)ja?*	A
	舉	*jǔ*	< *kjoX*	< **k(r/l)ja?*	A
	虎	*hǔ*	< *xuX*	< **xa?(?)*	A
	所	*suǒ*	< *srjoX*	< **s(k)rja?*	A
	女	*rǔ*	< *nyoX*	< **nja?*	A
78.2	黃	*huáng*	< *hwang*	< **g^{w}ang*	A
	襄	*xiāng*	< *sjang*	< **snjang*	A
	行	*háng*	< *hang*	< **gang*	A
	揚	*yáng*	< *yang*	< **ljang*	A
	射	*shè*	< *zyæH*	< **LjAks*	B
	御	*yù*	< *ngjoH*	< **ng(r)jaks*	B
	控	*kòng*	< *khuwngH*	< **khongs*	C
	送	*sòng*	< *suwngH*	< **songs*	C
78.3	鴇	*bǎo*	< *pawX*	< **pu?*	A
	首	*shǒu*	< *syuwX*	< **hlju?*	A
	手	*shǒu*	< *syuwX*	< **hju?*	A
	阜	*fù*	< *bjuwX*	< **b(r)ju?*	A
	慢	*màn*	< *mænH*	< **mrans*	B
	罕	*hǎn*	< *xanX*	< **xan?*	B
	捌	*bīng*	< *ping*	< **prjing*	C
	弓	*gōng*	< *kjuwng*	< **k^{w}jing*	C

79 *Zhèng fēng* 鄭風: *Qīng rén* 清人

79.1	彭	*péng*	< *bæng*	< **brang*	A
	旁	[*páng*]	< *pæng*	< **prang*	A
	英	*yīng*	< *ʔjæng*	< **ʔrjang*	A
	翔	*xiáng*	< *zjang*	< **z(l)jang*	A
79.2	消	*xiāo*	< *sjew*	< **s(l)jew*	A
	鷹	*biāo*	< *pjew*	< **p(r)jaw*	A
	喬	*qiáo*	< *gjew*	< **fik(r)jaw*	A
	遥	*yáo*	< *yew*	< **ljaw*	A
79.3	軸	*zhóu*	< *drjuwk*	< **lrjuk*	A
	陶	*dào*	< *dawH*	< **b-lus*	A
	抽	*chōu*	< *trhjuw*	< **hlrju*	A
	好	*hào*	< *xawH*	< **xu(?)s*	A

80 *Zhèng fēng* 鄭風: *Gāo qiú* 羔裘

80.1	濡	*rú*	< *nyu*	< **njo*	A
	侯	*hóu*	< *huw*	< **g(r)o*	A
	渝	*yú*	< *yu*	< **ljo*	A
80.2	飾	*shì*	< *syik*	< **hljik*	A
	力	*lì*	< *lik*	< **C-rjik*	A
	直	*zhí*	< *drik*	< **drjik*	A
80.3	晏	*yàn*	< *ʔænH*	< **ʔrans*	A
	粲	*càn*	< *tshanH*	< **tshans*	A
	彦	*yàn*	< *ngjenH*	< **ngrjans*	A

81 *Zhèng fēng* 鄭風: *Zūn dà lù* 遵大路

81.1	路	*lù*	< *luH*	< **g-raks*	A
	袪	*qū*	< *khjo*	< **kh(r)ja*	A
	惡	*wù*	< *ʔuH*	< **ʔaks*	A
	故	*gù*	< *kuH*	< **kaʔ(s)*	A
81.2	手	*shǒu*	< *syuwX*	< **hju?*	A
	魗	*chóu*	< *dzyuw(X)*	< **dju(?)*	A
	好	*hǎo*	< *xawX*	< **xu?*	A

82 *Zhèng fēng* 鄭風: *Nǚ yuē jī míng* 女曰雞鳴

82.1	旦	*dàn*	< *tanH*	< **tans*	A
	爛	*làn*	< *lanH*	< **C-rans*	A
	鴈	*yàn*	< *ngænH*	< **ngrans*	A
82.2	加	*jiā*	< *kæ*	< **kraj*	A
	宜	*yí*	< *ngje*	< **ng(r)jaj*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	B
	老	*lǎo*	< *lawX*	< **C-ru?*	B
	好	*hǎo*	< *xawX*	< **xu?*	B
82.3	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	贈	*zèng*	< *dzongH*	< **dzings*	A
	順	*shùn*	< *zywinH*	< **fisKjuns*	B
	問	*wèn*	< *mjunH*	< **mjuns*	B
	好	*hào*	< *xawH*	< **xu(?)s*	C
	報	*bào*	< *pawH*	< **pus*	C

83 *Zhèng fēng* 鄭風: *Yǒu nǚ tóng jū* 有女同車

83.1	車	*jū*	< *kjo*	< **k(r)ja*	A
	華	*huā*	< *xwæ*	< **hwra*	A
	翔	*xiáng*	< *zjang*	< **z(l)jang*	B
	琚	*jū*	< *kjo*	< **k(r)ja*	A
	姜	*jiāng*	< *kjang*	< **k(l)jang*	B
	都	*dū*	< *tu*	< **ta*	A
83.2	行	*xíng*	< *hæng*	< **grang*	A
	英	*yīng*	< *ʔjæng*	< **ʔrjang*	A
	翔	*xiáng*	< *zjang*	< **z(l)jang*	B
	將	*qiāng*	< *tshjang*	< **tshjang*	A
	姜	*jiāng*	< *kjang*	< **k(l)jang*	B
	忘	*wàng*	< *mjang(H)*	< **mjang*	A

84 *Zhèng fēng* 鄭風: *Shān yǒu fú sū* 山有扶蘇

84.1	蘇	*sū*	< *su*	< **snga*	A
	華	*huā*	< *xwæ*	< **hwra*	A
	都	*dū*	< *tu*	< **ta*	A
	且	*jū*	< *tsjo*	< **tsja*	A
84.2	松	*sōng*	< *sjowng*	< **skjong*	A
	龍	*lóng*	< *ljowng*	< **C-rjong*	A
	充	*chōng*	< *tsyhuwng*	< **thjo/ung* (?)	A
	童	*tóng*	< *duwng*	< **dong*	A

85 *Zhèng fēng* 鄭風: *Tuò xī* 蘀兮

85.1	蘀	*tuò*	< *thak*	< **hlak*	A
	吹	*chuī*	< *tsyhwe*	< **thjoj*	B
	伯	*bó*	< *pæk*	< **prak*	A
	和	*hè*	< *hwaH*	< **gojs*	B
85.2	蘀	*tuò*	< *thak*	< **hlak*	A
	漂	*piāo*	< *phjiew*	< **phjew*	B
	伯	*bó*	< *pæk*	< **prak*	A
	要	*yāo*	< *ʔjiew*	< **ʔjew*	B

86 *Zhèngfēng* 鄭風: *Jiǎo tóng* 狡童

86.1	言	*yán*	< *ngjon*	< **ngjan*	A
	餐	*cān*	< *tshan*	< **tshan*	A
86.2	食	*shí*	< *zyik*	< **Ljɨk*	A
	息	*xī*	< *sik*	< **sjɨk*	A

87 *Zhèngfēng* 鄭風: *Qiān cháng* 褰裳

87.1	溱	*zhēn*	< *tsrin*	< **tsrjin*	A
	人	*rén*	< *nyin*	< **njin*	A
87.2	洧	*wěi*	< *hwijX*	< **wrjɨʔ*	A
	士	*shì*	< *dzrix*	< **fisrjɨʔ*	A

88 *Zhèngfēng* 鄭風: *Fēng* 丰

88.1	丰	*fēng*	< *phjowng*	< **ph(r)jong*	A
	巷	*xiàng*	< *hæwngH*	< **grongs*	A
	送	*sòng*	< *suwngH*	< **songs*	A
88.2	昌	*chāng*	< *tsyhang*	< **thjang*	A
	堂	*táng*	< *dang*	< **dang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A
88.3	裳	*cháng*	< *dzyang*	< **djang*	A
	行	*xíng*	< *hæng*	< **grang*	A
88.4	衣	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	歸	*guī*	< *kjwɨj*	< **k*^{w}*jɨj*	A

89 *Zhèngfēng* 鄭風: *Dōng mén zhī shàn* 東門之墠

89.1	墠	*shàn*	< *dzyenX*	< **djanʔ*	A
	阪	[*bǎn*]	< *pjonX*	< **pjanʔ*	A
	遠	*yuǎn*	< *hjwonX*	< **wjanʔ*	A
89.2	栗	*lì*	< *lit*	< **C-rjit*	A
	室	*shì*	< *syit*	< **stjit*	A
	即	*jí*	< *tsik*	< **tsjik*	A

90 *Zhèng fēng* 鄭風: *Fēng yǔ* 風雨

90.1	淒	*qī*	< *tshej*	< **tshij*	A
	喈	*jiē*	< *kɛj*	< **krɨj*	A
	夷	*yí*	< *yij*	< **ljɨj*	A
90.2	瀟	*xiāo*	< *sew*	< **siw*	A
	膠	*jiāo*	< *kæw*	< **kriw*	A
	瘳	*chōu*	< *trhjuw*	< **hrjiw*	A
90.3	晦	*huì*	< *xwojH*	< **hmɨ(k)ɣ(s)*	A
	已	*yǐ*	< *yiX*	< **lji?*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	A
	喜	*xǐ*	< *xiX*	< **x(r)ji?*	A

91 *Zhèng fēng* 鄭風: *Zǐ jīn* 子衿

91.1	衿	*jīn*	< *kim*	< **k(r)jɨm*	A
	心	*xīn*	< *sim*	< **sjɨm*	A
	音	*yīn*	< *ʔim*	< **ɣ(r)jɨm*	A
91.2	佩	[*pèi*]	< *bwojH*	< **bɨs*	A
	思	*sī*	< *si*	< **sjɨ*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
91.3	達	*tà*	< *that*	< **hlat*	A
	闕	*què*	< *khjwot*	< **k^{w}hjat*	A
	月	*yuè*	< *ngjwot*	< **ng^{w}jat*	A

92 *Zhèng fēng* 鄭風: *Yáng zhī shuǐ* 揚之水

92.1	水	*shuǐ*	< *sywijX*	< **h[l]juj?*	A
	楚	*chǔ*	< *tsrhjoX*	< **tsrhja?*	B
	弟	*dì*	< *dejX*	< **dɨlij?*	A
	女	*rǔ*	< *nyoX*	< **nja?*	B
	女	*rǔ*	< *nyoX*	< **nja?*	B
92.2	水	*shuǐ*	< *sywijX*	< **h[l]juj?*	A
	薪	*xīn*	< *sin*	< **sjin(g)*	B
	弟	*dì*	< *dejX*	< **dɨlij?*	A
	人	*rén*	< *nyin*	< **njin*	B
	信	*xìn*	< *sinH*	< **snjins*	B

93 *Zhèng fēng* 鄭風: *Chū qí dōng mén* 出其東門

93.1	門	*mén*	< *mwon*	< **min*	A
	雲	*yún*	< *hjun*	< **wjin*	A
	雲	*yún*	< *hjun*	< **wjin*	A
	存	*cún*	< [*dzwon*]	< **dzin*	A
	巾	*jīn*	< *kin*	< **krjin*	A
	員	*yún*	< *hjun*	< **wjin*	A
93.2	闍	*dū*	< *tu*	< **ta*	A
	荼	*tú*	< *du*	< **la*	A
	荼	*tú*	< *du*	< **la*	A
	且	*cú*	< *dzu*	< **dza*	A
	蘆	*lú*	< *ljo*	< **C-rja*	A
	娛	*yú*	< *ngju*	< **ng^{W}(r)ja*	A

94 *Zhèng fēng* 鄭風: *Yě yǒu màn cǎo* 野有蔓草

94.1	漙	*tuán*	< *dwan*	< **don*	A
	婉	[*wǎn*]	< *ʔjwonX*	< **ʔjon?*	A
	願	*yuàn*	< *ngjwonH*	< **ngjons*	A
94.2	瀼	*ráng*	< *nyang*	< **njang*	A
	揚	*yáng*	< *yang*	< **ljang*	A
	臧	*zāng*	< *tsang*	< **tsang*	A

95 *Zhèng fēng* 鄭風: *Zhēn wěi* 溱洧

95.1	渙	*huàn*	< *xwanH*	< **hwans*	A
	蒓	*jiān*	< *kæn*	< **kran*	A
	乎	[*hū*]	< *hu*	< **fia*	B
	且	*cú*	< *dzu*	< **dza*	B
	乎	[*hū*]	< *hu*	< **fia*	B
	樂	*lè*	< *lak*	< **g-rawk*	C
	謔	*xuè*	< *xjak*	< **hng(r)jawk*	C
	藥	*yào*	< *yak*	< **rawk*	C
95.2	清	*qīng*	< *tshjeng*	< **tshjeng*	A
	盈	*yíng*	< *yeng*	< **(l)jeng*	A
	乎	[*hū*]	< *hu*	< **fia*	B
	且	*cú*	< *dzu*	< **dza*	B
	乎	[*hū*]	< *hu*	< **fia*	B

	樂	*lè*	< *lak*	< **g-rawk*	C
	謔	*xuè*	< *xjak*	< **hng(r)jawk*	C
	藥	*yào*	< *yak*	< **rawk*	C

96 *Qí fēng* 齊風: *Jī míng* 雞鳴

96.1	鳴	*míng*	< *mjæng*	< **mrjeng*	A
	盈	*yíng*	< *yeng*	< **(l)jeng*	A
	鳴	*míng*	< *mjæng*	< **mrjeng*	A
	聲	*shēng*	< *syeng*	< **xjeng*	A
96.2	明	*míng*	< *mjæng*	< **mrjang*	A
	昌	*chāng*	< *tsyhang*	< **thjang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	光	*guāng*	< *kwang*	< **k^{w}ang*	A
96.3	薨	*hōng*	< *xwong*	< **hmi̯ng*	A
	夢	*mèng*	< *mjuwng(H)*	< **mji̯ng(s)*	A
	憎	*zēng*	< *tsong*	< **tsi̯ng*	A

97 *Qí fēng* 齊風: *Xuán* 還

97.1	還	*xuán*	< *zjwen*	< **fiswjen*	A
	間	*jiān*	< *kɛn*	< **kren*	A
	肩	*jiān*	< *ken*	< **ken*	A
	儇	*xuān*	< *xjwien*	< **hwjen*	A
97.2	茂	[*mào*]	< *muwH*	< **m(r)juʔ(s)*	A
	道	*dào*	< *dawX*	< **luʔ*	A
	牡	*mǔ*	< *muwX*	< **m(r)juʔ*	A
	好	*hǎo*	< *xawX*	< **xuʔ*	A
97.3	昌	*chāng*	< *tsyhang*	< **thjang*	A
	陽	*yáng*	< *yang*	< **ljang*	A
	狼	*láng*	< *lang*	< **C-rang*	A
	臧	*zāng*	< *tsang*	< **tsang*	A

98 *Qí fēng* 齊風: *Zhù* 著

98.1	著	[*zhù*]	< *drjo*	< **drja*	A
	素	*sù*	< *suH*	< **saks*	A
	華	*huá*	< *hwæ*	< **wra*	A

98.2	庭	*tíng*	< *deng*	< **leng*	A
	青	*qīng*	< *tsheng*	< **sreng*	A
	瑩	*yíng*	< *hjwæng*	< **wrjeng*	A
98.3	堂	*táng*	< *dang*	< **dang*	A
	黃	*huáng*	< *hwang*	< **g^{w}ang*	A
	英	*yīng*	< *ʔjæng*	< **ʔrjang*	A

99 *Qí fēng* 齊風: *Dōng fāng zhī rì* 東方之日

99.1	日	*rì*	< *nyit*	< **njit*	A
	室	*shì*	< *syit*	< **stjit*	A
	室	*shì*	< *syit*	< **stjit*	A
	即	*jí*	< *tsik*	< **tsjik*	A
99.2	月	*yuè*	< *ngjwot*	< **ng^{w}jat*	A
	闥	*tà*	< *that*	< **hlat*	A
	闥	*tà*	< *that*	< **hlat*	A
	發	*fā*	< *pjot*	< **pjat*	A

100 *Qí fēng* 齊風: *Dōng fāng wèi míng* 東方未明

100.1	明	*míng*	< *mjæng*	< **mrjang*	A
	裳	*cháng*	< *dzyang*	< **djang*	A
	倒	*dǎo*	< *tawX*	< **taw?*	B
	召	*zhào*	< *drjewH*	< **drjaws*	B
100.2	晞	*xī*	< *xjij*	< **xjij*	A
	衣	*yī*	< *ʔjij*	< **ʔjij*	A
	顚	*diān*	< *ten*	< **tin*	B
	令	*lìng*	< *lingH*	< **C-rjings*	B
100.3	圃	[*pǔ*]	< *puH*	< **pas*	A
	瞿	*jù*	< *gjuH*	< **g^{w}(r)jas*	A
	夜	*yè*	< *yæH*	< **(l)jAks*	A
	莫	*mù*	< *muH*	< **maks*	A

101 *Qí fēng* 齊風: *Nán shān* 南山

101.1	崔	[*cuī*]	< *dzwoj*	< **Sduj*	A
	綏	[*suí*]	< *swij*	< **snjuj*	A
	歸	*guī*	< *kjwij*	< **k^{w}jij*	A

	歸	*guī*	< *kjwɨj*	< *k^{w}jɨj*	B
	懷	*huái*	< *hwɛj*	< **gruj*	B
101.2	兩	*liǎng*	< *ljangX*	< **b-rjang?*	A
	雙	*shuāng*	< *sræwng*	< **sCr(j)ong*	B
	蕩	*dàng*	< *dangX*	< **lang?*	A
	庸	[*yōng*]	< *yowng*	< **ljong*	B
	庸	[*yōng*]	< *yowng*	< **ljong*	B
	從	*cóng*	< *dzjowng*	< **dzjong*	B
101.3	畝	*mǔ*	< *muwX*	< **m(r)oli?*	A
	母	*mǔ*	< *muwX*	< **m(r)oli?*	A
	告	*gù*	< *kowk*	< **kuk*	B
	鞠	*jū*	< *kjuwk*	< **k(r)juk*	B
101.4	克	*kè*	< *khok*	< **khik*	A
	得	*dé*	< *tok*	< **tik*	A
	得	*dé*	< *tok*	< **tik*	B
	極	*jí*	< *gik*	< **g(r)jik*	B

102 *Qí fēng* 齊風: *Fǔ tián* 甫田

102.1	田	*tián*	< *den*	< **din*	A
	驕	*jiāo*	< *kjew*	< **k(r)jaw*	B
	人	*rén*	< *nyin*	< **njin*	A
	忉	*dāo*	< *taw*	< **taw*	B
102.2	田	*tián*	< *den*	< **din*	A
	桀	*jié*	< *kjot*	< **kjat*	B
	人	*rén*	< *nyin*	< **njin*	A
	怛	*dá*	< *tat*	< **tat*	B
102.3	婉	[*wǎn*]	< *ʔjwonX*	< **ʔjon?*	A
	孌	[*luán*]	< *ljwenX*	< **b-rjon?*	A
	丱	*guàn*	< *kwænH*	< **krons*	B
	弁	*biàn*	< *bjenH*	< **brjons*	B

103 *Qí fēng* 齊風: *Lú líng* 盧令

103.1	令	*líng*	< *leng*	< **C-ring*	A
	仁	*rén*	< *nyin*	< **njin*	A
103.2	環	*huán*	< *hwæn*	< **wren*	A
	鬈	*quán*	< *gjwen*	< **g^{w}rjen*	A

103.3	鋂	*méi*	< *mwoj*	< **mɨ*	A
	偲	*cāi*	< *tshoj*	< **tshɨ*	A

104 *Qí fēng* 齊風: *Bì gǒu* 敝笱

104.1	鰥	*guān*	< *kwɛn*	< **k*^{w}*rɨn*	A
	雲	*yún*	< *hjun*	< **wjɨn*	A
104.2	魴	*xù*	< *zjoX*	< **zlja?*	A
	雨	*yǔ*	< *hjuX*	< **w(r)ja?*	A
104.3	唯	*wěi*	< *ywijX*	< **ljuj?*	A
	水	*shuǐ*	< *sywijX*	< **h[l]juj?*	A

105 *Qí fēng* 齊風: *Zài qū* 載驅

105.1	薄	[*bó*]	< *phak*	< **phak*	A
	鞹	*kuò*	< *khwak*	< **k*^{w}*hak*	A
	夕	*xī*	< *zjek*	< **z(l)jAk*	A
105.2	濟	*jǐ*	< *tsejX*	< **tsɨj?*	A
	滸	*nǐ*	< *nejX*	< **nɨj?*	A
	弟	[*tì*]	< *dejX*	< **dɨj?*	A
105.3	湯	*shāng*	< *syang*	< **hljang*	A
	彭	*bāng*	< *pang*	< **pang*	A
	翔	*xiáng*	< *zjang*	< **z(l)jang*	A
105.4	滔	*tāo*	< *thaw*	< **hlu*	A
	儦	*biāo*	< *pjew*	< **p(r)jaw*	A
	敖	*áo*	< *ngaw*	< **ngaw*	A

106 *Qí fēng* 齊風: *Yī jiē* 猗嗟

106.1	昌	*chāng*	< *tsyhang*	< **thjang*	A
	長	*cháng*	< *drjang*	< **fitrjang*	A
	揚	*yáng*	< *yang*	< **ljang*	A
	揚	*yáng*	< *yang*	< **ljang*	A
	蹌	*qiāng*	< *tshjang*	< **tshjang*	A
	臧	*zāng*	< *tsang*	< **tsang*	A
106.2	名	*míng*	< *mjieng*	< **mjeng*	A
	清	*qīng*	< *tshjeng*	< **tshjeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A

	正	*zhēng*	< *tsyeng*	< **tjeng*	A
	甥	*shēng*	< *srjæng*	< **srjeng*	A
106.3	孌	[*luán*]	< *ljwenX*	< **b-rjon?*	A
	婉	[*wǎn*]	< *ʔjwonX*	< **ʔjon?*	A
	選	[*xuǎn*]	< *sjwenH*	< **sjon(?)s*	B
	貫	*guàn*	< *kwanH*	< **kons*	B
	變	*biàn*	< *pjenH*	< **prjons*	B
	亂	*luàn*	< *lwanH*	< **C-rons*	B

107 *Wèifēng* 魏風: *Géjù* 葛屨

107.1	霜	*shuāng*	< *srjang*	< **srjang*	A
	裳	*cháng*	< *dzyang*	< **djang*	A
	褐	*jí*	< *kik*	< **k(r)jik*	B
	服	*fú*	< *bjuwk*	< **bjik*	B
107.2	提	*tí*	< *dej*	< **de*	A
	辟	*bì*	< *bjieH*	< **bjeks*	A
	掃	*tì*	< *thejH*	< **theks*	A
	刺	*cì*	< *tshjeH*	< **tshjek(s)*	A

108 *Wèifēng* 魏風: *Fénjù rú* 汾沮洳

108.1	洳	*rú*	< *nyoH*	< **njas*	A
	莫	*mù*	< *muH*	< **maks*	A
	度	*dù*	< *duH*	< **laks*	A
	度	*dù*	< *duH*	< **laks*	A
	路	*lù*	< *luH*	< **g-raks*	A
108.2	方	*fāng*	< *pjang*	< **pjang*	A
	桑	*sāng*	< *sang*	< **sang*	A
	英	*yīng*	< *ʔjæng*	< **ʔrjang*	A
	英	*yīng*	< *ʔjæng*	< **ʔrjang*	A
	行	*háng*	< *hang*	< **gang*	A
108.3	曲	*qū*	< *khjowk*	< **kh(r)jok*	A
	黃	*xù*	< *zjowk*	< **zljok*	A
	玉	*yù*	< *ngjowk*	< **ng(r)jok*	A
	玉	*yù*	< *ngjowk*	< **ng(r)jok*	A
	族	*zú*	< *dzuwk*	< **dzok*	A

109 *Wèi fēng* 魏風: *Yuán yǒu táo* 園有桃

109.1	桃	*táo*	< *daw*	< **g-law*	A
	殽	[*yáo*]	< *hæw*	< **graw*	A
	謠	*yáo*	< *yew*	< **ljaw*	A
	驕	*jiāo*	< *kjew*	< **k(r)jaw*	A
	哉	*zāi*	< *tsoj*	< **tsɨ*	B
	其	*jī*	< *ki*	< **k(r)jɨ*	B
	之	*zhī*	< *tsyi*	< **tjɨ*	B
	之	*zhī*	< *tsyi*	< **tjɨ*	B
	思	*sī*	< *si*	< **sjɨ*	B
109.2	棘	*jí*	< *kik*	< **krjɨk*	A
	食	*shí*	< *zyik*	< **Ljɨk*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	A
	極	*jí*	< *gik*	< **g(r)jɨk*	A
	哉	*zāi*	< *tsoj*	< **tsɨ*	B
	其	*jī*	< *ki*	< **k(r)jɨ*	B
	之	*zhī*	< *tsyi*	< **tjɨ*	B
	之	*zhī*	< *tsyi*	< **tjɨ*	B
	思	*sī*	< *si*	< **sjɨ*	B

110 *Wèi fēng* 魏風: *Zhì hù* 陟岵

110.1	岵	*hù*	< *huX*	< **gaʔ*	A
	父	*fù*	< *bjuX*	< **b(r)jaʔ*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	B
	已	*yǐ*	< *yiX*	< **ljɨʔ*	B
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	B
110.2	屺	*qǐ*	< *khiX*	< **kh(r)jɨʔ*	A
	母	*mǔ*	< *muwX*	< **m(r)oɨʔ*	A
	季	*jì*	< *kjwijH*	< **k^{w}jits*	B
	寐	*mèi*	< *mjijH*	< **mjits*	B
	棄	*qì*	< *khjijH*	< **khjits*	B
110.3	岡	*gāng*	< *kang*	< **kang*	A
	兄	*xiōng*	< *xjwæng*	< **hwrjang*	A
	弟	*dì*	< *dejX*	< **dɨlijʔ*	B
	偕	[*xié*]	< *kɛj*	< **krij(ʔ)*	B
	死	*sǐ*	< *sijX*	< **sjijʔ*	B

111 *Wèifēng* 魏風: *Shí mǔ zhī jiān* 十畝之間

111.1	間	*jiān*	< *kɛn*	< **kren*	A
	閑	*xián*	< *hɛn*	< **ɦkren*	A
	還	*xuán*	< *zjwen*	< **ɦswjen*	A
111.2	外	*wài*	< *ngwajH*	< **ng^{w}ats*	A
	泄	*yì*	< *yejH*	< **ljats*	A
	逝	*shì*	< *dzyejH*	< **djats*	A

112 *Wèifēng* 魏風: *Fá tán* 伐檀

112.1	檀	*tán*	< *dan*	< **dan*	A
	干	*gān*	< *kan*	< **kan*	A
	漣	*lián*	< *ljen*	< **C-rjan*	A
	廛	*chán*	< *drjen*	< **drjan*	A
	貆	*huán*	< *hwan*	< **wan*	A
	餐	*cān*	< *tshan*	< **tshan*	A
112.2	輻	*fú*	< *pjuwk*	< **pjɨk*	A
	側	[*cè*]	< *tsrik*	< **tsrjɨk*	A
	直	*zhí*	< *drik*	< **drjɨk*	A
	億	*yì*	< *ʔik*	< **ʔ(r)jɨk*	A
	特	[*tè*]	< *dok*	< **dɨk*	A
	食	*shí*	< *zyik*	< **Ljɨk*	A
112.3	輪	*lún*	< *lwin*	< **C-rjun*	A
	滀	*chún*	< *zywin*	< **ɦstjun* (?)	A
	淪	*lún*	< *lwin*	< **C-rjun*	A
	囷	*qūn*	< *khwin*	< **khrjun*	A
	鶉	*chún*	< *dzywin*	< **djun*	A
	飧	*sūn*	< *swon*	< **sun*	A

113 *Wèifēng* 魏風: *Shuò shǔ* 碩鼠

113.1	鼠	*shǔ*	< *syoX*	< **hjaʔ*	A
	黍	*shǔ*	< *syoX*	< **hjaʔ*	B
	女	*rǔ*	< *nyoX*	< **njaʔ*	A
	顧	*gù*	< *kɑH*	< **kaʔ(s)*	B
	女	*rǔ*	< *nyoX*	< **njaʔ*	A
	土	*tǔ*	< *thuX*	< **hlaʔ*	B
	土	*tǔ*	< *thuX*	< **hlaʔ*	B
	所	*suǒ*	< *srjoX*	< **s(k)rjaʔ*	B

113.2	鼠	*shǔ*	< *syoX*	< **hja?*	A
	麥	*mài*	< *mɛk*	< **mrɨk*	B
	女	*rǔ*	< *nyoX*	< **nja?*	A
	德	*dé*	< *tok*	< **tɨk*	B
	女	*rǔ*	< *nyoX*	< **nja?*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	B
	國	*guó*	< *kwok*	< **k^{w}ɨk*	B
	直	*zhí*	< *drik*	< **drjɨk*	B
113.3	鼠	*shǔ*	< *syoX*	< **hja?*	A
	苗	*miáo*	< *mjew*	< **m(r)jaw*	B
	女	*rǔ*	< *nyoX*	< **nja?*	A
	勞	*láo*	< *law*	< **C-raw*	B
	女	*rǔ*	< *nyoX*	< **nja?*	A
	郊	*jiāo*	< *kæw*	< **kraw*	B
	郊	*jiāo*	< *kæw*	< **kraw*	B
	號	*háo*	< *haw*	< **gaw*	B

114 *Táng fēng* 唐風: *Xīshuài* 蟋蟀

114.1	堂	*táng*	< *dang*	< **dang*	A
	莫	*mù*	< *muH*	< **maks*	B
	除	*zhù*	< *drjoH*	< **lrjas*	B
	康	*kāng*	< *khang*	< **khang*	A
	居	*jū*	< *kjo*	< **k(r)ja*	B
	荒	*huāng*	< *xwang*	< **hmang*	A
	瞿	*jù*	< *gjuH*	< **g^{w}(r)jas*	B
114.2	堂	*táng*	< *dang*	< **dang*	A
	逝	*shì*	< *d yejH*	< **djats*	B
	邁	*mài*	< *mæjH*	< **mrats*	B
	康	*kāng*	< *khang*	< **khang*	A
	外	*wài*	< *ngwajH*	< **ng^{w}ats*	B
	荒	*huāng*	< *xwang*	< **hmang*	A
	邁	*guì*	< *gjwejH*	< **g^{w}rjats*	B
114.3	堂	*táng*	< *dang*	< **dang*	A
	休	*xiū*	< *xjuw*	< **x(r)ju*	B
	慆	*tāo*	< *thaw*	< **hlu*	B
	康	*kāng*	< *khang*	< **khang*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	B
	荒	*huāng*	< *xwang*	< **hmang*	A
	休	*xiū*	< *xjuw*	< **x(r)ju*	B

115 *Táng fēng* 唐風: *Shān yǒu shū* 山有樞

115.1	樞	[*shū*]	< *ʔuw*	< **ʔ(r)o*	A
	榆	*yú*	< *yu*	< **ljo*	A
	婁	*lǚ*	< *lju*	< **C-rjo*	A
	驅	*qū*	< *khju*	< **kh(r)jo*	A
	偷	*yú*	< *yu*	< **ljo*	A
115.2	栲	*kǎo*	< *khawX*	< **khuʔ*	A
	杻	*niǔ*	< *nrjuwX*	< **nrjuʔ*	A
	埽	*sǎo*	< *sawX*	< **suʔ*	A
	考	*kǎo*	< *khawX*	< **khuʔ*	A
	保	*bǎo*	< *pawX*	< **puʔ*	A
115.3	漆	*qī*	< *tshit*	< **tshjit*	A
	栗	*lì*	< *lit*	< **C-rjit*	A
	瑟	*sè*	< *srit*	< **sprjit*	A
	日	*rì*	< *nyit*	< **njit*	A
	室	*shì*	< *syit*	< **stjit*	A

116 *Táng fēng* 唐風: *Yáng zhī shuǐ* 揚之水

116.1	鑿	*záo*	< *tsak*	< **tsawk*	A
	襮	*bó*	< *pak*	< **pawk*	A
	沃	*wò*	< *ʔowk*	< **ʔawk*	A
	樂	*lè*	< *lak*	< **g-rawk*	A
116.2	皓	*hào*	< *hawX*	< **gu(k)ʔ*	A
	繡	*xiù*	< *sjuwH*	< **sjiw(k)s*	A
	鵠	*hú*	< *howk*	< **guk*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	A
116.3	粼	*lín*	< *lin*	< **C-rjin*	A
	命	*mìng*	< *mjængH*	< **mrjing(s)*	A
	人	*rén*	< *nyin*	< **njin*	A

117 *Táng fēng* 唐風: *Jiāo liáo* 椒聊

117.1	升	*shēng*	< *sying*	< **h(l)jing*	A
	朋	*péng*	< *bong*	< **bing*	A
	聊	*liáo*	< *lew*	< **C-riw*	B
	條	*tiáo*	< *dew*	< **liw*	B
117.2	匊	*jū*	< *kjuwk*	< **k(r)juk*	A
	篤	*dǔ*	< *towk*	< **tuk*	A

	聊	*liáo*	< *lew*	< **C-riw*	B
	條	*tiáo*	< *dew*	< **liw*	B

118 *Táng fēng* 唐風: *Chóu móu* 綢繆

118.1	薪	*xīn*	< *sin*	< **sjin(g)*	A
	天	*tiān*	< *then*	< **hlin*	A
	人	*rén*	< *nyin*	< **njin*	A
	人	*rén*	< *nyin*	< **njin*	A
118.2	芻	[*chú*]	< *tsrhju*	< **tshrjo*	A
	隅	*yú*	< *ngju*	< **ng(r)jo*	A
	逅	*hòu*	< *huwH*	< **gros*	A
	逅	*hòu*	< *huwH*	< **gros*	A
118.3	楚	*chǔ*	< *tsrhjoX*	< **tsrhja?*	A
	戶	*hù*	< *huX*	< **ga?*	A
	者	*zhě*	< *tsyæX*	< **tjA?*	A
	者	*zhě*	< *tsyæX*	< **tjA?*	A

119 *Táng fēng* 唐風: *Dì dù* 杕杜

119.1	杜	*dù*	< *duX*	< **la?*	A
	湑	*xǔ*	< *sjoX*	< **sngja?*	A
	踽	*jǔ*	< *kjuX*	< **k^{w}(r)ja?*	A
	父	*fù*	< *bjuX*	< **b(r)ja?*	A
	比	[*bǐ*]	< *bjijH*	< **bjijs*	B
	佽	*cì*	< *tshijH*	< **tshjijs*	B
119.2	菁	*jīng*	< *tsjeng*	< **tsjeng*	A
	景	*qióng*	< *gjwieng*	< **g^{w}jeng*	A
	姓	*xìng*	< *sjengH*	< **sjengs*	A
	比	[*bǐ*]	< *bjijH*	< **bjijs*	B
	佽	*cì*	< *tshijH*	< **tshjijs*	B

120 *Táng fēng* 唐風: *Gāo qiú* 羔裘

120.1	祛	*qū*	< *khjo*	< **kh(r)ja*	A
	居	*jū*	< *kjo*	< **k(r)ja*	A
	故	*gù*	< *kuH*	< **ka?(s)*	A

120.2	裒	*xiù*	< *zjuwH*	< **zjus*	A
	究	*[jiū]*	< *kjuwH*	< **k(r)jus*	A
	好	*hào*	< *xawH*	< **xu(ʔ)s*	A

121 *Táng fēng* 唐風: *Bǎo yǔ* 鴇羽

121.1	羽	*yǔ*	< *hjuX*	< **w(r)jaʔ*	A
	栩	*xǔ*	< *xjuX*	< **hw(r)jaʔ*	A
	盬	*gǔ*	< *kuX*	< **kaʔ*	A
	黍	*shǔ*	< *syoX*	< **hjaʔ*	A
	怙	*hù*	< *huX*	< **gaʔ*	A
	所	*suǒ*	< *srjoX*	< **s(k)rjaʔ*	A
121.2	翼	*yì*	< *yik*	< **ljik*	A
	棘	*jí*	< *kik*	< **krjik*	A
	稷	*jì*	< *tsik*	< **tsjik*	A
	食	*shí*	< *zyik*	< **Ljik*	A
	極	*jí*	< *gik*	< **g(r)jik*	A
121.3	行	*háng*	< *hang*	< **gang*	A
	桑	*sāng*	< *sang*	< **sang*	A
	粱	*liáng*	< *ljang*	< **C-rjang*	A
	嘗	*cháng*	< *dzyang*	< **djang*	A
	常	*cháng*	< *dzyang*	< **djang*	A

122 *Táng fēng* 唐風: *Wú yī* 無衣

122.1	七	*qī*	< *tshit*	< **tshjit*	A
	吉	*jí*	< *kjit*	< **kJit*	A
122.2	六	*liù*	< *ljuwk*	< **C-rjuk*	A
	燠	*yù*	< *ʔjuwk*	< **ʔ(r)juk*	A

123 *Táng fēng* 唐風: *Yǒu dì zhī dù* 有杕之杜

123.1	左	*zuǒ*	< *tsaX*	< **tsajʔ*	A
	我	*[wǒ]*	< *ngaX*	< **ngajʔ*	A
	好	*hào*	< *xawH*	< **xu(ʔ)s*	B
	食	*sì*	< *ziH*	< **zljiks*	B
123.2	周	*zhōu*	< *tsyuw*	< **tjiw*	A
	遊	*yóu*	< *yuw*	< **ju*	A

	好	*hào*	< *xawH*	< **xu(ʔ)s*	B
	食	*sì*	< *ziH*	< **zljiks*	B

124 *Tángfēng* 唐風: *Gé shēng* 葛生

124.1	楚	*chǔ*	< *tsrhjoX*	< **tsrhja?*	A
	野	*yě*	< *yæX*	< **ljA?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
124.2	棘	*jí*	< *kik*	< **krjik*	A
	域	*yù*	< *hwik*	< **wrjik*	A
	息	*xī*	< *sik*	< **sjik*	A
124.3	粲	*càn*	< *tshanH*	< **tshans*	A
	爛	*làn*	< *lanH*	< **C-rans*	A
	旦	*dàn*	< *tanH*	< **tans*	A
124.4	夜	*yè*	< *yæH*	< **(l)jAks*	A
	居	*jū*	< *kjo*	< **k(r)ja*	A
124.5	日	*rì*	< *nyit*	< **njit*	A
	室	*shì*	< *syit*	< **stjit*	A

125 *Tángfēng* 唐風: *Cǎi líng* 采苓

125.1	苓	*líng*	< *leng*	< **C-ring*	A
	顚	*diān*	< *ten*	< **tin*	A
	言	*yán*	< *ngjon*	< **ngjan*	B
	信	*xìn*	< *sinH*	< **snjins*	A
	旃	*zhān*	< *tsyen*	< **tjan*	B
	然	*rán*	< *nyen*	< **njan*	B
	言	*yán*	< *ngjon*	< **ngjan*	B
	焉	[*yān*]	< *hjen*	< **fi(r)jan*	B
125.2	苦	*kǔ*	< *khuX*	< **kha?*	A
	下	*xià*	< *hæX*	< **gra?*	A
	言	*yán*	< *ngjon*	< **ngjan*	B
	與	*yǔ*	< *yoX*	< **lja?*	A
	旃	*zhān*	< *tsyen*	< **tjan*	B
	然	*rán*	< *nyen*	< **njan*	B
	言	*yán*	< *ngjon*	< **ngjan*	B
	焉	[*yān*]	< *hjen*	< **fi(r)jan*	B
125.3	葑	*fēng*	< *phjowng*	< **ph(r)jong*	A
	東	*dōng*	< *tuwng*	< **tong*	A

	言	*yán*	< *ngjon*	< **ngjan*	B
	從	*cóng*	< *dzjowng*	< **dzjong*	A
	旃	*zhān*	< *tsyen*	< **tjan*	B
	然	*rán*	< *nyen*	< **njan*	B
	言	*yán*	< *ngjon*	< **ngjan*	B
	焉	[*yān*]	< *hjen*	< **fi(r)jan*	B

126 *Qín fēng* 秦風: *Jū lín* 車鄰

126.1	鄰	*lín*	< *lin*	< **C-rjin*	A
	顚	*diān*	< *ten*	< **tin*	A
	令	*lìng*	< *ljeng(H)*	< **C-rjing(s)*	A
126.2	漆	*qī*	< *tshit*	< **tshjit*	A
	栗	*lì*	< *lit*	< **C-rjit*	A
	瑟	*sè*	< *srit*	< **sprjit*	A
	耋	*dié*	< *det*	< **dit*	A
126.3	桑	*sāng*	< *sang*	< **sang*	A
	楊	*yáng*	< *yang*	< **ljang*	A
	簧	*huáng*	< *hwang*	< **g^{w}ang*	A
	亡	*wáng*	< *mjang*	< **mjang*	A

127 *Qín fēng* 秦風: *Sì tiě* 駟驖

127.1	阜	*fù*	< *bjuwX*	< **b(r)juʔ*	A
	手	*shǒu*	< *syuwX*	< **hjuʔ*	A
	狩	*shòu*	< *syuwH*	< **stjus*	A
127.2	碩	*shuò*	< *dzyek*	< **djAk*	A
	獲	*huò*	< *hwɐk*	< **wrak*	A
127.3	園	*yuán*	< *hjwon*	< **wjan*	A
	閑	*xián*	< [*hɐn*]	< **gran*	A
	鑣	*biāo*	< *pjew*	< **p(r)jaw*	B
	驕	*jiāo*	< *kjew*	< **k(r)jaw*	B

128 *Qín fēng* 秦風: *Xiǎo róng* 小戎

128.1	收	*shōu*	< *syuw*	< **xjiw*	A
	輈	*zhōu*	< *trjuw*	< **trju*	A
	驅	*qū*	< *khju*	< **kh(r)jo*	B
	續	*xù*	< *zjowk*	< **zljok*	B

	轂	*gǔ*	< *kuwk*	< **kok*	B
	舁	*zhù*	< *tsyuH*	< **tjoks*	B
	玉	*yù*	< *ngjowk*	< **ng(r)jok*	B
	屋	*wū*	< *ʔuwk*	< **ʔok*	B
	曲	*qū*	< *khjowk*	< **kh(r)jok*	B
128.2	阜	*fù*	< *bjuwX*	< **b(r)juʔ*	A
	手	*shǒu*	< *syuwX*	< **hjuʔ*	A
	中	*zhōng*	< *trjuwng*	< **k-ljung*	B
	鑾	*cān*	< *tshom*	< **srum*	B
	合	*hé*	< *hop*	< **gop*	C
	軜	*nà*	< *nop*	< **nup*	C
	邑	*yì*	< *ʔip*	< **ʔ(r)jup*	C
	期	[*qī*]	< *gi*	< **g(r)jɨ*	D
	之	*zhī*	< *tsyi*	< **tjɨ*	D
128.3	羣	*qún*	< *gjun*	< **gjun*	A
	錞	*duì*	< *dwojH*	< **dujs*	A
	苑	[*yuàn*]	< *ʔjwonX*	< **ʔjonʔ*	A
	隋	*yīng*	< *ʔing*	< **ʔ(r)jing*	B
	弓	*gōng*	< *kjuwng*	< **k*^{w}*jing*	B
	縢	*téng*	< *dong*	< **ling*	B
	興	*xīng*	< *xing*	< **x(r)jing*	B
	音	*yīn*	< *ʔim*	< **ʔ(r)jim*	B

129 *Qínfēng* 秦風: *Jiān jiā* 蒹葭

129.1	蒼	*cāng*	< *tshang*	< **srang* (?)	A
	霜	*shuāng*	< *srjang*	< **srjang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	長	*cháng*	< *drjang*	< **ɬitrjang*	A
	央	*yāng*	< *ʔjang*	< **ʔjang*	A
129.2	淒	*qī*	< *tshej*	< **tshɨj*	A
	晞	*xī*	< *xjɨj*	< **xjɨj*	A
	湄	*méi*	< *mij*	< **mrjɨj*	A
	躋	*jī*	< *tsej*	< **tsɨj*	A
	坻	*chí*	< *drij*	< **drjɨj*	A
129.3	采	*cǎi*	< *tshojX*	< **srɨ(k)ʔ*	A
	已	*yǐ*	< *yiX*	< **ljiʔ*	A
	涘	*sì*	< *zriX*	< **zrjɨʔ*	A
	右	*yòu*	< *hjuwX/H*	< **wjɨʔ(s)*	A
	沚	*zhǐ*	< *tsyiX*	< **tjiʔ*	A

130 *Qín fēng* 秦風: *Zhōng nán* 終南

130.1	梅	*méi*	< *mwoj*	< **mɨ*	A
	裘	*qiú*	< *gjuw*	< **g^{w}jɨ*	A
	哉	*zāi*	< *tsoj*	< **tsɨ*	A
130.2	堂	*táng*	< *dang*	< **dang*	A
	裳	*cháng*	< *dzyang*	< **djang*	A
	將	*qiāng*	< *tshjang*	< **tshjang*	A
	忘	*wàng*	< *mjang(H)*	< **mjang*	A

131 *Qín fēng* 秦風: *Huáng niǎo* 黃鳥

131.1	棘	*jí*	< *kik*	< **krjɨk*	A
	息	*xī*	< *sik*	< **sjɨk*	A
	息	*xī*	< *sik*	< **sjɨk*	A
	特	[*tè*]	< *dok*	< **dɨk*	A
	穴	*xué*	< *hwet*	< **wit*	B
	慄	*lì*	< *lit*	< **C-rjit*	B
	天	*tiān*	< *then*	< **hlin*	C
	人	*rén*	< *nyin*	< **njin*	C
	身	*shēn*	< *syin*	< **hljin*	C
131.2	桑	*sāng*	< *sang*	< **sang*	A
	行	*háng*	< *hang*	< **gang*	A
	行	*háng*	< *hang*	< **gang*	A
	防	*fáng*	< *bjang*	< **bjang*	A
	穴	*xué*	< *hwet*	< **wit*	B
	慄	*lì*	< *lit*	< **C-rjit*	B
	天	*tiān*	< *then*	< **hlin*	C
	人	*rén*	< *nyin*	< **njin*	C
	身	*shēn*	< *syin*	< **hljin*	C
131.3	楚	*chǔ*	< *tsrhjoX*	< **tsrhja?*	A
	虎	*hǔ*	< *xuX*	< **xa?(?)*	A
	虎	*hǔ*	< *xuX*	< **xa?(?)*	A
	禦	*yù*	< *ngjoX*	< **ng(r)ja?*	A
	穴	*xué*	< *hwet*	< **wit*	B
	慄	*lì*	< *lit*	< **C-rjit*	B
	天	*tiān*	< *then*	< **hlin*	C
	人	*rén*	< *nyin*	< **njin*	C
	身	*shēn*	< *syin*	< **hljin*	C

132 *Qín fēng* 秦風: *Chén fēng* 晨風

132.1	風	*fēng*	< *pjuwng*	< **p(r)jɨl/um*	A
	林	*lín*	< *lim*	< **C-rjɨm*	A
	欽	*qīn*	< *khim*	< **kh(r)jɨm*	A
	何	*hé*	< *ha*	< **gaj*	B
	多	*duō*	< *ta*	< **taj*	B
132.2	櫟	*lì*	< *lek*	< **C-rewk*	A
	駁	*bó*	< *pæwk*	< **pra/ewk*	A
	樂	*lè*	< *lak*	< **g-rawk*	A
	何	*hé*	< *ha*	< **gaj*	B
	多	*duō*	< *ta*	< **taj*	B
132.3	隸	*dì*	< *dejH*	< **lɨps*	A
	悸	*suì*	< *zwijH*	< **zjuts*	A
	醉	*zuì*	< *tswijH*	< **tsjuts*	A
	何	*hé*	< *ha*	< **gaj*	B
	多	*duō*	< *ta*	< **taj*	B

133 *Qín fēng* 秦風: *Wú yī* 無衣

133.1	衣	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	袍	*páo*	< *baw*	< **bu*	B
	師	*shī*	< *srɨj*	< **srjɨj*	A
	矛	[*máo*]	< *mjuw*	< **m(r)ju*	B
	仇	*qiú*	< *gjuw*	< **g(r)ju*	B
133.2	衣	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	澤	*zé*	< *dræk*	< **lrak*	B
	師	*shī*	< *srɨj*	< **srjɨj*	A
	戟	*jǐ*	< *kjæk*	< **krjak*	B
	作	*zuò*	< *tsak*	< **tsak*	B
133.3	衣	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	裳	*cháng*	< *dzyang*	< **djang*	B
	師	*shī*	< *srɨj*	< **srjɨj*	A
	兵	*bīng*	< *pjæng*	< **prjang*	B
	行	*xíng*	< *hæng*	< **grang*	B

134 *Qín fēng* 秦風: *Wèi yáng* 渭陽

134.1	陽	*yáng*	< *yang*	< **ljang*	A
	黃	*huáng*	< *hwang*	< **g^{w}ang*	A

134.2	思	*sì*	< *siH*	< **sjis*	A
	佩	[*pèi*]	< *bwojH*	< **bis*	A

135 *Qínfēng* 秦風: *Quán yú* 權輿

135.1	乎	[*hū*]	< *hu*	< **fia*	A
	渠	*qú*	< *gjo*	< **g(r)ja*	A
	餘	*yú*	< *yo*	< **lja*	A
	乎	[*hū*]	< *hu*	< **fia*	A
	輿	*yú*	< *yo*	< **lja*	A
135.2	簋	*guǐ*	< *kwijX*	< **k^{w}rju?*	A
	飽	*bǎo*	< *pæwX*	< **pru?*	A
	乎	[*hū*]	< *hu*	< **fia*	B
	輿	*yú*	< *yo*	< **lja*	B

136 *Chénfēng* 陳風: *Wǎn qiū* 宛丘

136.1	湯	*tāng*	< *thang*	< **hlang*	A
	上	*shàng*	< *dzyangH*	< **djangs*	A
	望	*wàng*	< *mjangH*	< **mjangs*	A
136.2	鼓	*gǔ*	< *kuX*	< **ka?*	A
	下	*xià*	< *hæX*	< **gra?*	A
	夏	*xià*	< *hæX*	< **g/fira?*	A
	羽	*yǔ*	< *hjuX*	< **w(r)ja?*	A
136.3	道	*dào*	< *dawX*	< **lu?*	A
	缶	*fǒu*	< *pjuwX*	< **p(r)ju?*	A
	翿	*dào*	< *dawH*	< **lus*	A

137 *Chénfēng* 陳風: *Dōng mén zhīfén* 東門之枌

137.1	栩	*xǔ*	< *xjuX*	< **hw(r)ja?*	A
	下	*xià*	< *hæX*	< **gra?*	A
137.2	差	*chā*	< *tsrhɛi*	< **tshrjaj*	A
	原	*yuán*	< *ngjwon*	< **ng^{w}jan*	A
	麻	*má*	< *mæ*	< **mraj*	A
	娑	*suō*	< *sa*	< **saj*	A
137.3	逝	*shì*	< *dzyejH*	< **djats*	A
	邁	*mài*	< *mæjH*	< **mrats*	A

	荍	*qiáo*	< [*gjiew*]	< **g(r)jiw*	B
	椒	*jiāo*	< [*tsjew*]	< **tsjiw*	B

138 *Chén fēng* 陳風: *Héng mén* 衡門

138.1	遲	*chí*	< *drij*	< **drjij*	A
	飢	*jī*	< *kij*	< **krjij*	A
138.2	魴	*fáng*	< *bjang*	< **bjang*	A
	姜	*jiāng*	< *kjang*	< **k(l)jang*	A
138.3	鯉	*lǐ*	< *liX*	< **C-rjɨʔ*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A

139 *Chén fēng* 陳風: *Dōng mén zhī chí* 東門之池

139.1	池	*chí*	< *drje*	< **lrjaj*	A
	麻	*má*	< *mæ*	< **mraj*	A
	歌	*gē*	< *ka*	< **kaj*	A
139.2	紵	*zhù*	< *drjoX*	< **drjaʔ*	A
	語	*yǔ*	< *ngjoX*	< **ng(r)jaʔ*	A
139.3	菅	*jiān*	< *kæn*	< **kran*	A
	言	*yán*	< *ngjon*	< **ngjan*	A

140 *Chén fēng* 陳風: *Dōng mén zhī yáng* 東門之楊

140.1	楊	*yáng*	< *yang*	< **ljang*	A
	牂	*zāng*	< *tsang*	< **tsang*	A
	煌	*huáng*	< *hwang*	< **wang*	A
140.2	肺	*pèi*	< *phajH*	< **phots*	A
	晢	[*zhé*]	< *tsyejH*	< **tjats*	A

141 *Chén fēng* 陳風: *Mù mén* 墓門

141.1	斯	*sī*	< *srje*	< **srje*	A
	知	*zhī*	< *trje*	< **trje*	A
	已	*yǐ*	< *yiX*	< **ljɨʔ*	B
	矣	*yǐ*	< *hiX*	< **fijɨʔ*	B
141.2	萃	[*cuì*]	< *dzwijH*	< **dzjups*	A
	誶	*suì*	< *swijH*	< **sjuts*	A

	顧	*gù*	< *kuH*	< **ka?(s)*	B
	予	*yú*	< [*yo*]	< **lja?*	B

142 *Chénfēng* 陳風: *Fáng yǒu què cháo* 防有鵲巢

142.1	巢	*cháo*	< *dzræw*	< **dzraw*	A
	苕	*tiáo*	< *dew*	< **dew*	A
	忉	*dāo*	< *taw*	< **taw*	A
142.2	巂	[*pī*]	< *bek*	< **bek*	A
	鵲	*yì*	< *ngek*	< **ngek*	A
	惕	*tì*	< *thek*	< **hlek*	A

143 *Chénfēng* 陳風: *Yuè chū* 月出

143.1	皎	*jiǎo*	< *kewX*	< **kew?*	A
	僚	*liǎo*	< *lewX*	< **C-rew?*	A
	糾	[*jiū*]	< [*gjewX*]	< **g(r)jiw?*	A
	悄	*qiǎo*	< *tshjewX*	< **tshjew?*	A
143.2	皓	*hào*	< *hawX*	< **gu(k)?*	A
	懰	[*liú*]	< *ljuwX*	< **C-rju?*	A
	受	*shòu*	< *dzyuwX*	< **dju?*	A
	慅	*cǎo*	< *tshawX*	< **tshu?*	A
143.3	照	*zhào*	< *tsyewH*	< **tjaws*	A
	燎	*liào*	< *ljewH*	< **C-rjaws*	A
	紹	*shào*	< *dzyewX*	< **djaw?*	A
	慘	*cǎn*	< *tshomX*	< **srum?*	A

144 *Chénfēng* 陳風: *Zhū lín* 株林

144.1	林	*lín*	< *lim*	< **C-rjim*	A
	南	*nán*	< *nom*	< **nim*	A
	林	*lín*	< *lim*	< **C-rjim*	A
	南	*nán*	< *nom*	< **nim*	A
144.2	馬	*mǎ*	< *mæX*	< **mra?*	A
	野	*yě*	< *yæX*	< **ljA?*	A
	駒	*jū*	< *kju*	< **k(r)jo*	B
	株	*zhū*	< *trju*	< **trjo*	B

145 *Chénfēng* 陳風: *Zé bēi* 澤陂

145.1	陂	*bēi*	< *pje*	< **p(r)jaj*	A
	荷	*hé*	< *ha*	< **gaj*	A
	何	*hé*	< *ha*	< **gaj*	A
	爲	*wéi*	< *hjwe*	< **w(r)jaj*	A
	沱	*tuó*	< *da*	< **laj*	A
145.2	蒲	*jiān*	< *kɛn*	< **krɛn*	A
	卷	*quán*	< *gjwen*	< **g^{w}rjen*	A
	悁	*yuān*	< *ʔjwien*	< **ʔ^{w}jen*	A
145.3	菡	*hàn*	< *homX*	< **gomʔ*	A
	萏	*dàn*	< *domX*	< **(g-)lomʔ*	A
	儼	*yǎn*	< *ngjæmX*	< **ngrjomʔ(?)*	A
	枕	*zhěn*	< *tsyimX*	< **Kjumʔ*	A

146 *Guìfēng* 檜風: *Gāo qiú* 羔裘

146.1	遥	*yáo*	< *yew*	< **ljaw*	A
	朝	*cháo*	< *drjew*	< **fitrjaw*	A
	忉	*dāo*	< *taw*	< **taw*	A
146.2	翔	*xiáng*	< *zjang*	< **z(l)jang*	A
	堂	*táng*	< *dang*	< **dang*	A
	傷	*shāng*	< *syang*	< **hljang*	A
146.3	膏	*gào*	< *kawH*	< **kaws*	A
	曜	*yào*	< *yewH*	< **lja/ewks*	A
	悼	*dào*	< *dawH*	< **dawks*	A

147 *Guìfēng* 檜風: *Sù guān* 素冠

147.1	冠	*guān*	< *kwan*	< **kon*	A
	欒	*luán*	< *lwan*	< **b-ron*	A
	慱	*tuán*	< *dwan*	< **don*	A
147.2	衣	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	悲	*bēi*	< *pij*	< **prjɨj*	A
	歸	*guī*	< *kjwij*	< **k^{w}jɨj*	A
147.3	韠	*bì*	< *pjit*	< **pjit*	A
	結	*jié*	< *ket*	< **kit/k*	A
	一	*yī*	< *ʔjit*	< **ʔjit*	A

148 *Guì fēng* 檜風: *Xí yǒu cháng chǔ* 隰有萇楚

148.1	枝	*zhī*	< *tsye*	< **kje*	A
	知	*zhī*	< *trje*	< **trje*	A
148.2	華	*huā*	< *xwæ*	< **hwra*	A
	家	*jiā*	< *kæ*	< **kra*	A
148.3	實	*shí*	< *zyit*	< **Ljit*	A
	室	*shì*	< *syit*	< **stjit*	A

149 *Guì fēng* 檜風: *Fěi fēng* 匪風

149.1	發	*fā*	< *pjot*	< **pjat*	A
	偈	[*jié*]	< *khjet*	< **khrjat*	A
	怛	*dá*	< *tat*	< **tat*	A
149.2	飄	[*piāo*]	< *bjiew*	< **bjew*	A
	嘌	*piāo*	< *phjiew*	< **phjew*	A
	弔	*diào*	< *tewH*	< **til/ew(k)s*	A
149.3	謐	*xín*	< *zim*	< **zjim*	A
	音	*yīn*	< *ʔim*	< **ʔ(r)jim*	A

150 *Cáo fēng* 曹風: *Fúyóu* 蜉蝣

150.1	羽	*yǔ*	< *hjuX*	< **w(r)jaʔ*	A
	楚	*chǔ*	< *tsrhjoX*	< **tsrhjaʔ*	A
	處	*chǔ*	< *tsyhoX*	< **KHjaʔ*	A
150.2	翼	*yì*	< *yik*	< **ljik*	A
	服	*fú*	< *bjuwk*	< **bjik*	A
	息	*xī*	< *sik*	< **sjik*	A
150.3	閱	*yuè*	< *ywet*	< **ljot*	A
	雪	*xuě*	< *sjwet*	< **sjot*	A
	說	*shuì*	< *sywejH*	< **hljots*	A

151 *Cáo fēng* 曹風: *Hòu rén* 候人

151.1	祋	*duì*	< *twajH*	< **tots*	A
	芾	*fú*	≲ *pjut*	< **pjut*	A
151.2	翼	*yì*	< *yik*	< **ljik*	A
	服	*fú*	*bjuwk*	< **bjik*	A

151.3	咮	*zhòu*	< *trjuwH*	< **trjo(k)s*	A
	媾	*gòu*	< *kuwH*	< **k(r)os*	A
151.4	薈	[*huì*]	< *ʔwajH*	< **ʔops*	A
	蔚	*wèi*	< *ʔjwɨjH*	< **ʔjuts*	A
	隋	*jī*	< *tsej*	< **tsɨj*	B
	婉	[*wǎn*]	< *ʔjwonX*	< **ʔjon?*	C
	孌	[*luán*]	< *ljwenX*	< **b-rjon?*	C
	飢	*jī*	< *kij*	< **krjɨj*	B

152 *Cáofēng* 曹風: *Shījiū* 鳲鳩

152.1	七	*qī*	< *tshit*	< **tshjit*	A
	一	*yī*	< *ʔjit*	< **ʔjit*	A
	一	*yī*	< *ʔjit*	< **ʔjit*	A
	結	*jié*	< *ket*	< **kit/k*	A
152.2	梅	*méi*	< *mwoj*	< **mɨ*	A
	絲	*sī*	< *si*	< **sjɨ*	A
	絲	*sī*	< *si*	< **sjɨ*	A
	騏	*qí*	< *gi*	< **g(r)jɨ*	A
152.3	棘	*jí*	< *kik*	< **krjɨk*	A
	式	*tè*	< *thok*	< **hlɨk*	A
	式	*tè*	< *thok*	< **hlɨk*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	A
152.4	榛	*zhēn*	< *tsrin*	< **tsrjin*	A
	人	*rén*	< *nyin*	< **njin*	A
	人	*rén*	< *nyin*	< **njin*	A
	年	*nián*	< *nen*	< **nin*	A

153 *Cáofēng* 曹風: *Xià quán* 下泉

153.1	泉	*quán*	< *dzjwen*	< **Sg^{w}jan*	A
	稂	*láng*	< *lang*	< **C-rang*	B
	嘆	[*tàn*]	< *than*	< **hnan*	A
	京	*jīng*	< *kjæng*	< **krjang*	B
153.2	泉	*quán*	< *dzjwen*	< **Sg^{w}jan*	A
	蕭	*xiāo*	< *sew*	< **siw*	B
	嘆	[*tàn*]	< *than*	< **hnan*	A
	周	*zhōu*	< *tsyuw*	< **tjiw*	B

153.3	泉	*quán*	< *dzjwen*	< **Sg^{w}jan*	A
	薯	*shī*	< *syij*	< **xjij*	B
	嘆	[*tàn*]	< *than*	< **hnan*	A
	師	*shī*	< *srij*	< **srjij*	B
153.4	膏	*gào*	< *kawH*	< **kaws*	A
	勞	[*láo*]	< *lawH*	< **C-raws*	A

154 *Bīn fēng* 豳風: *Qī yuè* 七月

154.1	火	*huǒ*	< *xwaX*	< **hmij?*	A
	衣	*yī*	< *ʔjij*	< **ʔjij*	A
	發	*fā*	< *pjot*	< **pjat*	B
	烈	*liè*	< *ljet*	< **C-rjat*	B
	褐	*hè*	< *hat*	< **gat*	B
	歲	*suì*	< *sjwejH*	< **swjat(s)*	B
	耜	*sì*	< *ziX*	< **zljɨ?*	C
	趾	*zhǐ*	< *tsyiX*	< **tjɨ?*	C
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	C
	畝	*mǔ*	< *mɯwX*	< **m(r)olɨ?*	C
	喜	*xǐ*	< *xiX*	< **x(r)jɨ?*	C
154.2	火	*huǒ*	< *xwaX*	< **hmɨj?*	A
	衣	*yī*	< *ʔjij*	< **ʔjij*	A
	陽	*yáng*	< *yang*	< **ljang*	B
	庚	*gēng*	< *kæng*	< **krang*	B
	筐	*kuāng*	< *khjwang*	< **k^{w}hjang*	B
	行	*xíng*	< *æng*	< **grang*	B
	桑	*sāng*	< *sang*	< **sang*	B
	遲	*chí*	< *drij*	< **drjɨj*	C
	祁	*qí*	< *gij*	< **grjɨj*	C
	悲	*bēi*	< *pij*	< **prjɨj*	C
	歸	*guī*	< *kjwij*	< **k^{w}jɨj*	C
154.3	火	*huǒ*	< *xwaX*	< **hmɨj?*	A
	葦	*wěi*	< *hjwɨjX*	< **wjɨj?*	A
	桑	*sāng*	< *sang*	< **sang*	B
	斯	*qiāng*	< *tshjang*	< **tshjang*	B
	揚	*yáng*	< *yang*	< **ljang*	B
	桑	*sāng*	< *sang*	< **sang*	B
	鵙	*jú*	< *kwek*	< **k^{w}ek*	C
	績	*jī*	< *tsek*	< **tsek*	C
	黃	*huáng*	< *hwang*	< **g^{w}ang*	D

	陽	*yáng*	< *yang*	< **ljang*	D
	裳	*cháng*	< *dzyang*	< **djang*	D
154.4	蓼	*yāo*	< *ʔjiew*	< **ʔjew*	A
	蜩	*tiáo*	< *dew*	< **diw*	A
	穫	*huò*	< *hwak*	< **wak*	B
	薿	*tuò*	< *thak*	< **hlak*	B
	貉	*hé*	< *hak*	< **gak*	B
	貍	*lí*	< *li*	< **C-rji*	C
	裘	*qiú*	< *gjuw*	< **g^{w}ji*	C
	同	*tóng*	< *duwng*	< **dong*	D
	功	*gōng*	< *kuwng*	< **kong*	D
	豵	*zōng*	< *tsuwng*	< **tsong*	D
	公	*gōng*	< *kuwng*	< **kong*	D
154.5	股	*gǔ*	< *kuX*	< **ka?*	A
	羽	*yǔ*	< *hjuX*	< **w(r)ja?*	A
	野	*yě*	< *yæX*	< **ljA?*	A
	宇	*yǔ*	< *hjuX*	< **w(r)ja?*	A
	戶	*hù*	< *huX*	< **ga?*	A
	下	*xià*	< *hæX*	< **gra?*	A
	鼠	*shǔ*	< *syoX*	< **hja?*	A
	戶	*hù*	< *huX*	< **ga?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
154.6	蔓	*yù*	< *ʔjuwk*	< **ʔ(r)juk*	A
	荼	*shū*	< *syuwk*	< **stjiwk*	A
	棗	*zǎo*	< *tsawX*	< **tsu?*	B
	稻	*dào*	< *dawX*	< **lu?*	B
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	B
	壽	*shòu*	< *dzyuwX*	< **dju?*	B
	瓜	*guā*	< *kwæ*	< **k^{w}ra*	C
	壺	*hú*	< *hu*	< **g/ɦa*	C
	苴	[*jū*]	< *tshjo*	< **tshja*	C
	樗	*chū*	< *trhjo*	< **hlrja* (?)	C
	夫	*fū*	< *pju*	< **p(r)ja*	C
154.7	圃	[*pǔ*]	< *puH*	< **pas*	A
	稼	*jià*	< *kæH*	< **kras*	A
	穋	*lù*	< *ljuwk*	< **C-rjiwk*	B
	麥	*mài*	< *mɛk*	< **mrik*	B
	同	*tóng*	< *duwng*	< **dong*	C
	功	*gōng*	< *kuwng*	< **kong*	C
	茅	*máo*	< *mæw*	< **mru*	D
	綯	*táo*	< *daw*	< **lu*	D

	屋	*wū*	< *ʔuwk*	< **ʔok*	E
	穀	*gǔ*	< *kuwk*	< **kok*	E
154.8	沖	[*chōng*]	< *drjuwng*	< **g-ljung*	A
	陰	*yīn*	< *ʔim*	< **ʔ(r)jum*	A
	蚤	*zǎo*	< *tsawx*	< **tsuʔ*	B
	韭	*jiǔ*	< *kjuwx*	< **k(r)juʔ*	B
	霜	*shuāng*	< *srjang*	< **srjang*	C
	場	*cháng*	< *drjang*	< **g-ljang*	C
	饗	*xiǎng*	< *xjangx*	< **xjangʔ*	C
	羊	*yáng*	< *yang*	< **(l)jang*	C
	堂	*táng*	< *dang*	< **dang*	C
	觥	*gōng*	< *kwæng*	< **k^{w}rang*	C
	彊	*jiāng*	< *kjang*	< **kjang*	C

155 *Bīn fēng* 豳風: *Chīxiāo* 鴟鴞

155.1	恩	*ēn*	< *ʔon*	< **ʔin*	A
	勤	*qín*	< *gjin*	< **gjin*	A
	閔	*mǐn*	< *minx*	< **mrjin(ʔ)*	A
155.2	雨	*yǔ*	< *hjux*	< **w(r)jaʔ*	A
	土	*dù*	< *dux*	< **laʔ*	A
	戶	*hù*	< *hux*	< **gaʔ*	A
	予	*yú*	< [*yo*]	< **ljaʔ*	A
155.3	据	*jū*	< *kjo*	< **k(r)ja*	A
	荼	*tú*	< *du*	< **la*	A
	租	*zū*	< *tsu*	< **tsa*	A
	瘏	*tú*	< *du*	< **da*	A
	家	*jiā*	< *kæ*	< **kra*	A
155.4	譙	*qiáo*	< *dzjew*	< **dzjew*	A
	翛	*xiāo*	< *sew*	< **sliw*	A
	翹	*qiáo*	< *gjiew*	< **gJew*	A
	搖	*yáo*	< *yew*	< **ljaw*	A
	嘵	*xiāo*	< *xew*	< **hngew*	A

156 *Bīn fēng* 豳風: *Dōng shān* 東山

156.1	東	*dōng*	< *tuwng*	< **tong*	A
	濛	*méng*	< *muwng*	< **mong*	A
	歸	*guī*	< *kjwij*	< **k^{w}jij*	B
	悲	*bēi*	< *pij*	< **prjij*	B

	衣	*yī*	< *ʔjij*	< **ʔjij*	B
	枚	*méi*	< *mwoj*	< **mij*	B
	蜮	*zhú*	< *dzyowk*	< **djok*	C
	野	*yě*	< *yæX*	< **ljAʔ*	D
	宿	*sù*	< *sjuwk*	< **sjuk*	C
	下	*xià*	< *hæX*	< **graʔ*	D
156.2	東	*dōng*	< *tuwng*	< **tong*	A
	濛	*méng*	< *muwng*	< **mong*	A
	實	*shí*	< *zyɨt*	< **Ljit*	B
	宇	*yǔ*	< *hjuX*	< **w(r)jaʔ*	C
	室	*shì*	< *syit*	< **stjit*	B
	戶	*hù*	< *huX*	< **gaʔ*	C
	場	*cháng*	< *drjang*	< **g-ljang*	D
	行	*xíng*	< *hæng*	< **grang*	D
	畏	*wèi*	< *ʔjwijH*	< **ʔjuj(s)*	E
	懷	*huái*	< *hwɛj*	< **gruj*	E
156.3	東	*dōng*	< *tuwng*	< **tong*	A
	濛	*méng*	< *muwng*	< **mong*	A
	垤	*dié*	< *det*	< **dit*	B
	室	*shì*	< *syit*	< **stjit*	B
	窒	*zhì*	< *trit*	< **trjit*	B
	至	*zhì*	< *tsyijH*	< **tjits*	B
	薪	*xīn*	< *sin*	< **sjin(g)*	C
	年	*nián*	< *nen*	< **nin*	C
156.4	東	*dōng*	< *tuwng*	< **tong*	A
	濛	*méng*	< *muwng*	< **mong*	A
	飛	*fēi*	< *pjɨj*	< **pjɨj*	B
	羽	*yǔ*	< *hjuX*	< **w(r)jaʔ*	C
	歸	*guī*	< *kjwij*	< **k^{w}jɨj*	B
	馬	*mǎ*	< *mæX*	< **mraʔ*	C
	縭	*lí*	< *lje*	< **C-rjaj*	D
	儀	*yí*	< *ngje*	< **ng(r)jaj*	D
	嘉	*jiā*	< *kæ*	< **kraj*	D
	何	*hé*	< *ha*	< **gaj*	D

157 *Bīn fēng* 豳風: *Pò fǔ* 破斧

157.1	斨	*qiāng*	< *tshjang*	< **tshjang*	A
	皇	*huáng*	< *hwang*	< **wang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A

157.2	錡	*qí*	< *gje*	< **g(r)jaj*	A
	吪	*é*	< *ngwa*	< **ng^{w}aj*	A
	嘉	*jiā*	< *kæ*	< **kraj*	A
157.3	鋦	*qiú*	< *gjuw*	< **g(r)ju*	A
	遒	*qiú*	< *dzjuw*	< **dzju*	A
	休	*xiū*	< *xjuw*	< **x(r)ju*	A

158 *Bīn fēng* 豳風: *Fá kē* 伐柯

158.1	克	*kè*	< *khok*	< **khik*	A
	得	*dé*	< *tok*	< **tik*	A
158.2	遠	*yuǎn*	< *hjwonX*	< **wjan?*	A
	踐	*jiàn*	< *dzjenX*	< **dzjan?*	A

159 *Bīn fēng* 豳風: *Jiǔ yù* 九罭

159.1	魴	*fáng*	< *bjang*	< **bjang*	A
	裳	*cháng*	< *dzyang*	< **djang*	A
159.2	渚	*zhǔ*	< *tsyoX*	< **tja?*	A
	所	*suǒ*	< *srjoX*	< **s(k)rja?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
159.3	陸	*lù*	< *ljuwk*	< **C-rjuk*	A
	復	*fù*	< *bjuwk*	< **b(r)juk*	A
	宿	*sù*	≤ *sjuwk*	< **sjuk*	A
159.4	衣	*yī*	< *ʔjij*	< **ʔjij*	A
	歸	*guī*	< *kjwij*	< **k^{w}jij*	A
	悲	*bēi*	*pij*	< **prjij*	A

160 *Bīn fēng* 豳風: *Láng bá* 狼跋

160.1	胡	*hú*	< *hu*	< **ga*	A
	尾	*wěi*	< *mjijX*	< **mjij?*	B
	膚	*fū*	< *pju*	< **prja*	A
	几	*jǐ*	< *kijX*	< **krjij?*	B
160.2	胡	*hú*	< *hu*	< **ga*	A
	膚	*fū*	< *pju*	< **prja*	A
	瑕	*xiá*	< *hæ*	< **gra*	A

161 *Xiǎo yǎ* 小雅: *Lù míng* 鹿鳴

161.1	鳴	*míng*	< *mjæng*	< **mrjeng*	A
	莘	*píng*	< *bjæng*	< **brjeng*	A
	笙	*shēng*	< *srjæng*	< **srjeng*	A
	簧	*huáng*	< *hwang*	< **g^{w}ang*	B
	將	*jiāng*	< *tsjang*	< **tsjang*	B
	行	*xíng*	< *hæng*	< **grang*	B
161.2	蒿	*hāo*	< *xaw*	< **xaw*	A
	昭	*zhāo*	< *tsyew*	< **tjaw*	A
	恌	*tiāo*	< *thew*	< **hlew*	A
	傚	*xiào*	< *hæwH*	< **graws*	A
	敖	*áo*	< *ngaw*	< **ngaw*	A
161.3	芩	*qín*	< *gim*	< **g(r)jim*	A
	琴	*qín*	< *gim*	< **g(r)jim*	A
	琴	*qín*	< *gim*	< **g(r)jim*	A
	湛	*dān*	< *tom*	< **k-lim*	A
	心	*xīn*	< *sim*	< **sjim*	A

162 *Xiǎo yǎ* 小雅: *Sì mǔ* 四牡

162.1	騑	*fēi*	< *phjɨj*	< **phjɨj*	A
	遲	*chí*	< *drij*	< **drjɨj*	A
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	A
	悲	*bēi*	< *pij*	< **prjɨj*	A
162.2	騑	*fēi*	< *phjɨj*	< **phjɨj*	A
	馬	*mǎ*	< *mæX*	< **mraʔ*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	A
	盬	*gǔ*	< *kuX*	< **kaʔ*	B
	處	*chǔ*	< *tsyhoX*	< **KHjaʔ*	B
162.3	下	*xià*	< *hæX*	< **graʔ*	A
	栩	*xǔ*	< *xjuX*	< **hw(r)jaʔ*	A
	盬	*gǔ*	< *kuX*	< **kaʔ*	A
	父	*fù*	< *bjuX*	< **b(r)jaʔ*	A
162.4	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	杞	*qǐ*	< *khiX*	< **kh(r)jɨʔ*	A
	母	*mǔ*	< *muwX*	< **m(r)o/iʔ*	A
162.5	駸	*qīn*	< *tsrhim*	< **tshrjim*	A
	誫	*shěn*	< *syimX*	< **hnjimʔ*	A

163 *Xiǎo yǎ* 小雅: *Huáng huáng zhě huā* 皇皇者華

163.1	華	*huā*	< *xwæ*	< **hwra*	A
	隰	*xí*	< *zip*	< **zjɨp*	B
	夫	*fū*	< *pju*	< **p(r)ja*	A
	及	*jí*	< *gip*	< **g(r)jɨp*	B
163.2	駒	*jū*	< *kju*	< **k(r)jo*	A
	濡	*rú*	< *nyu*	< **njo*	A
	驅	*qū*	< *khju*	< **kh(r)jo*	A
	諏	[*zōu*]	< *tsju*	< **tsjo*	A
163.3	騏	*qí*	< *gi*	< **g(r)jɨ*	A
	絲	*sī*	< *si*	< **sjɨ*	A
	謀	*móu*	< *mjuw*	< **mjɨ*	A
163.4	駱	*luò*	< *lak*	< **C-rak*	A
	若	*ruò*	< *nyak*	< **njak*	A
	度	*duó*	< *dak*	< **lak*	A
163.5	駰	*yīn*	< *ʔjin*	< **ʔjin*	A
	均	*jūn*	< *kjwin*	< **k^{w}jin*	A
	詢	[*xún*]	< *swin*	< **swjin*	A

164 *Xiǎo yǎ* 小雅: *Cháng dì* 常棣

164.1	韡	*wěi*	< *hjwɨjX*	< **wjɨj?*	A
	弟	*dì*	< *dejX*	< **dɨlij?*	A
164.2	威	*wēi*	< *ʔjwɨj*	< **ʔjuj*	A
	懷	*huái*	< *hwɛj*	< **gruj*	A
	裒	*póu*	< *buw*	< **bU*	B
	求	*qiú*	< *gjuw*	< **grju*	B
164.3	原	*yuán*	< *ngjwon*	< **ng^{w}jan*	A
	難	*nán*	< *nan*	< **nan*	A
	歎	[*tàn*]	< *than*	< **hnan*	A
164.4	務	*wù*	< *mjuH*	< **m(r)jos*	A
	戎	*róng*	< *nyuwng*	< **njung*	A
164.5	平	*píng*	< *bjæng*	< **brjeng*	A
	寧	*níng*	< *neng*	< **neng*	A
	生	*shēng*	< *srjæng*	< **srjeng*	A
164.6	豆	*dòu*	< *duwH*	< **dos*	A
	飫	*yù*	< *ʔjuH*	< **ʔ(r)joks*	A

	具	*jù*	< *gjuH*	< **g(r)jos*	A
	孺	[*rú*]	< *nyuH*	< **njos*	A
164.7	合	*hé*	< *hop*	< **gop*	A
	琴	*qín*	< *gim*	< **g(r)jim*	B
	翕	*xì*	< *xip*	< **x(r)jo/up*	A
	湛	*dān*	< *tom*	< **k-lim*	B
164.8	家	*jiā*	< *kæ*	< **kra*	A
	帑	*nú*	< *nu*	< **na*	A
	圖	*tú*	< *du*	< **d/la*	A
	乎	[*hū*]	< *hu*	< **fia*	A

165 *Xiǎo yǎ* 小雅: *Fá mù* 伐木

165.1	丁	*zhēng*	< *trɛng*	< **treng*	A
	嚶	*yīng*	< *ʔɛng*	< **ʔreng*	A
	谷	*gǔ*	< *kɯwk*	< **kok*	B
	木	*mù*	< *mɯwk*	< **mok*	B
	聲	*shēng*	< *syeng*	< **xjeng*	C
	聲	*shēng*	< *syeng*	< **xjeng*	C
	生	*shēng*	< *srjæng*	< **srjeng*	C
	平	*píng*	< *bjæng*	< **brjeng*	C
165.2	許	*hǔ*	< *xɯX*	< **hnga?*	A
	奠	*xù*	< *zjoX*	< **zlja?*	A
	羜	*zhù*	< *drjoX*	< **drja?*	A
	父	*fù*	< *bjuX*	< **b(r)ja?*	A
	顧	*gù*	< *kɯH*	< **kaʔ(s)*	A
	埽	*sào*	< *sawH*	< **sus*	B
	簋	*guǐ*	< *kwijX*	< **kʷrju?*	B
	牡	*mǔ*	< *mɯwX*	< **m(r)ju?*	B
	舅	*jiù*	< *gjuwX*	< **g(r)ju?*	B
	咎	*jiù*	< *gjuwX*	< **g(r)ju?*	B
165.3	阪	[*bǎn*]	< *pjonX*	< **pjan?*	A
	衍	*yǎn*	< *yenX*	< **ran?*	A
	踐	*jiàn*	< *dzjenX*	< **dzjan?*	A
	遠	*yuǎn*	< *hjwonX*	< **wjan?*	A
	愆	*qiān*	< *khjen*	< **khrjan*	A
	湑	*xǔ*	< *sjoX*	< **sngja?*	B
	酤	[*gū*]	< *huX*	< **ga?*	B
	鼓	*gǔ*	< *kɯX*	< **ka?*	B
	舞	*wǔ*	< *mjuX*	< **m(r)ja?*	B

	暇	[*xiá*]	< *hæH*	< **gras*	B
	湔	*xǔ*	< *sjoX*	< **sngja?*	B

166 *Xiǎo yǎ* 小雅: *Tiān bǎo* 天保

166.1	固	*gù*	< *kuH*	< **kas*	A
	除	*zhù*	< *drjoH*	< **lrjas*	A
	庶	*shù*	< *syoH*	< **stjaks*	A
166.2	穀	*gǔ*	< *kuwk*	< **kok*	A
	祿	*lù*	< *luwk*	< **b-rok*	A
	足	*zú*	< *tsjowk*	< **tsjok*	A
166.3	興	*xīng*	< *xing*	< **x(r)jing*	A
	陵	*líng*	< *ling*	< **b-rjing*	A
	增	*zēng*	< *tsong*	< **tsing*	A
166.4	享	*xiǎng*	< *xjangX*	< **xjang?*	A
	嘗	*cháng*	< *dzyang*	< **djang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	疆	*jiāng*	< *kjang*	< **kjang*	A
166.5	福	*fú*	< *pjuwk*	< **pjik*	A
	食	*shí*	< *zyik*	< **Ljik*	A
	德	*dé*	< *tok*	< **tik*	A
166.6	恆	*gèng*	< *kongH*	< **kings*	A
	升	*shēng*	< *sying*	< **h(l)jing*	A
	壽	*shòu*	< *dzyuwX*	< **dju?*	B
	崩	*bēng*	< *pong*	< **ping*	A
	茂	[*mào*]	< *muwH*	< **m(r)juʔ(s)*	B
	承	*chéng*	< *dzying*	< **djing*	A

167 *Xiǎo yǎ* 小雅: *Cǎi wēi* 采薇

167.1	薇	[*wēi*]	< *mjij*	< **mjij*	A
	作	*zuò*	< *tsak*	< **tsak*	B
	歸	*guī*	< *kjwij*	< **k^{w}jij*	A
	莫	*mù*	< *muH*	< **maks*	B
	家	*jiā*	< *kæ*	< **kra*	C
	故	*gù*	< *kuH*	< **kaʔ(s)*	C
	居	*jū*	< *kjo*	< **k(r)ja*	C
	故	*gù*	< *kuH*	< **kaʔ(s)*	C

167.2	薇	[*wēi*]	< *mjɨj*	< **mjɨj*	A
	柔	*róu*	< *nyuw*	< **nju*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	B
	烈	*liè*	< *ljet*	< **C-rjat*	C
	渴	*kě*	< *khat*	< **khat*	C
	定	*dìng*	< *dengH*	< **dengs*	D
	聘	[*pìn*]	< *phjiengH*	< **phjengs*	D
167.3	薇	[*wēi*]	< *mjɨj*	< **mjɨj*	A
	剛	*gāng*	< *kang*	< **kang*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	A
	陽	*yáng*	< *yang*	< **ljang*	B
	鹽	*gǔ*	< *kɑX*	< **ka?*	C
	處	*chǔ*	< *tsyhoX*	< **KHja?*	C
	疚	*jiù*	< *kjuwH*	< **k^{w}jɨ(k)s*	D
	來	*lái*	< *loj*	< **C-rɨ(k)*	D
167.4	何	*hé*	< *ha*	< **gaj*	A
	華	*huā*	< *xwæ*	< **hwra*	B
	何	*hé*	< *ha*	< **gaj*	A
	車	*jū*	< *kjo*	< **k(r)ja*	B
	駕	*jià*	< *kæH*	< **krajs*	A
	業	*yè*	< *ngjæp*	< **ng(r)jap*	C
	捷	*jié*	< *dzjep*	< **dzjap*	C
167.5	騤	*kuí*	< *gwij*	< **g^{w}rjɨj*	A
	依	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	腓	*féi*	< *bjɨj*	< **bjɨj*	A
	翼	*yì*	< *yik*	< **ljɨk*	B
	服	*fú*	< *bjuwk*	< **bjɨk*	B
	戒	*jiè*	< *kɐjH*	< **krɨk(s)*	B
	棘	*jí*	< *kik*	< **krjɨk*	B
167.6	依	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	霏	*fēi*	< *phjɨj*	< **phjɨj*	A
	遲	*chí*	< *drij*	< **drjɨj*	A
	飢	*jī*	< *kij*	< **krjɨj*	A
	悲	*bēi*	< *pij*	< **prjɨj*	A
	哀	*āi*	< *ʔoj*	< **ʔɨj*	A

168 *Xiǎo yǎ* 小雅: *Chūjū* 出車

168.1	牧	*mù*	< *mjuwk*	< **mjɨk*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A

	載	*zài*	< *tsojH*	< **tsi(k)s*	A
	棘	*jí*	< *kik*	< **krjik*	A
168.2	郊	*jiāo*	< *kæw*	< **kraw*	A
	朓	*zhào*	< *drjewX*	< **drjaw?*	A
	旄	*máo*	< *maw*	< **maw*	A
	旆	[*pèi*]	< *bajH*	< **bots*	B
	瘁	[*cuì*]	< *dzwijH*	< **dzjuts*	B
168.3	方	*fāng*	< *pjang*	< **pjang*	A
	彭	*péng*	< *bæng*	< **brang*	A
	央	[*yāng*]	< *ʔjæng*	< **ʔrjang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	襄	*xiāng*	< *sjang*	< **snjang*	A
168.4	華	*huā*	< *xwæ*	< **hwra*	A
	塗	*tú*	< *du*	< **la*	A
	居	*jū*	< *kjo*	< **k(r)ja*	A
	書	*shū*	< *syo*	< **stja*	A
168.5	蟲	*chóng*	< *drjuwng*	< **lrjung*	A
	螽	*zhōng*	< *tsyuwng*	< **tjung*	A
	仲	*chōng*	< *trhjuwng*	< **kh-ljung*	A
	降	*xiáng*	< *hæwng*	< **fikrung*	A
	戎	*róng*	< *nyuwng*	< **njung*	A
168.6	遲	*chí*	< *drij*	< **drjɨj*	A
	萋	*qī*	< *tshej*	< **tshɨj*	A
	喈	*jiē*	< *kɛj*	< **krɨj*	A
	祁	*qí*	< *gij*	< **grjɨj*	A
	歸	*guī*	< *kjwij*	< **k^{w}jɨj*	A
	夷	*yí*	< *yij*	< **ljɨj*	A

169 *Xiǎo yǎ* 小雅: *Dì dù* 杕杜

169.1	杜	*dù*	< *duX*	< **la?*	A
	實	*shí*	< *zyit*	< **Ljit*	B
	noise	*gǔ*	< *kuX*	< **ka?*	A
	日	*rì*	< *nyit*	< **njit*	B
	陽	*yáng*	< *yang*	< **ljang*	C
	傷	*shāng*	< *syang*	< **hljang*	C
	遑	*huáng*	< *hwang*	< **wang*	C
169.2	杜	*dù*	< *duX*	< **la?*	A
	萋	*qī*	< *tshej*	< **tshɨj*	B
	noise	*gǔ*	< *kuX*	< **ka?*	A

	悲	*bēi*	< *pij*	< **prjɨj*	B
	萋	*qī*	< *tshej*	< **tshɨj*	C
	悲	*bēi*	< *pij*	< **prjɨj*	C
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	C
169.3	杞	*qǐ*	< *khiX*	< **kh(r)jɨʔ*	A
	母	*mǔ*	< *muwX*	< **m(r)oɨʔ*	A
	憚	*chǎn*	< *tsyhenX*	< **thjanʔ*	B
	瘖	*guǎn*	< *kwanX*	< **k^{w}anʔ*	B
	遠	*yuǎn*	< *hjwonX*	< **wjanʔ*	B
169.4	載	*zài*	< *tsojH*	< **tsɨ(k)s*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	疚	*jiù*	< *kjuwH*	< **k^{w}jɨ(k)s*	A
	至	*zhì*	< *tsyijH*	< **tjits*	B
	恤	*xù*	< *swit*	< **swjit*	B
	偕	[*xié*]	< *kɛj*	< **krij(ʔ)*	C
	近	*jìn*	< *gjinX*	< **gjinʔ*	C
	邇	*ěr*	< *nyeX*	< **njɨjʔ*	C

170 *Xiǎo yǎ* 小雅: *Yú lí* 魚麗

170.1	罶	*liǔ*	< *ljuwX*	< **C-rjuʔ*	A
	鱨	*shā*	< *sræ*	< **sCraj*	B
	酒	*jiǔ*	< *tsjuwX*	< **tsjuʔ*	A
	多	*duō*	< *ta*	< **taj*	B
170.2	罶	*liǔ*	< *ljuwX*	< **C-rjuʔ*	A
	鱧	*lǐ*	< *lejX*	< **C-rijʔ*	B
	酒	*jiǔ*	< *tsjuwX*	< **tsjuʔ*	A
	旨	*zhǐ*	< *tsyijX*	< **kjijʔ*	B
170.3	罶	*liǔ*	< *ljuwX*	< **C-rjuʔ*	A
	鯉	*lǐ*	< *liX*	< **C-rɨʔ*	B
	酒	*jiǔ*	< *tsjuwX*	< **tsjuʔ*	A
	有	*yǒu*	< *hjuwX*	< **wjɨʔ*	B
170.4	多	*duō*	< *ta*	< **taj*	A
	嘉	*jiā*	< *kæ*	< **kraj*	A
170.5	旨	*zhǐ*	< *tsyijX*	< **kjijʔ*	A
	偕	[*xié*]	< *kɛj*	< **krij(ʔ)*	A
170.6	有	*yǒu*	< *hjuwX*	< **wjɨʔ*	A
	時	*shí*	< *dzyi*	< **djɨ(ʔ)*	A

171 *Xiǎo yǎ* 小雅: *Nán yǒu jiā yú* 南有嘉魚

171.1	罩	*zhào*	< *træwH*	< **trawks*	A
	樂	*lè*	< *lak*	< **g-rawk*	A
171.2	汕	*shàn*	< *srænH*	< **s(C)r(j)ans*	A
	衎	*kàn*	< *khanH*	< **khans*	A
171.3	橾	*léi*	< *lwij*	< **C-rjuj*	A
	綏	[*suí*]	< *swij*	< **snjuj*	A
171.4	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	又	*yòu*	< *hjuwH*	< **wjɨ(k)s*	A

172 *Xiǎo yǎ* 小雅: *Nán shān yǒu tái* 南山有臺

172.1	臺	*tái*	< *doj*	< **lɨ*	A
	萊	*lái*	< *loj*	< **C-rɨ*	A
	基	*jī*	< *kɨ*	< **k(r)jɨ*	A
	期	[*qī*]	< *gɨ*	< **g(r)jɨ*	A
172.2	桑	*sāng*	< *sang*	< **sang*	A
	楊	*yáng*	< *yang*	< **ljang*	A
	光	*guāng*	< *kwang*	< **k^{w}ang*	A
	疆	*jiāng*	< *kjang*	< **kjang*	A
172.3	杞	*qǐ*	< *khiX*	< **kh(r)jɨʔ*	A
	李	*lǐ*	< *liX*	< **C-rjɨʔ*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	母	*mǔ*	< *muwX*	< **m(r)o/ɨʔ*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	已	*yǐ*	< *yiX*	< **ljɨʔ*	A
172.4	栲	*kǎo*	< *khawX*	< **khuʔ*	A
	杻	*niǔ*	< *nrjuwX*	< **nrjuʔ*	A
	壽	*shòu*	< *dzyuwX*	< **djuʔ*	A
	茂	[*mào*]	< *muwH*	< **m(r)juʔ(s)*	A
172.5	枸	[*jǔ*]	< *gjuX*	< **g(r)joʔ*	A
	楰	[*yú*]	< *yuX*	< **joʔ*	A
	耇	*gǒu*	< *kuwX*	< **k(r)oʔ*	A
	後	*hòu*	< *huwX*	< **ɦ(r)oʔ*	A

173 *Xiǎo yǎ* 小雅: *Lù xiāo* 鹿蕭

173.1	湑	*xǔ*	< *sjoX*	< **sngja?*	A
	鴛	*xiě*	< *sjæX*	< **sjA(k)?*	A
	語	*yǔ*	< *ngjoX*	< **ng(r)ja?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
173.2	瀼	*ráng*	< *nyang*	< **njang*	A
	光	*guāng*	< *kwang*	< **k^{w}ang*	A
	爽	*shuǎng*	< *srjangX*	< **srjang?*	A
	忘	*wàng*	< *mjang(H)*	< **mjang*	A
173.3	泥	*nǐ*	< *nejX*	< **nɨj?*	A
	弟	[*tì*]	< *dejX*	< **dɨj?*	A
	弟	*dì*	< *dejX*	< **dɨl/ij?*	A
	豈	*kǎi*	< *khojX*	< **khɨj?*	A
173.4	濃	*nóng*	< [*nuwng*]	< **nung* (?)	A
	沖	[*chōng*]	< *drjuwng*	< **g-ljung*	A
	雝	*yōng*	< *ʔjowng*	< **ʔ(r)jong*	A
	同	*tóng*	< *duwng*	< **dong*	A

174 *Xiǎo yǎ* 小雅: *Zhàn lù* 湛露

174.1	晞	*xī*	< *xjɨj*	< **xjɨj*	A
	歸	*guī*	< *kjwij*	< **k^{w}jɨj*	A
174.2	草	*cǎo*	< *tshawX*	< **tshu?*	A
	考	*kǎo*	< *khawX*	< **khu?*	A
174.3	棘	*jí*	< *kik*	< **krjɨk*	A
	德	*dé*	< *tok*	< **tɨk*	A
174.4	椅	*yī*	< *ʔje*	< **ʔ(r)jaj*	A
	離	*lí*	< *lje*	< **C-rjaj*	A
	儀	*yí*	< *ngje*	< **ng(r)jaj*	A

175 *Xiǎo yǎ* 小雅: *Tóng gōng* 彤弓

175.1	藏	*cáng*	< *dzang*	< **fitshang*	A
	貺	[*kuàng*]	< *xjwangH*	< **hwjangs*	A
	饗	*xiǎng*	< *xjangX*	< **xjang?*	A
175.2	載	*zài*	< *tsojH*	< **tsɨ(k)s*	A
	喜	*xǐ*	< *xiX*	< **x(r)ji?*	A
	右	*yòu*	< *hjuwX/H*	< **wjɨʔ(s)*	A

175.3	翯	*gāo*	< *kaw*	< **ku*	A
	好	*hào*	< *xawH*	< **xu(ʔ)s*	A
	疇	*chóu*	< *dzyuw*	< **dju*	A

176 *Xiǎo yǎ* 小雅: *Jīng jīng zhě é* 菁菁者莪

176.1	莪	*é*	< *nga*	< **ngaj*	A
	阿	*ē*	< *ʔa*	< **ʔaj*	A
	儀	*yí*	< *ngje*	< **ng(r)jaj*	A
176.2	沚	*zhǐ*	< *tsyix*	< **tjiʔ*	A
	喜	*xǐ*	< *xix*	< **x(r)jiʔ*	A
176.3	陵	*líng*	< *ling*	< **b-rjing*	A
	朋	*péng*	< *bong*	< **bing*	A
176.4	舟	*zhōu*	< *tsyuw*	< **tju*	A
	浮	*fú*	< *bjuw*	< **b(r)ju*	A
	休	*xiū*	< *xjuw*	< **x(r)ju*	A

177 *Xiǎo yǎ* 小雅: *Liù yuè* 六月

177.1	棲	*xī*	< *sej*	< **sij*	A
	飭	*chì*	< *trhik*	< **hrjik*	B
	騏	*kuí*	< *gwij*	< **g^{W}rjij*	A
	服	*fú*	< *bjuwk*	< **bjik*	B
	熾	*chì*	< *tsyhiH*	< **thjik(s)*	B
	急	*jí*	< *kip*	< **k(r)jip*	B
	國	*guó*	< *kwok*	< **k^{W}ik*	B
177.2	則	*zé*	< *tsok*	< **tsik*	A
	服	*fú*	< *bjuwk*	< **bjik*	A
	里	*lǐ*	< *lix*	< **C-rjiʔ*	B
	子	*zǐ*	< *tsix*	< **tsjiʔ*	B
177.3	顒	*yóng*	< *ngjowng*	< **ng(r)jong*	A
	公	*gōng*	< *kuwng*	< **kong*	A
	翼	*yì*	< *yik*	< **ljik*	B
	服	*fú*	< *bjuwk*	< **bjik*	B
	服	*fú*	< *bjuwk*	< **bjik*	B
	國	*guó*	< *kwok*	< **k^{W}ik*	B
177.4	茹	[*rú*]	< *nyoH*	< **njas*	A
	穫	[*huò*]	< *huH*	< **waks*	A
	方	*fāng*	< *pjang*	< **pjang*	B

	陽	*yáng*	< *yang*	< **ljang*	B
	章	*zhāng*	< *tsyang*	< **tjang*	B
	央	[*yāng*]	< *ʔjæng*	< **ʔrjang*	B
	行	*háng*	< *hang*	< **gang*	B
177.5	安	*ān*	< *ʔan*	< **ʔan*	A
	軒	[*xuān*]	< *xjon*	< **xjan*	A
	閑	*xián*	< [*hɛn*]	< **gran*	A
	原	*yuán*	< *ngjwon*	< **ng^{w}jan*	A
	憲	*xiàn*	< *xjonH*	< **xjans*	A
177.6	喜	*xǐ*	< *xiX*	< **x(r)jiʔ*	A
	祉	[*zhǐ*]	< *trhiX*	< **thrjiʔ*	A
	久	*jiǔ*	< *kjuwX*	< **k^{w}jiʔ*	A
	友	*yǒu*	< *hjuwX*	< **wjiʔ*	A
	鯉	*lǐ*	< *liX*	< **C-rjiʔ*	A
	矣	*yǐ*	< *hiX*	< **fijiʔ*	A
	友	*yǒu*	< *hjuwX*	< **wjiʔ*	A

178 *Xiǎo yǎ* 小雅: *Cǎi qǐ* 采芑

178.1	芑	*qǐ*	< *khiX*	< **kh(r)jiʔ*	A
	田	*tián*	< *den*	< **din*	B
	畝	*mǔ*	< *muwX*	< **m(r)o/iʔ*	A
	泄	*lì*	< *lijH*	< **C-rjips*	C
	千	*qiān*	< *tshen*	< **snin*	B
	試	*shì*	< *syiH*	< **hljik(s)*	D
	率	[*shuài*]	< *srwit*	< **srjut*	C
	騏	*qí*	< *gi*	< **g(r)ji*	A
	翼	*yì*	< *yik*	< **ljik*	D
	爽	[*shì*]	< *xik*	< **x(r)jik*	D
	服	*fú*	< *bjuwk*	< **bjik*	D
	革	*gé*	< *kɛk*	< **krik*	D
178.2	田	*tián*	< *den*	< **din*	A
	鄉	*xiāng*	< *xjang*	< **xjang*	B
	泄	*lì*	< *lijH*	< **C-rjips*	C
	千	*qiān*	< *tshen*	< **snin*	A
	央	[*yāng*]	< *ʔjæng*	< **ʔrjang*	B
	率	[*shuài*]	< *srwit*	< **srjut*	C
	衡	*héng*	< *hæng*	< **grang*	B
	瑲	*qiāng*	< *tshjang*	< **tshjang*	B
	皇	*huáng*	< *hwang*	< **wang*	B
	珩	*héng*	< *hæng*	< **grang*	B

178.3	天	*tiān*	< *then*	< **hlin*	A
	粒	*lì*	< *lijH*	< **C-rjips*	B
	千	*qiān*	< *tshen*	< **snin*	A
	率	[*shuài*]	< *srwit*	< **srjut*	B
	鼓	*gǔ*	< *kuX*	< **ka?*	C
	旅	*lǚ*	< *ljoX*	< **g-rja?*	C
	淵	*yuān*	< *ʔwen*	< **ʔʷin*	D
	闐	*tián*	< *den*	< **din*	D
178.4	鼬	*chóu*	< *dzyuw*	< **Gju*	A
	老	*lǎo*	< *lawX*	< **C-ru?*	A
	猶	*yóu*	< *yuw*	< **ju*	A
	醜	*chǒu*	< *tsyhuwX*	< **thju?*	A
	惇	[*tūn*]	< *thwoj*	< **thuj*	B
	雷	*léi*	< *lwoj*	< **C-ruj*	B
	威	*wēi*	< *ʔjwij*	< **ʔjuj*	B

179 *Xiǎo yǎ* 小雅: *Jū gōng* 車攻

179.1	攻	*gōng*	< *kuwng*	< **kong*	A
	同	*tóng*	< *duwng*	< **dong*	A
	龐	*lóng*	< *luwng*	< **b-rong*	A
	東	*dōng*	< *tuwng*	< **tong*	A
179.2	好	*hǎo*	< *xawX*	< **xu?*	A
	阜	*fù*	< *bjuwX*	< **b(r)ju?*	A
	草	*cǎo*	< *tshawX*	< **tshu?*	A
	狩	*shòu*	< *syuwH*	< **stjus*	A
179.3	苗	*miáo*	< *mjew*	< **m(r)jaw*	A
	鷮	*áo*	< *ngaw*	< **ngaw*	A
	旄	*máo*	< *maw*	< **maw*	A
	敖	*áo*	< *ngaw*	< **ngaw*	A
179.4	奕	*yì*	< *yek*	< **jAk*	A
	烏	*xì*	< *sjek*	< **sjAk*	A
	繹	*yì*	< *yek*	< **ljAk*	A
179.5	佽	*cì*	< *tshijH*	< **tshjijs*	A
	調	*tiáo*	< *dew*	< **diw*	B
	同	*tóng*	< *duwng*	< **dong*	B
	柴	*zì*	< *dzjeH*	< **dzjejs*	A
179.6	駕	*jià*	< *kæH*	< **krajs*	A
	猗	[*yī*]	< *ʔjeH*	< **ʔ(r)jajs*	A

	馳	*chí*	< *drje*	< **lrjaj*	A
	破	*pò*	< *phaH*	< **phajs*	A
179.7	蕭	*xiāo*	< *sew*	< **siw*	A
	鳴	*míng*	< *mjæng*	< **mrjeng*	B
	悠	[*yōu*]	< *yuw*	< **ljiw*	A
	旌	*jīng*	< *tsjeng*	< **tsjeng*	B
	驚	*jīng*	< *kjæng*	< **krjeng*	B
	盈	*yíng*	< *yeng*	< **(l)jeng*	B
179.8	征	*zhēng*	< *tsyeng*	< **tjeng*	A
	聲	*shēng*	< *syeng*	< **xjeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A

180 *Xiǎo yǎ* 小雅: *Jírì* 吉日

180.1	戊	[*wù*]	< *muwH*	< **m(r)jus*	A
	禱	*dǎo*	< *tawX*	< **tu?*	A
	好	*hǎo*	< *xawX*	< **xu?*	A
	阜	*fù*	< *bjuwX*	< **b(r)ju?*	A
	阜	*fù*	< *bjuwX*	< **b(r)ju?*	A
	醜	*chǒu*	< *tsyhuwX*	< **thju?*	A
180.2	午	*wǔ*	< *nguX*	< **nga?*	A
	馬	*mǎ*	< *mæX*	< **mra?*	A
	同	*tóng*	< *duwng*	< **dong*	B
	黍	*yǔ*	< *ngjuX*	< **ng^{w}(r)ja?*	A
	從	*cóng*	< *dzjowng*	< **dzjong*	B
	所	*suǒ*	< *srjoX*	< **s(k)rja?*	A
180.3	有	*yǒu*	< *hjuwX*	< **wjɨ?*	A
	俟	*sì*	< *zrix*	< **zrjɨ?*	A
	友	*yǒu*	< *hjuwX*	< **wjɨ?*	A
	右	*yòu*	< *hjuwX/H*	< **wjɨ?(s)*	A
	子	*zǐ*	< *tsix*	< **tsjɨ?*	A
180.4	矢	*shǐ*	< *syijX*	< **hljij?*	A
	兕	*sì*	< *zijX*	< **zjij?*	A
	醴	*lǐ*	< *lejX*	< **C-rij?*	A

181 *Xiǎo yǎ* 小雅: *Hóng yàn* 鴻鴈

181.1	羽	*yǔ*	< *hjuX*	< **w(r)ja?*	A
	野	*yě*	< *yæX*	< **ljA?*	A
	寡	*guǎ*	< *kwæX*	< **k^{w}ra?*	A

181.2	澤	*zé*	< *drǽk*	< **lrak*	A
	作	*zuò*	< *tsak*	< **tsak*	A
	宅	*zhái*	< *drǽk*	< **drak*	A
181.3	勞	*áo*	< *ngaw*	< **ngaw*	A
	勞	*láo*	< *law*	< **C-raw*	A
	驕	*jiāo*	< *kjew*	< **k(r)jaw*	A

182 *Xiǎo yǎ* 小雅: *Tíng liáo* 庭燎

182.1	央	*yāng*	< *ʔjang*	< **ʔjang*	A
	光	*guāng*	< *kwang*	< **k^{w}ang*	A
	將	*qiāng*	< *tshjang*	< **tshjang*	A
182.2	艾	*ài*	< *ngajH*	< **ngats*	A
	晰	[*zhé*]	< *tsyejH*	< **tjats*	A
	噦	*huì*	< *xwajH*	< **hwats*	A
182.3	晨	*chén*	< *dzyin*	< **djin*	A
	煇	*huī*	< *xjwij*	< **hwjij*	A
	旂	*qí*	< *gjij*	< **gjij*	A

183 *Xiǎo yǎ* 小雅: *Miǎn shuǐ* 沔水

183.1	水	*shuǐ*	< *sywijX*	< **h[l]juj?*	A
	海	*hǎi*	< *xojX*	< **hmi?*	B
	隼	*sǔn*	< *swinX*	< **sjun?*	A
	止	*zhǐ*	< *tsyiX*	< **tji?*	B
	弟	*dì*	< *dejX*	< **dil/ij?*	A
	友	*yǒu*	< *hjuwX*	< **wji?*	B
	母	*mǔ*	< *muwX*	< **m(r)o/i?*	B
183.2	水	*shuǐ*	< *sywijX*	< **h[l]juj?*	A
	湯	*shāng*	< *syang*	< **hljang*	B
	隼	*sǔn*	< *swinX*	< **sjun?*	A
	揚	*yáng*	< *yang*	< **ljang*	B
	行	*xíng*	< *hæng*	< **grang*	B
	忘	*wàng*	< *mjang(H)*	< **mjang*	B
183.3	陵	*líng*	< *ling*	< **b-rjing*	A
	懲	*chéng*	< *dring*	< **drjing*	A
	興	*xīng*	< *xing*	< **x(r)jing*	A

184 *Xiǎo yǎ* 小雅: *Hè míng* 鶴鳴

184.1	野	*yě*	< *yæX*	< **ljA?*	A
	渚	*zhǔ*	< *tsyoX*	< **tja?*	A
	園	*yuán*	< *hjwon*	< **wjan*	B
	檀	*tán*	< *dan*	< **dan*	B
	攅	*tuò*	< *thak*	< **hlak*	C
	石	*shí*	< *dzyek*	< **djAk*	C
	錯	*cuò*	< *tshak*	< **tshak*	C
184.2	天	*tiān*	< *then*	< **hlin*	A
	淵	*yuān*	< *ʔwen*	< **ʔʷin*	A
	園	*yuán*	< *hjwon*	< **wjan*	B
	檀	*tán*	< *dan*	< **dan*	B
	穀	*gǔ*	< *kuwk*	< **kok*	C
	玉	*yù*	< *ngjowk*	< **ng(r)jok*	C

185 *Xiǎo yǎ* 小雅: *Qí fù* 祈父

185.1	牙	*yá*	< *ngæ*	< **ngra*	A
	居	*jū*	< *kjo*	< **k(r)ja*	A
185.2	士	*shì*	< *dzriX*	< **fisrji?*	A
	止	*zhǐ*	< *tsyiX*	< **tji?*	A
185.3	聰	*cōng*	< *tshuwng*	< **tshong*	A
	饔	*yōng*	< *ʔjowng*	< **ʔ(r)jong*	A

186 *Xiǎo yǎ* 小雅: *Bái jū* 白駒

186.1	苗	*miáo*	< *mjew*	< **m(r)jaw*	A
	朝	*zhāo*	< *trjew*	< **trjaw*	A
	遥	*yáo*	< *yew*	< **ljaw*	A
186.2	藿	*huò*	< *xwak*	< **hwak*	A
	夕	*xī*	< *zjek*	< **z(l)jAk*	A
	客	*kè*	< *khæk*	< **khrak*	A
186.3	思	*sī*	< *si*	< **sji*	A
	期	[*qī*]	< *gi*	< **g(r)ji*	A
	思	*sī*	< *si*	< **sji*	A
186.4	谷	*gǔ*	< *kuwk*	< **kok*	A
	束	*shù*	< *syowk*	< **hjok*	A
	玉	*yù*	< *ngjowk*	< **ng(r)jok*	A

	音	*yīn*	< *ʔim*	< **ʔ(r)jim*	B
	心	*xīn*	< *sim*	< **sjim*	B

187 *Xiǎo yǎ* 小雅: *Huáng niǎo* 黃鳥

187.1	穀	*gǔ*	< *kuwk*	< **kok*	A
	粟	*sù*	< *sjowk*	< **sjok*	A
	穀	*gǔ*	< *kuwk*	< **kok*	A
	族	*zú*	< *dzuwk*	< **dzok*	A
187.2	桑	*sāng*	< *sang*	< **sang*	A
	梁	*liáng*	< *ljang*	< **C-rjang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	兄	*xiōng*	< *xjwæng*	< **hwrjang*	A
187.3	栩	*xǔ*	< *xjuX*	< **hw(r)jaʔ*	A
	黍	*shǔ*	< *syoX*	< **hjaʔ*	A
	處	*chǔ*	< *tsyhoX*	< **KHjaʔ*	A
	父	*fù*	< *bjuX*	< **b(r)jaʔ*	A

188 *Xiǎo yǎ* 小雅: *Wǒ xíng qí yě* 我行其野

188.1	樗	*chū*	< *trhjo*	< **hlrja* (?)	A
	居	*jū*	< *kjo*	< **k(r)ja*	A
	家	*jiā*	< *kæ*	< **kra*	A
188.2	蓫	[*zhú*]	< *trhjuwk*	< **hlrjiwk*	A
	宿	*sù*	< *sjuwk*	< **sjuk*	A
	畜	*xù*	< *xjuwk*	< **x(r)juk* (?)	A
	復	*fù*	< *bjuwk*	< **b(r)juk*	A
188.3	葍	*fú*	< *pjuwk*	< **pjɨk*	A
	特	[*tè*]	< *dok*	< **dɨk*	A
	富	*fù*	< *pjuwH*	< **pjɨk(s)*	B
	異	*yì*	< *yiH*	< **ljɨks*	B

189 *Xiǎo yǎ* 小雅: *Sīgān* 斯干

189.1	干	*gān*	< *kan*	< **kan*	A
	山	*shān*	< *sren*	< **srjan*	A
	苞	*bǎo*	< *pæw*	< **pru*	B
	茂	[*mào*]	< *muwH*	< **m(r)juʔ(s)*	B

	好	*hào*	< *xawH*	< **xu(ʔ)s*	B
	猶	*yóu*	< *yuw*	< **ju*	B
189.2	祖	*zǔ*	< *tsuX*	< **tsaʔ*	A
	堵	*dǔ*	< *tuX*	< **taʔ*	A
	戶	*hù*	< *huX*	< **gaʔ*	A
	處	*chǔ*	< *tsyhoX*	< **KHjaʔ*	A
	語	*yǔ*	< *ngjoX*	< **ng(r)jaʔ*	A
189.3	閣	*gé*	< *kak*	< **kak*	A
	橐	*tuó*	< *thak*	< **thak*	A
	除	*zhù*	< *drjoH*	< **lrjas*	B
	去	*qù*	< *khjoH*	< **kh(r)jas*	B
	芋	[*yǔ*]	< *xju*	< **hw(r)ja*	B
189.4	翼	*yì*	< *yik*	< **ljik*	A
	棘	*jí*	< *kik*	< **krjik*	A
	革	*gé*	< *kɛk*	< **krik*	A
	飛	*fēi*	< *pjɨj*	< **pjɨj*	B
	躋	*jī*	< *tsej*	< **tsɨj*	B
189.5	庭	*tíng*	< *deng*	< **leng*	A
	楹	*yíng*	< *yeng*	< **(l)jeng*	A
	正	*zhēng*	< *tsyeng*	< **tjeng*	A
	冥	*míng*	< *meng*	< **meng*	A
	寧	*níng*	< *neng*	< **neng*	A
189.6	簟	*diàn*	< *demX*	< **limʔ*	A
	寢	*qǐn*	< *tshimX*	< **tshjimʔ*	A
	興	*xīng*	< *xing*	< **x(r)jing*	B
	夢	*mèng*	< *mjuwng(H)*	< **mjing(s)*	B
	何	*hé*	< *ha*	< **gaj*	C
	羆	[*pí*]	< *pje*	< **p(r)jaj*	C
	蛇	*shé*	< *zyæ*	< **LjAj*	C
189.7	羆	[*pí*]	< *pje*	< **p(r)jaj*	A
	祥	*xiáng*	< *zjang*	< **z(l)jang*	B
	蛇	*shé*	< *zyæ*	< **LjAj*	A
	祥	*xiáng*	< *zjang*	< **z(l)jang*	B
189.8	牀	*chuáng*	< *dzrjang*	< **dzrjang*	A
	裳	*cháng*	< *dzyang*	< **djang*	A
	璋	*zhāng*	< *tsyang*	< **tjang*	A
	喤	[*huáng*]	< *hwæng*	< **wrang*	A
	皇	*huáng*	< *hwang*	< **wang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A

189.9	地	*dì*	< *[dijH]*	< **lrjajs (?)*	A
	裼	*tì*	< *thejH*	< **hleks*	A
	瓦	*wǎ*	< *ngwæX*	< **ng^{w}raj?*	B
	儀	*yí*	< *ngje*	< **ng(r)jaj*	B
	議	*yì*	< *ngjeH*	< **ng(r)jajs*	B
	罹	*lí*	< *lje*	< **C-rjaj*	B

190 *Xiǎo yǎ* 小雅: *Wú yáng* 無羊

190.1	羣	*qún*	< *gjun*	< **gjun*	A
	惇	*rún*	< *nywin*	< **njun*	A
	濈	*jí*	< *tsrip*	< **tsrjiɨlup*	B
	濕	*shī*	< *syip*	< **hjiɨlup*	B
190.2	阿	*ē*	< *ʔa*	< **ʔaj*	A
	池	*chí*	< *drje*	< **lrjaj*	A
	訛	*é*	< *ngwa*	< **ng^{w}aj*	A
	喉	*hóu*	< *huw*	< **g(r)o*	B
	具	*jù*	< *gjuH*	< **g(r)jos*	B
190.3	蒸	*zhēng*	< *tsying*	< **tjiŋ*	A
	雄	*[xióng]*	< *hjuwng*	< **wjiŋ*	A
	兢	*[jīng]*	< *ging*	< **g(r)jiŋ*	A
	崩	*bēng*	< *pong*	< **piŋ*	A
	肱	*gōng*	< *kwong*	< **k^{w}iŋ*	A
	升	*shēng*	< *sying*	< **h(l)jiŋ*	A
190.4	魚	*yú*	< *ngjo*	< **ng(r)ja*	A
	旟	*yú*	< *yo*	< **lja*	A
	魚	*yú*	< *ngjo*	< **ng(r)ja*	A
	年	*nián*	< *nen*	< **nin*	B
	旟	*yú*	< *yo*	< **lja*	A
	溱	*zhēn*	< *tsrin*	< **tsrjin*	B

191 *Xiǎo yǎ* 小雅: *Jié nán shān* 節南山

191.1	巖	*yán*	< *ngæm*	< **ngram*	A
	瞻	*zhān*	< *tsyem*	< **tjam*	A
	倓	*tán*	< *dam*	< **lam*	A
	談	*tán*	< *dam*	< **lam*	A
	斬	*zhǎn*	< *tsɪɛmX*	< **tsrjam?*	A
	監	*jiān*	< *kæm*	< **kram*	A

191.2	猗	*yī*	< *ʔje*	< **ʔ(r)jaj*	A
	何	*hé*	< *ha*	< **gaj*	A
	瘥	*cuó*	< *dza*	< **dzaj*	A
	多	*duō*	< *ta*	< **taj*	A
	嘉	*jiā*	< *kæ*	< **kraj*	A
	嗟	*jiē*	< *tsjæ*	< **tsjAj*	A
191.3	師	*shī*	< *srij*	< **srjij*	A
	氏	*dǐ*	< *tejX*	< **tij?*	A
	均	*jūn*	< *kjwin*	< **k^{w}jin*	B
	維	*wéi*	< *ywij*	< **wjij*	A
	毗	*pí*	< *bjij*	< **bjij*	A
	迷	*mí*	< *mej*	< **mij*	A
	天	*tiān*	< *then*	< **hlin*	B
	師	*shī*	< *srij*	< **srjij*	A
191.4	親	*qīn*	< *tshin*	< **tshjin*	A
	信	*xìn*	< *sinH*	< **snjins*	A
	仕	*shì*	< *dzrix*	< **fisrji?*	B
	子	*zǐ*	< *tsix*	< **tsji?*	B
	已	*yǐ*	< *yix*	< **lji?*	B
	殆	*dài*	< *dojX*	< **li?*	B
	仕	*shì*	< *dzrix*	< **fisrji?*	B
191.5	傭	*chōng*	< *trhjowng*	< **hlrjong*	A
	詾	*xiōng*	< *xjowng*	< **x(r)jong*	A
	惠	*huì*	< *hwejH*	< **wets*	B
	戾	*lì*	< *lejH*	< **C-rets*	B
	屈	*jiè*	< *kɛjH*	< **krets*	B
	閔	*què*	< *khwet*	< **k^{w}hit*	B
	夷	*yí*	< *yij*	< **ljij*	C
	違	*wéi*	< *hjwij*	< **wjij*	C
191.6	定	*dìng*	< *dengH*	< **dengs*	A
	生	*shēng*	< *srjæng*	< **srjeng*	A
	寧	*níng*	< *neng*	< **neng*	A
	酲	*chéng*	< *drjeng*	< **lrjeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
	政	*zhèng*	< *tsyengH*	< **tjengs*	A
	姓	*xìng*	< *sjengH*	< **sjengs*	A
191.7	領	*lǐng*	< *ljengX*	< **C-rjeng?*	A
	騁	*chěng*	< *trhjengX*	< **hlrjeng?*	A
191.8	惡	*è*	< *ʔak*	< **ʔak*	A
	矛	[*máo*]	< *mjuw*	< **m(r)ju*	B

	懌	*yì*	< *yek*	< **ljAk*	A
	疇	*chóu*	< *dzyuw*	< **dju*	B
191.9	平	*píng*	< *bjæng*	< **brjeng*	A
	寧	*níng*	< *neng*	< **neng*	A
	正	*zhèng*	< *tsyengH*	< **tjengs*	A
191.10	誦	*sòng*	< *zjowngH*	< **zljongs*	A
	詾	*xiōng*	< *xjowng*	< **x(r)jong*	A
	邦	*bāng*	< *pæwng*	< **prong*	A

192 *Xiǎo yǎ* 小雅: *Zhēng yuè* 正月

192.1	霜	*shuāng*	< *srjang*	< **srjang*	A
	傷	*shāng*	< *syang*	< **hljang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A
	京	*jīng*	< *kjæng*	< **krjang*	A
	痒	*yáng*	< *yang*	< **(l)jang*	A
192.2	癒	[*yù*]	< *yuX*	< **ljo?*	A
	後	*hòu*	< *huwX*	< **fi(r)o?*	A
	口	*kǒu*	< *khuwX*	< **kh(r)o?*	A
	口	*kǒu*	< *khuwX*	< **kh(r)o?*	A
	愈	[*yù*]	< *yuX*	< **ljo?*	A
	侮	*wǔ*	< *mjuX*	< **m(r)jo?(s)*	A
192.3	祿	*lù*	< *luwk*	< **b-rok*	A
	僕	[*pú*]	< *buwk*	< **bok*	A
	祿	*lù*	< *luwk*	< **b-rok*	A
	屋	*wū*	< *ʔuwk*	< **?ok*	A
192.4	蒸	*zhēng*	< *tsying*	< **tjing*	A
	夢	*mèng*	< *mjuwng(H)*	< **mjing(s)*	A
	勝	*shēng*	< *sying*	< **hljing*	A
	憎	*zēng*	< *tsong*	< **tsing*	A
192.5	陵	*líng*	< *ling*	< **b-rjing*	A
	懲	*chéng*	< *dring*	< **drjing*	A
	夢	*mèng*	< *mjuwng(H)*	< **mjing(s)*	A
	雄	[*xióng*]	< *hjuwng*	< **wjing*	A
192.6	局	*jú*	< *gjowk*	< **fikh(r)jok*	A
	蹐	*jí*	< *tsjek*	< **tsjek*	A
	脊	*jǐ*	< *tsjek*	< **tsjek*	A
	蜴	[*yì*]	< *sek*	< **slek*	A

192.7	特	[tè]	< *dok*	< **dik*	A
	克	kè	< *khok*	< **khik*	A
	則	zé	< *tsok*	< **tsik*	A
	得	dé	< *tok*	< **tik*	A
	力	lì	< *lik*	< **C-rjik*	A
192.8	結	jié	< *ket*	< **kit/k*	A
	厲	lì	< *ljejH*	< **C-rjats*	A
	滅	miè	< *mjiet*	< **mjet*	A
	威	xuē	< *xjwiet*	< **hmjet*	A
192.9	雨	yǔ	< *hjuX*	< **w(r)ja?*	A
	輔	[fǔ]	< *bjuX*	< **b(r)ja?*	A
	予	yú	< [*yo*]	< **lja?*	A
192.10	輻	fú	< *pjuwk*	< **pjik*	A
	載	zài	< *tsojH*	< **tsi(k)s*	A
	意	yì	< *ʔiH*	< **ʔ(r)jiks*	A
192.11	沼	zhǎo	< *tsyewX*	< **tjaw?*	A
	樂	lè	< *lak*	< **g-rawk*	A
	炤	zhāo	< *tsyak*	< **tjawk*	A
	虐	nüè	< *ngjak*	< **ng(r)jawk*	A
192.12	酒	jiǔ	< *tsjuwX*	< **tsju?*	A
	殽	[yáo]	< *hæw*	< **graw*	A
	云	yún	< *hjun*	< **wjin*	B
	慇	yīn	< *ʔjin*	< **ʔjin*	B
192.13	屋	wū	< *ʔuwk*	< **ʔok*	A
	穀	gǔ	< *kuwk*	< **kok*	A
	祿	lù	< *luwk*	< **b-rok*	A
	椓	zhuó	< *træwk*	< **trok*	A
	獨	dú	< *duwk*	< **dok*	A

193 *Xiǎo yǎ* 小雅: *Shí yuè zhī jiāo* 十月之交

193.1	卯	mǎo	< *mæwX*	< **mru?*	A
	醜	chǒu	< *tsyhuwX*	< **thju?*	A
	微	[wēi]	< *mjij*	< **mjij*	B
	微	[wēi]	< *mjij*	< **mjij*	B
	哀	āi	< *ʔoj*	< **ʔij*	B
193.2	行	xíng	< *hæng*	< **grang*	A
	良	liáng	< *ljang*	< **C-rjang*	A
	常	cháng	< *dzyang*	< **djang*	A
	臧	zāng	< *tsang*	< **tsang*	A

193.3	電	*diàn*	< *denH*	< **dins*	A
	令	*lìng*	< *ljeng(H)*	< **C-rjing(s)*	A
	騰	*téng*	< *dong*	< **ling*	B
	崩	*bēng*	< *pong*	< **ping*	B
	陵	*líng*	< *ling*	< **b-rjing*	B
	懲	*chéng*	< *dring*	< **drjing*	B
193.4	士	*shì*	< *dzriX*	< **fisrji?*	A
	徒	*tú*	< *du*	< **da*	B
	宰	*zǎi*	< *tsojX*	< **tsi?*	A
	夫	*fū*	< *pju*	< **p(r)ja*	B
	史	*shǐ*	< *sriX*	< **srji?*	A
	馬	*mǎ*	< *mæX*	< **mra?*	C
	處	*chǔ*	< *tsyhoX*	< **KHja?*	C
193.5	時	*shí*	< *dzyi*	< **dji(?)*	A
	謀	*móu*	< *mjuw*	< **mji*	A
	萊	*lái*	< *loj*	< **C-ri*	A
	矣	*yǐ*	< *hiX*	< **fiji?*	A
193.6	向	[*xiàng*]	< *syangH*	< **hjangs*	A
	藏	*zàng*	< *dzangH*	< **fitshangs*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	向	[*xiàng*]	< *syangH*	< **hjangs*	A
193.7	勞	*láo*	< *law*	< **C-raw*	A
	㬎	*áo*	< *ngaw*	< **ngaw*	A
	天	*tiān*	< *then*	< **hlin*	B
	人	*rén*	< *nyin*	< **njin*	B
193.8	里	*lǐ*	< *liX*	< **C-rji?*	A
	瘁	*mèi*	< *mwojH*	< **miks*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	B
	休	*xiū*	< *xjuw*	< **x(r)ju*	B
	徹	*chè*	< *trhjet*	< **thrjet*	C
	逸	*yì*	< *yit*	< **ljit*	C

194 *Xiǎo yǎ* 小雅: *Yǔ wú zhèng* 雨無正

194.1	德	*dé*	< *tok*	< **tik*	A
	國	*guó*	< *kwok*	< **k^{w}ik*	A
	威	*wēi*	< *ʔjwij*	< **ʔjuj*	B
	圖	*tú*	< *du*	< **dlla*	C
	罪	*zuì*	< *dzwojX*	< **dzuj?*	B
	辜	*gū*	< *ku*	< **ka*	C

	罪	*zuì*	< *dzwojX*	< **dzuj?*	B
	鋪	*pū*	< *phu*	< **pha*	C
194.2	滅	*miè*	< *mjiet*	< **mjet*	A
	戾	*lì*	< *lejH*	< **C-rets*	A
	勩	*yì*	< *yejH*	< **ljeps* (?)	A
	夜	*yè*	< *yæH*	< **(l)jAks*	B
	夕	*xī*	< *zjek*	< **z(l)jAk*	B
	惡	*è*	< *?ak*	< **?ak*	B
194.3	天	*tiān*	< *then*	< **hlin*	A
	信	*xìn*	< *sinH*	< **snjins*	A
	臻	*zhēn*	< *tsrin*	< **tsrjin*	A
	身	*shēn*	< *syin*	< **hljin*	A
	天	*tiān*	< *then*	< **hlin*	A
194.4	退	*tuì*	< *thwojH*	< **hnups*	A
	遂	*suì*	< *zwijH*	< **zjuts*	A
	瘁	[*cuì*]	< *dzwijH*	< **dzjuts*	A
	誶	*suì*	< *swijH*	< **sjuts*	A
	苔	*dá*	< *top*	< **k-lup*	A
	退	*tuì*	< *thwojH*	< **hnups*	A
194.5	出	[*chū*]	< *tsyhwijH*	< **thjuts*	A
	瘁	[*cuì*]	< *dzwijH*	< **dzjuts*	A
	流	*liú*	< *ljuw*	< **C-rju*	B
	休	*xiū*	< *xjuw*	< **x(r)ju*	B
194.6	仕	*shì*	< *dzriX*	< **fisrji?*	A
	殆	*dài*	< *dojX*	< **li?*	A
	使	*shǐ*	< *sriX*	< **srji?*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	A
	使	*shǐ*	< *sriX*	< **srji?*	A
	友	*yǒu*	< *hjuwX*	< **wji?*	A
194.7	都	*dū*	< *tu*	< **ta*	A
	家	*jiā*	< *kæ*	< **kra*	A
	血	*xuè*	< *xwet*	< **hwit*	B
	疾	*jí*	< *dzit*	< **dzjit*	B
	居	*jū*	< *kjo*	< **k(r)ja*	A
	室	*shì*	< *syit*	< **stjit*	B

195 *Xiǎo yǎ* 小雅: *Xiǎo mín* 小旻

195.1	土	*tǔ*	< *thuX*	< **hla?*	A
	沮	[*jǔ*]	< *dzjoX*	< **dzja?*	A

	從	*cóng*	< *dzjowng*	< **dzjong*	B
	用	*yòng*	< *yowngH*	< **ljongs*	B
	邛	*qióng*	< *gjowng*	< **g(r)jong*	B
195.2	哀	*āi*	< *ʔoj*	< **ʔɨj*	A
	違	*wéi*	< *ɦjwɨj*	< **wjɨj*	A
	依	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	底	[*dǐ*]	< *tsyijX*	< **tjij?*	A
195.3	猶	*yóu*	< *yuw*	< **ju*	A
	就	*jiù*	< *dzjuwH*	< **dzjus*	A
	咎	*jiù*	< *gjuwX*	< **g(r)ju?*	A
	道	*dào*	< *dɑwX*	< **lu?*	A
195.4	程	*chéng*	< *drjeng*	< **lrjeng*	A
	經	*jīng*	< *keng*	< **keng*	A
	聽	*tīng*	< *theng*	< **hleng*	A
	爭	*zhēng*	< *tsrɛng*	< **tsr(j)eng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
195.5	止	*zhǐ*	< *tsyiX*	< **tjɨ?*	A
	否	*fǒu*	< *pjuwX*	< **pjɨ?*	A
	無	*wǔ*	< [*mjuX*]	< **m(j)ɨ*	A
	謀	*móu*	< *mjuw*	< **mjɨ*	A
	艾	*yì*	< *ngjojH*	< **ngjats*	B
	敗	*bài*	< *pæjH*	< **prats*	B
195.6	河	*hé*	< *ha*	< **gaj*	A
	他	[*tā*]	< *tha*	< **hlaj*	A
	兢	*jīng*	< *king*	< **k(r)jɨng*	B
	冰	*bīng*	< *ping*	< **prjɨng*	B

196 *Xiǎo yǎ* 小雅: *Xiǎo wǎn* 小宛

196.1	天	*tiān*	< *then*	< **hlin*	A
	人	*rén*	< *nyin*	< **njin*	A
	人	*rén*	< *nyin*	< **njin*	A
196.2	克	*kè*	< *khok*	< **khɨk*	A
	富	*fù*	< *pjuwH*	< **pjɨk(s)*	A
	又	*yòu*	< *ɦjuwH*	< **wjɨ(k)s*	A
196.3	采	*cǎi*	< *tshojX*	< **srɨ(k)?*	A
	負	*fù*	< *bjuwX*	< **ɓjɨ(k)?*	A
	似	*sì*	< *zɨX*	< **zljɨ?*	A

196.4	令	*líng*	< *leng*	< **C-ring*	A
	鳴	*míng*	< *mjæng*	< **mrjeng*	A
	征	*zhēng*	< *tsyeng*	< **tjeng*	A
	生	*shēng*	< *srjæng*	< **srjeng*	A
196.5	扈	*hù*	< *huX*	< **ga?*	A
	粟	*sù*	< *sjowk*	< **sjok*	B
	寡	*guǎ*	< *kwæX*	< **k^{w}ra?*	A
	獄	*yù*	< *ngjowk*	< **ng(r)jok*	B
	卜	*bǔ*	< *puwk*	< **pok*	B
	穀	*gǔ*	< *kuwk*	< **kok*	B
196.6	木	*mù*	< *muwk*	< **mok*	A
	谷	*gǔ*	< *kuwk*	< **kok*	A
	兢	*jīng*	< *king*	< **k(r)jing*	B
	冰	*bīng*	< *ping*	< **prjing*	B

197 *Xiǎo yǎ* 小雅: *Xiǎo pán* 小弁

197.1	斯	*sī*	< *sje*	< **sje*	A
	提	*shí*	< *dzye*	< **dje*	A
	罹	*lí*	< *lje*	< **C-rjaj*	B
	何	*hé*	< *ha*	< **gaj*	B
	何	*hé*	< *ha*	< **gaj*	B
197.2	道	*dào*	< *dawX*	< **lu?*	A
	草	*cǎo*	< *tshawX*	< **tshu?*	A
	擣	*dǎo*	< *tawX*	< **tu?*	A
	老	*lǎo*	< *lawX*	< **C-ru?*	A
	首	*shǒu*	< *syuwX*	< **hlju?*	A
197.3	梓	*zǐ*	< *tsiX*	< **tsji?*	A
	止	*zhǐ*	< *tsyiX*	< **tji?*	A
	母	*mǔ*	< *muwX*	< **m(r)oli?*	A
	裏	*lǐ*	< *liX*	< **C-rji?*	A
	在	*zài*	< *dzojX*	< **dzi?*	A
197.4	噣	*huì*	< *xwejH*	< **hwets*	A
	泲	*pì*	< *phejH*	< **phits*	A
	屆	*jiè*	< *kæjH*	< **krets*	A
	寐	*mèi*	< *mjijH*	< **mjits*	A
197.5	伎	*qí*	< *gje*	< **grje*	A
	雌	*cī*	< *tshje*	< **tshje*	A
	枝	*zhī*	< *tsye*	< **kje*	A
	知	*zhī*	< *trje*	< **trje*	A

197.6	先	*xiān*	< *senH*	< **sins*	A
	墐	*jìn*	< *ginH*	< **grjins*	A
	忍	*rěn*	< *nyinX*	< **njin?*	B
	隕	*yǔn*	< *ʔjunX*	< **ʔʷjin?*	B
197.7	疇	*chóu*	< *dzyuw*	< **dju*	A
	究	[*jiū*]	< *kjuwH*	< **k(r)jus*	A
	掎	*jǐ*	< *kjeX*	< **k(r)jaj?*	B
	扡	*chǐ*	< *trhjeX*	< **hlrjaj?*	B
	佗	[*tuó*]	< *thaH*	< **hlajs*	B
197.8	山	*shān*	< *sren*	< **srjan*	A
	泉	*quán*	< *dzjwen*	< **Sgʷjan*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
	垣	*yuán*	< *hjwon*	< **wjan*	A
	笱	*gǒu*	< *kuwX*	< **k(r)o?*	B
	後	*hòu*	< *huwX*	< **ɦ(r)o?*	B

198 *Xiǎo yǎ* 小雅: *Qiǎo yán* 巧言

198.1	且	[*qiě*]	< *tshjo*	< **tshja*	A
	辜	*gū*	< *ku*	< **ka*	A
	嘽	*hū*	< *xu*	< **hma*	A
	威	*wēi*	< *ʔjwij*	< **ʔjuj*	B
	罪	*zuì*	< *dzwojX*	< **dzuj?*	B
	嘽	*hū*	< *xu*	< **hma*	C
	辜	*gū*	< *ku*	< **ka*	C
198.2	涵	*hán*	< *hom*	< **gom*	A
	讒	*chán*	< *dzrem*	< **dzrjom*	A
	怒	[*nù*]	< *nuX*	< **na?*	B
	沮	[*jǔ*]	< *dzjoX*	< **dzja?*	B
	祉	[*zhǐ*]	< *trhiX*	< **thrji?*	C
	已	*yǐ*	< *yiX*	< **lji?*	C
198.3	盟	[*méng*]	< *mjæng*	< **mrjang*	A
	長	*cháng*	< *drjang*	< **ɦtrjang*	A
	盜	*dào*	< *dawH*	< **daw(k)s*	B
	暴	*bào*	< *bawH*	< **bawks*	B
	甘	*gān*	< *kam*	< **kam*	C
	餤	*tán*	< *dam*	< **lam*	C
	共	*gōng*	< *kjowng*	< **k(r)jong*	D
	邛	*qióng*	< *gjowng*	< **g(r)jong*	D

198.4	作	*zuò*	< *tsak*	< **tsak*	A
	莫	*mò*	< *mak*	< **mak*	A
	度	*duō*	< *dak*	< **lak*	A
	獲	*huò*	< *hwɛk*	< **wrak*	A
198.5	樹	*shù*	< *dzyuH*	< **djos*	A
	數	*shǔ*	< *srjuX*	< **skrjo(k)ʔ*	A
	口	*kǒu*	< *khuwX*	< **kh(r)oʔ*	A
	厚	*hòu*	< *huwX*	< **g(r)oʔ*	A
198.6	麋	*mí*	< *mij*	< **mrjij*	A
	勇	*yǒng*	< *yowngX*	< **ljongʔ*	B
	階	*jiē*	< *kɛj*	< **krij*	A
	矦	[*zhǒng*]	< *dzyowngX*	< **djongʔ*	B
	何	*hé*	< *ha*	< **gaj*	C
	多	*duō*	< *ta*	< **taj*	C
	何	*hé*	< *ha*	< **gaj*	C

199 *Xiǎo yǎ* 小雅: *Hé rén sī* 何人斯

199.1	艱	*jiān*	< *kɛn*	< **krin*	A
	門	*mén*	< *mwon*	< **min*	A
	云	*yún*	< *hjun*	< **wjin*	A
199.2	行	*xíng*	< *hæng*	< **grang*	A
	禍	*huò*	< *hwaX*	< **g^{w}ajʔ*	B
	梁	*liáng*	< *ljang*	< **C-rjang*	A
	我	[*wǒ*]	< *ngaX*	< **ngajʔ*	B
	可	*kě*	< *khaX*	< **khajʔ*	B
199.3	陳	*chén*	< *drin*	< **drjin*	A
	身	*shēn*	< *syin*	< **hljin*	A
	人	*rén*	< *nyin*	< **njin*	A
	天	*tiān*	< *then*	< **hlin*	A
199.4	風	*fēng*	< *pjuwng*	< **p(r)jɨ/um*	A
	南	*nán*	< *nom*	< **nɨm*	A
	心	*xīn*	< *sim*	< **sjim*	A
199.5	舍	*shě*	< *syæX*	< **hljˈA(k)ʔ*	A
	車	*jū*	< *kjo*	< **k(r)ja*	A
	盱	*xū*	< *xju*	< **hw(r)ja*	A
199.6	易	*yì*	< *yeH*	< **ljeks*	A
	知	*zhī*	< *trje*	< **trje*	A
	祇	*qí*	< *gjie*	< **gJe*	A

199.7	壎	[*xūn*]	< *xjwon*	< **xjon*	A
	篪	*chí*	< *drje*	< **lrje*	B
	貫	*guàn*	< *kwanH*	< **kons*	A
	知	*zhī*	< *trje*	< **trje*	B
	斯	*sī*	< *sje*	< **sje*	B
199.8	蜮	*yù*	< *hwok/hwik*	< **w(rj)ik*	A
	得	*dé*	< *tok*	< **tik*	A
	極	*jí*	< *gik*	< **g(r)jik*	A
	側	[*cè*]	< *tsrik*	< **tsrjik*	A

200 *Xiǎo yǎ* 小雅: *Xiàng bó* 巷伯

200.1	萋	*qī*	< *tshej*	< **tshij*	A
	斐	*fěi*	< *phjijX*	< **phjij?*	A
	錦	*jǐn*	< *kimX*	< **k(r)jil/um?*	B
	甚	*shèn*	< *dzyimX*	< **Gjum?*	B
200.2	哆	*chě*	< *tsyhæX*	< **thjAj?*	A
	侈	*chǐ*	< *tsyheX*	< **thjaj?*	A
	箕	*jī*	< *ki*	< **k(r)ji*	B
	謀	*móu*	< *mjuw*	< **mji*	B
200.3	翩	*piān*	< *ph(ji)en*	< **phin*	A
	人	*rén*	< *nyin*	< **njin*	A
	信	*xìn*	< *sinH*	< **snjins*	A
200.4	幡	*fān*	< *phjon*	< **phjan*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
	遷	*qiān*	< *tshjen*	< **tshjan*	A
200.5	好	*hǎo*	< *xawX*	< **xu?*	A
	草	*cǎo*	< *tshawX*	< **tshu?*	A
	天	*tiān*	< *then*	< **hlin*	B
	人	*rén*	< *nyin*	< **njin*	B
	人	*rén*	< *nyin*	< **njin*	B
200.6	食	*shí*	< *zyik*	< **Ljik*	A
	北	*běi*	< *pok*	< **pik*	A
	受	*shòu*	< *dzyuwX*	< **dju?*	B
	昊	*hào*	< *hawX*	< **gu?*	B
200.7	丘	*qiū*	< *khjuw*	< **k^{w}hji*	A
	詩	*shī*	< *syi*	< **stji*	A
	之	*zhī*	< *tsyi*	< **tji*	A

201 *Xiǎo yǎ* 小雅: *Gǔ fēng* 谷風

201.1	雨	*yǔ*	< *hjuX*	< **w(r)jaʔ*	A
	女	*rǔ*	< *nyoX*	< **njaʔ*	A
	予	*yú*	< [*yo*]	< **ljaʔ*	A
201.2	頹	*tuí*	< *dwoj*	< **dlluj*	A
	懷	*huái*	< *hwɛj*	< **gruj*	A
	遺	*yí*	< *ywij*	< **ljuj*	A
201.3	崔	[*cuī*]	< *dzwoj*	< **Sduj*	A
	嵬	*wéi*	< *ngwoj*	< **nguj*	A
	萎	[*wěi*]	< *ʔjwe*	< **ʔ(r)joj*	A
	怨	*yuàn*	< *ʔjwonH*	< **ʔjons*	A

202 *Xiǎo yǎ* 小雅: *Lù é* 蓼莪

202.1	蒿	*hāo*	< *xaw*	< **xaw*	A
	勞	*láo*	< *law*	< **C-raw*	A
202.2	蔚	*wèi*	< *ʔjwijH*	< **ʔjuts*	A
	瘁	[*cuì*]	< *dzwijH*	< **dzjuts*	A
202.3	恥	*chǐ*	< *trhiX*	< **hnrjiʔ*	A
	久	*jiǔ*	< *kjuwX*	< **k^{w}jiʔ*	A
	恃	*shì*	< *dzyiX*	< **djiʔ*	A
	恤	*xù*	< *swit*	< **swjit*	B
	至	*zhì*	< *tsyijH*	< **tjits*	B
202.4	鞠	*jū*	< *kjuwk*	< **k(r)juk*	A
	畜	*xù*	< *xjuwk*	< **x(r)juk* (?)	A
	育	*yù*	< *yuwk*	< **ljuk*	A
	復	*fù*	< *bjuwk*	< **b(r)juk*	A
	腹	*fù*	< *pjuwk*	< **p(r)juk*	A
	德	*dé*	< *tok*	< **tik*	B
	極	*jí*	< *gik*	< **g(r)jik*	B
202.5	烈	*liè*	< *ljet*	< **C-rjat*	A
	發	*fā*	< *pjot*	< **pjat*	A
	害	*hài*	< *hajH*	< **fikat(s)*	A
202.6	律	*lǜ*	< *lwit*	< **b-rjut*	A
	弗	*fú*	< *pjut*	< **pjut*	A
	卒	*zú*	< *tswit*	< **Stjut*	A

203 *Xiǎo yǎ* 小雅: *Dà dōng* 大東

203.1	匕	*bǐ*	< *pjijX*	< **pjij?*	A
	砥	[*dǐ*]	< *tsyijX*	< **tjij?*	A
	矢	*shǐ*	< *syijX*	< **hljij?*	A
	履	[*lǚ*]	< *lijX*	< **C-rjij?*	A
	視	*shì*	< *dzyijX/H*	< **gjij?s*	A
	涕	[*tì*]	< *thejX*	< **thij?*	A
203.2	東	*dōng*	< *tuwng*	< **tong*	A
	空	*kōng*	< *khuwng*	< **khong*	A
	霜	*shuāng*	< *srjang*	< **srjang*	B
	行	*háng*	< *hang*	< **gang*	B
	來	*lái*	< *loj*	< **C-ri(k)*	C
	疚	*jiù*	< *kjuwH*	< **k^{w}ji(k)s*	C
203.3	泉	*quán*	< *dzjwen*	< **Sg^{w}jan*	A
	薪	*xīn*	< *sin*	< **sjin(g)*	B
	歎	*tàn*	< *thanH*	< **hnans*	A
	人	*rén*	< *nyin*	< **njin*	B
	薪	*xīn*	< *sin*	< **sjin(g)*	B
	載	*zài*	< *tsojH*	< **tsɨ(k)s*	C
	人	*rén*	< *nyin*	< **njin*	B
	息	*xī*	< *sik*	< **sjik*	C
203.4	來	*lái*	< *loj*	< **C-ri(k)*	A
	服	*fú*	< *bjuwk*	< **bjɨk*	A
	裘	*qiú*	< *gjuw*	< **g^{w}jɨ*	A
	試	*shì*	< *syiH*	< **hljɨk(s)*	A
203.5	漿	*jiāng*	< *tsjang*	< **tsjang*	A
	長	*cháng*	< *drjang*	< **fitrjang*	A
	光	*guāng*	< *kwang*	< **k^{w}ang*	A
	襄	*xiāng*	< *sjang*	< **snjang*	A
203.6	襄	*xiāng*	< *sjang*	< **snjang*	A
	章	*zhāng*	< *tsyang*	< **tjang*	A
	箱	*xiāng*	< *sjang*	< **sjang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	庚	*gēng*	< *kæng*	< **krang*	A
	行	*háng*	< *hang*	< **gang*	A
203.7	揚	*yáng*	< *yang*	< **ljang*	A
	漿	*jiāng*	< *tsjang*	< **tsjang*	A
	舌	*shé*	< *zyet*	< **Ljat*	B
	揭	*jiē*	< *kjot*	< **kjat*	B

204 *Xiǎo yǎ* 小雅: *Sìyuè* 四月

204.1	夏	*xià*	< *hæX*	< **g/fira?*	A
	暑	*shǔ*	< *syoX*	< **stja?*	A
	予	*yú*	< [*yo*]	< **lja?*	A
204.2	淒	*qī*	< *tshej*	< **tshɨj*	A
	腓	*féi*	< *bjɨj*	< **bjɨj*	A
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	A
204.3	烈	*liè*	< *ljet*	< **C-rjat*	A
	發	*fā*	< *pjot*	< **pjat*	A
	害	*hài*	< *hajH*	< **fikat(s)*	A
204.4	梅	*méi*	< *mwoj*	< **mɨ*	A
	尤	*yóu*	< *hjuw*	< **wjɨ*	A
204.5	濁	*zhuó*	< *dræwk*	< **drok*	A
	穀	*gǔ*	< *kuwk*	< **kok*	A
204.6	紀	[*jǐ*]	< *kiX*	< **k(r)jɨ?*	A
	仕	*shì*	< *dzriX*	< **fisrjɨ?*	A
	有	*yǒu*	< *hjuwX*	< **wjɨ?*	A
204.7	天	*tiān*	< *then*	< **hlin*	A
	淵	*yuān*	< *ʔwen*	< **ʔ^{w}in*	A
204.8	薇	[*wēi*]	< *mjɨj*	< **mjɨj*	A
	棲	*yí*	< *yij*	< **ljɨj*	A
	哀	*āi*	< *ʔoj*	< **ʔɨj*	A

205 *Xiǎo yǎ* 小雅: *Běi shān* 北山

205.1	杞	*qǐ*	< *khiX*	< **kh(r)jɨ?*	A
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	A
	事	*shì*	< *dzri*	< **fisrjɨʔ(s)*	A
	母	*mǔ*	< *muwX*	< **m(r)o/ɨ?*	A
205.2	下	*xià*	< *hæX*	< **gra?*	A
	土	*tǔ*	< *thuX*	< **hla?*	A
	濱	*bīn*	< *pjin*	< **pjin*	B
	臣	*chén*	< *dzyin*	< **gjin*	B
	均	*jūn*	< *kjwin*	< **k^{w}jin*	B
	賢	*xián*	< *hen*	< **gin*	B
205.3	彭	*bāng*	< *pang*	< **pang*	A
	傍	[*páng*]	< *pæng*	< **prang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A

	剛	*gāng*	< *kang*	< **kang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
205.4	息	*xī*	< *sik*	< **sjɨk*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	A
	牀	*chuáng*	< *dzrjang*	< **dzrjang*	B
	行	*xíng*	< *hæng*	< **grang*	B
205.5	號	*hào*	< *hawH*	< **gaws*	A
	勞	*láo*	< *law*	< **C-raw*	A
	仰	*yǎng*	< *ngjangX*	< **ngjang?*	B
	掌	*zhǎng*	< *tsyangX*	< **tjang?*	B
205.6	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	咎	*jiù*	< *gjuwX*	< **g(r)ju?*	A
	議	*yì*	< *ngjeH*	< **ng(r)jajs*	B
	爲	*wéi*	< *hjwe*	< **w(r)jaj*	B

206 *Xiǎo yǎ* 小雅: *Wú jiāng dà jū* 無將大車

206.1	塵	*chén*	< *drin*	< **drjɨn*	A
	疧	*qí*	< *gjie*	< **gJe*	A
206.2	冥	*míng*	< *meng*	< **meng*	A
	熲	*jiǒng*	< *kwengX*	< **k^{w}eng?*	A
206.3	雍	[*yōng*]	< *ʔjowngX*	< **ʔ(r)jong?*	A
	重	*chóng*	< *drjowng*	< **drjong*	A

207 *Xiǎo yǎ* 小雅: *Xiǎo míng* 小明

207.1	土	*tǔ*	< *thuX*	< **hla?*	A
	野	*yě*	< *yæX*	< **ljA?*	A
	暑	*shǔ*	< *syoX*	< **stja?*	A
	苦	*kǔ*	< *khuX*	< **kha?*	A
	雨	*yǔ*	< *hjuX*	< **w(r)ja?*	A
	罟	*gǔ*	< *kuX*	< **ka?*	A
207.2	除	*zhù*	< *drjoH*	< **lrjas*	A
	莫	*mù*	< *muH*	< **maks*	A
	庶	*shù*	< *syoH*	< **stjaks*	A
	暇	[*xiá*]	< *hæH*	< **gras*	A
	顧	*gù*	< *kuH*	< **ka?(s)*	A
	怒	*nù*	< *nuH*	< **nas*	A

207.3	奧	*yù*	< *ʔjuwk*	< **ʔ(r)juk*	A
	蹙	*[cù]*	< *tsjuwk*	< **Stjiwk*	A
	菽	*shū*	< *syuwk*	< **stjiwk*	A
	戚	*qī*	< *tshek*	< **Sthiwk*	A
	宿	*sù*	< *sjuwk*	< **sjuk*	A
	覆	*fù*	< *phjuwk*	< **ph(r)juk*	A
207.4	處	*chù*	< *tsyhoH*	< **KHjas*	A
	與	*yǔ*	< *yoX*	< **lja?*	A
	女	*rǔ*	< *nyoX*	< **nja?*	A
207.5	息	*xī*	< *sik*	< **sjik*	A
	直	*zhí*	< *drik*	< **drjik*	A
	福	*fú*	< *pjuwk*	< **pjik*	A

208 *Xiǎo yǎ* 小雅: *Gǔ zhōng* 鼓鐘

208.1	將	*qiāng*	< *tshjang*	< **tshjang*	A
	湯	*shāng*	< *syang*	< **hljang*	A
	傷	*shāng*	< *syang*	< **hljang*	A
	忘	*wàng*	< *mjang(H)*	< **mjang*	A
208.2	喈	*jiē*	< *kɛj*	< **krij*	A
	湝	*[jiē]*	< *hɛj*	< **grij*	A
	悲	*bēi*	< *pij*	< **prjij*	A
	回	*huí*	< *hwoj*	< **wij*	A
208.3	鼛	*gāo*	< *kaw*	< **ku*	A
	洲	*zhōu*	< *tsyuw*	< **tju*	A
	妯	*chōu*	< *trhjuw*	< **hlrju*	A
	猶	*yóu*	< *yuw*	< **ju*	A
208.4	欽	*qīn*	< *khim*	< **kh(r)jim*	A
	琴	*qín*	< *gim*	< **g(r)jim*	A
	音	*yīn*	< *ʔim*	< **ʔ(r)jim*	A
	南	*nán*	< *nom*	< **nim*	A
	僭	*jiàn*	< *ts(h)emH*	< **ts(h)il/ims*	A

209 *Xiǎo yǎ* 小雅: *Chǔ cí* 楚茨

209.1	棘	*jí*	< *kik*	< **krjik*	A
	稷	*jì*	< *tsik*	< **tsjik*	A
	翼	*yì*	< *yik*	< **ljik*	A
	億	*yì*	< *ʔik*	< **ʔ(r)jik*	A
	食	*shí*	< *zyik*	< **Ljik*	A

	祀	*sì*	< *ziX*	< **zjɨk(ʔ)*	A
	侑	*yòu*	< *hjuwH*	< **wjɨ(k)s*	A
	福	*fú*	< *pjuwk*	< **pjɨk*	A
209.2	蹌	*qiāng*	< *tshjang*	< **tshjang*	A
	羊	*yáng*	< *yang*	< **(l)jang*	A
	嘗	*cháng*	< *dzyang*	< **djang*	A
	亨	*pēng*	< *phæng*	< **phrang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A
	祊	*bēng*	< *pæng*	< **prang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	皇	*huáng*	< *hwang*	< **wang*	A
	饗	*xiǎng*	< *xjangX*	< **xjangʔ*	A
	慶	*qìng*	< *khjængH*	< **khrjang(s)*	
	疆	*jiāng*	< *kjang*	< **kjang*	
209.3	踖	*[jí]*	< *tshjek*	< **tshjAk*	A
	碩	*shuò*	< *dzyek*	< **djAk*	A
	炙	*zhì*	< *tsyæH*	< **tjAks*	A
	莫	*mò*	< *[mɛk]*	< **mrak*	A
	庶	*shù*	< *syoH*	< **stjaks*	A
	客	*kè*	< *khæk*	< **khrak*	A
	錯	*cuò*	< *tshak*	< **tshak*	A
	度	*dù*	< *duH*	< **laks*	A
	獲	*huò*	< *hwɛk*	< **wrak*	A
	格	*gé*	< *kæk*	< **krak*	A
	酢	*zuò*	< *dzak*	< **dzak*	A
209.4	僎	*[nǎn]*	< *nyenX*	< **njanʔ*	A
	愆	*qiān*	< *khjen*	< **khrjan*	A
	孫	*sūn*	< *swon*	< **sun*	A
	祀	*sì*	< *ziX*	< **zjɨk(ʔ)*	B
	食	*shí*	< *zyik*	< **Ljɨk*	B
	福	*fú*	< *pjuwk*	< **pjɨk*	B
	式	*shì*	< *syik*	< **hljɨk*	B
	稷	*jì*	< *tsik*	< **tsjɨk*	B
	極	*jí*	< *gik*	< **g(r)jɨk*	B
	億	*yì*	< *ʔik*	< **ʔ(r)jɨk*	B
209.5	備	*bèi*	< *bijH*	< **brjɨks*	A
	戒	*jiè*	< *kɛjH*	< **krɨk(s)*	A
	告	*gào*	< *kawH*	< **kuks*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	B
	起	*qǐ*	< *khiX*	< **kh(r)jɨʔ*	B
	尸	*shī*	< *syij*	< **hljɨj*	C

	歸	*guī*	< *kjwij*	< *k^{w}jij*	C
	遲	*chí*	< *drij*	< *drɨj*	C
	弟	*dì*	< *dejX*	< *dɨ/lij?*	C
	私	*sī*	< *sij*	< *sɨj*	C
209.6	奏	*zòu*	< *t uwH*	< *tso(k)s*	A
	祿	*lù*	< *luwk*	< *b-rok*	A
	將	*jiāng*	< *tsjang*	< *tsjang*	B
	慶	*qìng*	< *khjængH*	< *khrjang(s)*	B
	飽	*bǎo*	< *pæwX*	< *pru?*	C
	首	*shǒu*	< *syuwX*	< *hlju?*	C
	考	*kǎo*	< *khawX*	< *khu?*	C
	盡	*jìn*	< *dzinX*	< *dzjin?*	D
	引	*yǐn*	< *yinX*	< *ljin?*	D

210 *Xiǎo yǎ* 小雅: *Xìn nán shān* 信南山

210.1	甸	*diàn*	< *denH*	< **dins*	A
	田	*tián*	< *den*	< **din*	A
	理	*lǐ*	< *liX*	< **C-rjɨ?*	B
	畝	*mǔ*	< *muwX*	< **m(r)o/ɨ?*	B
210.2	雲	*yún*	< *hjun*	< **wjɨn*	A
	雱	*fēn*	< *phjun*	< **phjɨn*	A
	霂	*mù*	< *muwk*	< **mok*	B
	渥	*wò*	< *ʔæwk*	< **ʔrok*	B
	足	*zú*	< *tsjowk*	< **tsjok*	B
	穀	*gǔ*	< *kuwk*	< **kok*	B
210.3	翼	*yì*	< *yik*	< **ljɨk*	A
	彧	*yù*	< *ʔjuwk*	< **ʔ^{w}jɨk*	A
	穡	*sè*	< *srik*	< **srjɨk*	A
	食	*shí*	< *zyik*	< **Ljɨk*	A
	賓	*bīn*	< *pjin*	< **pjin*	B
	年	*nián*	< *nen*	< **nin*	B
210.4	瓜	[*lú*]	< *ljo*	< **C-rja*	A
	瓞	*guā*	< *kwæ*	< **k^{w}ra*	A
	菹	*zū*	< *tsrjo*	< **tsrja*	A
	祖	*zǔ*	< *tsuX*	< **tsa?*	A
	胡	*hú*	< *huX*	< **ga?*	A
210.5	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	牡	*mǔ*	< *muwX*	< **m(r)ju?*	A
	考	*kǎo*	< *khawX*	< **khu?*	A

	刀	*dāo*	< *taw*	< **taw*	B
	毛	*máo*	< *maw*	< **maw*	B
	膋	*liáo*	< *lew*	< **C-rew*	B
210.6	享	*xiǎng*	< *xjangX*	< **xjang?*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	皇	*huáng*	< *hwang*	< **wang*	A
	彊	*jiāng*	< *kjang*	< **kjang*	A

211 *Xiǎo yǎ* 小雅: *Fǔ tián* 甫田

211.1	田	*tián*	< *den*	< **din*	A
	千	*qiān*	< *tshen*	< **snin*	A
	陳	*chén*	< *drin*	< **drjin*	A
	人	*rén*	< *nyin*	< **njin*	A
	年	*nián*	< *nen*	< **nin*	A
	畝	*mǔ*	< *muwX*	< **m(r)o/i?*	B
	耔	*zǐ*	< *tsiX*	< **tsji?*	B
	薿	*nǐ*	< *ngiX*	< **ng(r)ji(k)?*	B
	止	*zhǐ*	< *tsyiX*	< **tji?*	B
	士	*shì*	< *dzriX*	< **fisrji?*	B
211.2	明	*míng*	< *mjæng*	< **mrjang*	A
	羊	*yáng*	< *yang*	< **(l)jang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	臧	*zāng*	< *tsang*	< **tsang*	A
	慶	*qìng*	< *khjængH*	< **khrjang(s)*	A
	鼓	*gǔ*	< *kuX*	< **ka?*	B
	祖	*zǔ*	< *tsuX*	< **tsa?*	B
	雨	*yǔ*	< *hjuX*	< **w(r)ja?*	B
	黍	*shǔ*	< *syoX*	< **hja?*	B
	女	*nǚ*	< *nrjoX*	< **nrja?*	B
211.3	止	*zhǐ*	< *tsyiX*	< **tji?*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	A
	畝	*mǔ*	< *muwX*	< **m(r)o/i?*	A
	喜	*xǐ*	< *xiX*	< **x(r)ji?*	A
	右	*yòu*	< *hjuwX/H*	< **wji?(s)*	A
	否	*fǒu*	< *pjuwX*	< **pji?*	A
	畝	*mǔ*	< *muwX*	< **m(r)o/i?*	A
	有	*yǒu*	< *hjuwX*	< **wji?*	A
	敏	*mǐn*	< *minX*	< **mrji(n)?*	A
211.4	梁	*liáng*	< *ljang*	< **C-rjang*	A
	京	*jīng*	< *kjæng*	< **krjang*	A

倉	*cāng*	< *tshang*	< **tshang*	A
箱	*xiāng*	< *sjang*	< **sjang*	A
粱	*liáng*	< *ljang*	< **C-rjang*	A
慶	*qìng*	< *khjængH*	< **khrjang(s)*	A
疆	*jiāng*	< *kjang*	< **kjang*	A

212 *Xiǎo yǎ* 小雅: *Dà tián* 大田

212.1	戒	*jiè*	< *kɛjH*	< **krɨk(s)*	A
	事	*shì*	< *dzriH*	< **fisrjɨʔ(s)*	A
	耜	*sì*	< *ziX*	< **zljɨʔ*	A
	畝	*mǔ*	< *muwX*	< **m(r)o/ɨʔ*	A
	碩	*shuò*	< *dzyek*	< **djAk*	B
	若	*ruò*	< *nyak*	< **njak*	B
212.2	皂	*zào*	< *dzawX*	< **dzuʔ*	A
	好	*hǎo*	< *xawX*	< **xuʔ*	A
	莠	*yǒu*	< *yuwX*	< **ljuʔ*	A
	螣	[*tè*]	< *dok*	< **lɨk*	B
	賊	*zéi*	< *dzok*	< **dzɨk*	B
	穉	*zhì*	< *drijH*	< **drjɨjs*	C
	火	*huǒ*	< *xwaX*	< **hmɨjʔ*	C
212.3	萋	*qī*	< *tshej*	< **tshɨj*	A
	祁	*qí*	< *gij*	< **grjɨj*	A
	私	*sī*	< *sij*	< **sjɨj*	A
	穉	*zhì*	< *drijH*	< **drjɨjs*	B
	穧	*jì*	< *dzejH*	< **dzɨjs*	B
	穗	*suì*	< *zwijH*	< **fiswjɨts* (?)	C
	利	*lì*	< *lijH*	< **C-rjɨj/ts*	C
212.4	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	子	*zǐ*	< *tsɨX*	< **tsjɨʔ*	A
	畝	*mǔ*	< *muwX*	< **m(r)o/ɨʔ*	A
	喜	*xǐ*	< *xiX*	< **x(r)jɨʔ*	A
	祀	*sì*	< *ziX*	< **zjɨk(?)*	B
	黑	*hēi*	< *xok*	< **hmɨk*	B
	稷	*jì*	< *tsik*	< **tsjɨk*	B
	祀	*sì*	< *ziX*	< **zjɨk(?)*	B
	福	*fú*	< *pjuwk*	< **pjɨk*	B

213 *Xiǎo yǎ* 小雅: *Zhān bǐ luò yǐ* 瞻彼洛矣

213.1	矣	*yǐ*	< *hiX*	< **fiji?*	A
	止	*zhǐ*	< *tsyiX*	< **tji?*	A
	茨	*cí*	< *dzij*	< **dzjij*	B
	師	*shī*	< *srij*	< **srjij*	B
213.2	矣	*yǐ*	< *hiX*	< **fiji?*	A
	止	*zhǐ*	< *tsyiX*	< **tji?*	A
	瑟	*bì*	< *pjit*	< **pjit*	B
	室	*shì*	< *syit*	< **stjit*	B
213.3	矣	*yǐ*	< *hiX*	< **fiji?*	A
	止	*zhǐ*	< *tsyiX*	< **tji?*	A
	同	*tóng*	< *duwng*	< **dong*	B
	邦	*bāng*	< *pæwng*	< **prong*	B

214 *Xiǎo yǎ* 小雅: *Cháng cháng zhě huā* 裳裳者華

214.1	湑	*xǔ*	< *sjoX*	< **sngja?*	A
	鴛	*xiě*	< *sjæX*	< **sjA(k)?*	A
	鴛	*xiě*	< *sjæX*	< **sjA(k)?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
214.2	黃	*huáng*	< *hwang*	< **g^{w}ang*	A
	章	*zhāng*	< *tsyang*	< **tjang*	A
	章	*zhāng*	< *tsyang*	< **tjang*	A
	慶	*qìng*	< *khjængH*	< **khrjang(s)*	A
214.3	白	*bái*	< *bæk*	< **brak*	A
	駱	*luò*	< *lak*	< **C-rak*	A
	駱	*luò*	< *lak*	< **C-rak*	A
	若	*ruò*	< *nyak*	< **njak*	A
214.4	左	*zuǒ*	< *tsaX*	< **tsaj?*	A
	宜	*yí*	< *ngje*	< **ng(r)jaj*	A
	右	*yòu*	< *hjuwX/H*	< **wji?(s)*	B
	有	*yǒu*	< *hjuwX*	< **wji?*	B
	有	*yǒu*	< *hjuwX*	< **wji?*	B
	似	*sì*	< *ziX*	< **slji?*	B

215 *Xiǎo yǎ* 小雅: *Sāng hù* 桑扈

215.1	扈	*hù*	< *huX*	< **ga?*	A
	羽	*yǔ*	< *hjuX*	< **w(r)ja?*	A

	胥	*xū*	< *sjo*	< **sngja*	A
	祜	*hù*	< *huX*	< **ga?*	A
215.2	扈	*hù*	< *huX*	< **ga?*	A
	領	*lǐng*	< *ljengX*	< **C-rjeng?*	B
	胥	*xū*	< *sjo*	< **sngja*	A
	屏	*píng*	< *beng*	< **beng*	B
215.3	翰	*hàn*	< *hanH*	< **gans*	A
	憲	*xiàn*	< *xjonH*	< **xjans*	A
	難	*nán*	< *nan*	< **nan*	A
	那	*nuó*	< *na*	< **naj*	A
215.4	觓	*qiú*	< *gjiw*	< **g(r)jiw* (?)	A
	柔	*róu*	< *nyuw*	< **nju*	A
	敖	*ào*	< *ngawH*	< **ngaws*	A
	求	*qiú*	< *gjuw*	< **grju*	A

216 *Xiǎo yǎ* 小雅: *Yuān yāng* 鴛鴦

216.1	羅	*luó*	< *la*	< **C-raj*	A
	宜	*yí*	< *ngje*	< **ng(r)jaj*	A
216.2	翼	*yì*	< *yik*	< **ljik*	A
	福	*fú*	< *pjuwk*	< **pjik*	A
216.3	秣	*mò*	< *mat*	< **mat*	A
	艾	*ài*	< *ngajH*	< **ngats*	A
216.4	摧	*cuò*	< *tshwaH*	< **tshojs*	A
	綏	[*suí*]	< *swij*	< **snjuj*	A

217 *Xiǎo yǎ* 小雅: *Kuǐbiàn* 頍弁

217.1	何	*hé*	< *ha*	< **gaj*	A
	嘉	*jiā*	< *kæ*	< **kraj*	A
	他	[*tā*]	< *tha*	< **hlaj*	A
	蘿	*luó*	< *la*	< **C-raj*	A
	柏	*bǎi*	< *pæk*	< **prak*	B
	弈	*yì*	< *yek*	< **jAk*	B
	懌	*yì*	< *yek*	< **ljAk*	B
217.2	期	*jī*	< *ki*	< **k(r)jɨ*	A
	時	*shí*	< *dzyi*	< **djɨ(?)*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	上	*shàng*	< *dzyangH*	< **djangs*	B

	怲	[*bǐng*]	< *pjængH*	< **prjangs*	B
	臧	*zāng*	< *tsang*	< **tsang*	B
217.3	首	*shǒu*	< *syuwX*	< **hlju?*	A
	阜	*fù*	< *bjuwX*	< **b(r)ju?*	A
	舅	*jiù*	< *gjuwX*	< **g(r)ju?*	A
	慤	*xiàn*	< *senH*	< **s(k)ens*	B
	見	*jiàn*	< *kenH*	< **kens*	B
	宴	*yàn*	< *ʔenH*	< **ʔens*	B

218 *Xiǎo yǎ* 小雅: *Jū xiá* 車舝

218.1	舝	*xiá*	< *hæt*	< **grat*	A
	逝	*shì*	< *dzyejH*	< **djats*	A
	渴	*kě*	< *khat*	< **khat*	A
	括	[*kuò*]	< *hwat*	< **g^{w}at*	A
	友	*yǒu*	< *hjuwX*	< **wji?*	B
	喜	*xǐ*	< *xɨX*	< **x(r)ji?*	B
218.2	鷮	*jiāo*	< *kjew*	< **k(r)jaw*	A
	教	*jiào*	< *kæwH*	< **kraw(k)s*	A
	譽	*yù*	< *yoH*	< **ljas*	B
	射	*yì*	< *yek*	< **ljAk*	B
218.3	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	殽	[*yáo*]	< *hæw*	< **graw*	A
	女	*rǔ*	< *nyoX*	< **nja?*	B
	舞	*wǔ*	< *mjuX*	< **m(r)ja?*	B
218.4	湑	*xǔ*	< *sjoX*	< **sngja?*	A
	寫	*xiě*	< *sjæX*	< **sjA(k)?*	A
218.5	仰	*yǎng*	< *ngjangX*	< **ngjang?*	A
	行	*xíng*	< *hæng*	< **grang*	A
	琴	*qín*	< *gim*	< **g(r)jɨm*	B
	心	*xīn*	< *sim*	< **sjɨm*	B

219 *Xiǎo yǎ* 小雅: *Qīng yíng* 青蠅

219.1	樊	*fán*	< *bjon*	< **bjan*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
219.2	棘	*jí*	< *kik*	< **krjɨk*	A
	極	*jí*	< *gik*	< **g(r)jɨk*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	A

219.3	榛	[zhēn]	< dzrin	< *dzrjin	A
	人	rén	< nyin	< *njin	A

220 *Xiǎo yǎ* 小雅: *Bīn zhī chū yán* 賓之初筵

220.1	楚	chǔ	< tsrhjoX	< *tsrhja?	A
	旅	lǚ	< ljoX	< *g-rja?	A
	旨	zhǐ	< tsyijX	< *kjij?	B
	偕	[xié]	< kɛj	< *krij(?)	B
	設	shè	< syet	< *h(l)jet	C
	逸	yì	< yit	< *ljit	C
	抗	kàng	< khangH	< *khangs	D
	張	zhāng	< trjang	< *trjang	D
	同	tóng	< duwng	< *dong	E
	功	gōng	< kuwng	< *kong	E
	的	dì	< tek	< *tewk	F
	爵	jué	< tsjak	< *tsjewk	F
220.2	舞	wǔ	< mjuX	< *m(r)ja?	A
	鼓	gǔ	< kuX	< *ka?	A
	祖	zǔ	< tsuX	< *tsa?	A
	壬	rén	< nyim	< *njɨm	B
	林	lín	< lim	< *C-rjɨm	B
	湛	dān	< tom	< *k-lɨm	B
	能	néng	< nong	< *nɨ(ng)	C
	又	yòu	< hjuwH	< *wjɨ(k)s	C
	時	shí	< dzyi	< *djɨ(?)	C
220.3	反	fǎn	< pjonX	< *pjan?	A
	幡	fān	< phjon	< *phjan	A
	還	qiān	< tshjen	< *tshjan	A
	僊	xiān	< sjen	< *sjan	A
	抑	yì	< ʔik	< *ʔ(r)jik	B
	怭	bì	< bjit	< *bjit	B
	秩	zhì	< drit	< *lrjit	B
220.4	號	háo	< haw	< *gaw	A
	呶	náo	< nræw	< *nru (?)	A
	儦	qī	< khi	< *kh(r)jɨ	B
	郵	yóu	< hjuw	< *wjɨ	B
	俄	é	< nga	< *ngaj	C
	僊	suō	< sa	< *saj	C
	福	fú	< pjuwk	< *pjɨk	D
	德	dé	< tok	< *tɨk	D

	嘉	*jiā*	< *kæ*	< **kraj*	E
	儀	*yí*	< *ngje*	< **ng(r)jaj*	E
220.5	否	*fǒu*	< *pjuwX*	< **pjɨʔ*	A
	史	*shǐ*	< *srɨX*	< **srjɨʔ*	A
	恥	*chǐ*	< *trhiX*	< **hnrjɨʔ*	A
	怠	*dài*	< *dojX*	< **lɨʔ*	A
	語	*yǔ*	< *ngjoX*	< **ng(r)jaʔ*	B
	殺	*gǔ*	< *kɯX*	< **kaʔ*	B
	識	*shí*	< *syik*	< **stjik*	C
	又	*yòu*	< *hjuwH*	< **wjɨ(k)s*	C

221 *Xiǎo yǎ* 小雅: *Yú zǎo* 魚藻

221.1	藻	*zǎo*	< *tsawX*	< **tsawʔ*	A
	首	*shǒu*	< *syuwX*	< **hljuʔ*	B
	鎬	*hào*	< *hawX*	< **gawʔ*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsjuʔ*	B
221.2	藻	*zǎo*	< *tsawX*	< **tsawʔ*	A
	尾	*wěi*	< *mjɨjX*	< **mjɨjʔ*	B
	鎬	*hào*	< *hawX*	< **gawʔ*	A
	豈	*kǎi*	< *khojX*	< **khɨjʔ*	B
221.3	藻	*zǎo*	< *tsawX*	< **tsawʔ*	A
	蒲	*pú*	< *bu*	< **ba*	B
	鎬	*hào*	< *hawX*	< **gawʔ*	A
	居	*jū*	< *kjo*	< **k(r)ja*	B

222 *Xiǎo yǎ* 小雅: *Cǎi shū* 采菽

222.1	筥	*jǔ*	< *kjoX*	< **krjaʔ*	A
	予	*yǔ*	< *yoX*	< **ljaʔ*	A
	予	*yǔ*	< *yoX*	< **ljaʔ*	A
	馬	*mǎ*	< *mæX*	< **mraʔ*	A
	予	*yǔ*	< *yoX*	< **ljaʔ*	A
	黼	*fǔ*	< *pjuX*	< **p(r)jaʔ*	A
222.2	芹	*qín*	< *gjɨn*	< **gjɨn*	A
	旂	*qí*	< *gjɨj*	< **gjɨj*	A
	斿	*pì*	< *phejH*	< **phits*	B
	噣	*huì*	< *xwejH*	< **hwets*	B
	騏	*sì*	< *sijH*	< **s(p)jijlts*	B
	屆	*jiè*	< *kɛjH*	< **krets*	B

222.3	股	*gǔ*	< *kuX*	< **ka?*	A
	下	*xià*	< *hæX*	< **gra?*	A
	紓	*shū*	< *syo*	< **hlja*	A
	予	*yǔ*	< *yoX*	< **lja?*	A
	命	*mìng*	< *mjængH*	< **mrjing(s)*	B
	申	*shēn*	< *syin*	< **hljin*	B
222.4	蓬	*péng*	< *buwng*	< **bong*	A
	邦	*bāng*	< *pæwng*	< **prong*	A
	同	*tóng*	< *duwng*	< **dong*	A
	從	*cóng*	< *dzjowng*	< **dzjong*	A
222.5	維	*wéi*	< *ywij*	< **wjij*	A
	葵	*kuí*	< *gjwij*	< **g^{w}jij*	A
	膍	*pí*	< *bjij*	< **bjij*	A
	戾	*lì*	< *lejH*	< **C-rets*	A

223 *Xiǎo yǎ* 小雅: *Jiǎo gōng* 角弓

223.1	反	*fǎn*	< *pjonX*	< **pjan?*	A
	遠	*yuǎn*	< *hjwonX*	< **wjan?*	A
223.2	遠	*yuǎn*	< *hjwonX*	< **wjan?*	A
	然	*rán*	< *nyen*	< **njan*	A
	教	*jiào*	< *kæwH*	< **kraw(k)s*	B
	傚	*xiào*	< *hæwH*	< **graws*	B
223.3	裕	*yù*	< *yuH*	< **ljoks*	A
	瘉	[*yù*]	< *yuX*	< **ljo?*	A
223.4	良	*liáng*	< *ljang*	< **C-rjang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	讓	*ràng*	< *nyangH*	< **njangs*	A
	亡	*wáng*	< *mjang*	< **mjang*	A
223.5	駒	*jū*	< *kju*	< **k(r)jo*	A
	後	*hòu*	< *huwX*	< **ɦ(r)o?*	A
	飽	*yù*	< *ʔjuH*	< **ʔ(r)jos*	A
	取	*qǔ*	< *tshjuX*	< **tshjo?*	A
223.6	木	*mù*	< *muwk*	< **mok*	A
	附	*fù*	< *bjuH*	< **b(r)jos*	A
	屬	*shǔ*	< *dzyowk*	< **djok*	A
223.7	瀌	*biāo*	< *bjpjew*	< **b/p(r)jaw*	A
	消	*xiāo*	< *sjew*	< **s(l)jew*	A
	驕	*jiāo*	< *kjew*	< **k(r)jaw*	A

223.8	浮	*fú*	< *bjuw*	< **b(r)ju*	A
	流	*liú*	< *ljuw*	< **C-rju*	A
	髦	*máo*	< *maw*	< **mu*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	A

224 *Xiǎo yǎ* 小雅: *Wǎn liǔ* 菀柳

224.1	柳	*liǔ*	< *ljuwX*	< **C-rjuʔ*	A
	息	*xī*	< *sik*	< **sjik*	B
	蹈	[*dǎo*]	< *dawH*	< **lus*	A
	曙	*nì*	< [*nrit*]	< **nrjik*	B
	極	*jí*	< *gik*	< **g(r)jik*	B
224.2	柳	*liǔ*	< *ljuwX*	< **C-rjuʔ*	A
	愒	*qì*	< *khjejH*	< **khrjats*	B
	蹈	[*dǎo*]	< *dawH*	< **lus*	A
	瘵	*zhài*	< *tsrɛjH*	< **tsr(j)ets*	B
	邁	*mài*	< *mæjH*	< **mrats*	B
224.3	天	*tiān*	< *then*	< **hlin*	A
	臻	*zhēn*	< *tsrin*	< **tsrjin*	A
	矜	[*jīn*]	< *king*	< **kjing*	A

225 *Xiǎo yǎ* 小雅: *Dū rén shì* 都人士

225.1	黃	*huáng*	< *hwang*	< **g^{w}ang*	A
	章	*zhāng*	< *tsyang*	< **tjang*	A
	望	*wàng*	< *mjangH*	< **mjangs*	A
225.2	撮	*cuō*	< *tshwat*	< **tshot*	A
	髮	*fà*	< *pjot*	< **pjot*	A
	說	*yuè*	< *ywet*	< **ljot*	A
225.3	實	*shí*	< *zyit*	< **Ljit*	A
	吉	*jí*	< *kjit*	< **kJit*	A
	結	*jié*	< *ket*	< **kit/k*	A
225.4	厲	*lì*	< *ljejH*	< **C-rjats*	A
	薆	*chài*	< *trhæjH*	< **hrjats* (?)	A
	邁	*mài*	< *mæjH*	< **mrats*	A
225.5	餘	*yú*	< *yo*	< **lja*	A
	旗	*yú*	< *yo*	< **lja*	A
	盱	*xū*	< *xju*	< **hw(r)ja*	A

226 *Xiǎo yǎ* 小雅: *Cǎi lǜ* 采綠

226.1	綠	*lǜ*	< *ljowk*	< **C-rjok*	A
	匊	*jū*	< *kjuwk*	< **k(r)juk*	A
	局	*jú*	< *gjowk*	< **fikh(r)jok*	A
	沐	*mù*	< *muwk*	< **mok*	A
226.2	藍	*lán*	< *lam*	< **g-ram*	A
	襜	*chān*	< *tsyhem*	< **thjam*	A
	詹	*zhān*	< *tsyem*	< **tjam*	A
226.3	弓	*gōng*	< *kjuwng*	< **k^{w}jing*	A
	繩	*shéng*	< *zyiŋ*	< **fijiŋ*	A
226.4	貗	*xù*	< *zjoX*	< **zlja?*	A
	貗	*xù*	< *zjoX*	< **zlja?*	A
	者	*zhě*	< *tsyæX*	< **tjA?*	A

227 *Xiǎo yǎ* 小雅: *Shǔ miáo* 黍苗

227.1	苗	*miáo*	< *mjew*	< **m(r)jaw*	A
	膏	*gào*	< *kawH*	< **kaws*	A
	勞	[*láo*]	< *lawH*	< **C-raws*	A
227.2	牛	*niú*	< *ngjuw*	< **ng^{w}ji*	A
	哉	*zāi*	< *tsoj*	< **tsi*	A
227.3	御	*yù*	< *ngjoH*	< **ng(r)jaks*	A
	旅	*lǚ*	< *ljoX*	< **g-rja?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
227.4	營	*yíng*	< *yweng*	< **wjeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
227.5	平	*píng*	< *bjæng*	< **brjeng*	A
	清	*qīng*	< *tshjeng*	< **tshjeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
	寧	*níng*	< *neng*	< **neng*	A

228 *Xiǎo yǎ* 小雅: *Xí sāng* 隰桑

228.1	阿	*ē*	< *?a*	< **?aj*	A
	難	*nán*	< *nan*	< **nan*	A
	何	*hé*	< *ha*	< **gaj*	A

228.2	沃	*wò*	< *ʔowk*	< **ʔawk*	A
	樂	*lè*	< *lak*	< **g-rawk*	A
228.3	幽	*yōu*	< *ʔjiw(X)*	< **ʔ(r)jiw(ʔ)*	A
	膠	*jiāo*	< *kæw*	< **kriw*	A
228.4	愛	*ài*	< *ʔojH*	< **ʔits*	A
	謂	*wèi*	< *hjwɨjH*	< **wjɨts*	A
	藏	*cáng*	< *dzang*	< **fitshang*	B
	忘	*wàng*	< *mjang(H)*	< **mjang*	B

229 *Xiǎo yǎ* 小雅: *Bái huā* 白華

229.1	菅	*jiān*	< *kæn*	< **kran*	A
	束	*shù*	< *syowk*	< **hjok*	B
	遠	*yuàn*	< *hjwonH*	< **wjans*	A
	獨	*dú*	< *duwk*	< **dok*	B
229.2	茅	*máo*	< *mæw*	< **mru*	A
	猶	*yóu*	< *yuw*	< **ju*	A
229.3	田	*tián*	< *den*	< **din*	A
	人	*rén*	< *nyin*	< **njin*	A
229.4	薪	*xīn*	< *sin*	< **sjin(g)*	A
	湛	*chén*	< *dzyim*	< **Gjɨlum*	B
	人	*rén*	< *nyin*	< **njin*	A
	心	*xīn*	< *sim*	< **sjɨm*	B
229.5	外	*wài*	< *ngwajH*	< **ng^{w}ats*	A
	邁	*mài*	< *mæjH*	< **mrats*	A
229.6	林	*lín*	< *lim*	< **C-rjɨm*	A
	心	*xīn*	< *sim*	< **sjɨm*	A
229.7	梁	*liáng*	< *ljang*	< **C-rjang*	A
	翼	*yì*	< *yik*	< **ljɨk*	B
	良	*liáng*	< *ljang*	< **C-rjang*	A
	德	*dé*	< *tok*	< **tɨk*	B
229.8	卑	*bēi*	< *pjie*	< **pje*	A
	疧	*qí*	< *gjie*	< **gJe*	A

230 *Xiǎo yǎ* 小雅: *Mián mán* 緜蠻

230.1	阿	*ē*	< *ʔa*	< **ʔaj*	A
	何	*hé*	< *ha*	< **gaj*	A

	食	*sì*	< *ziH*	< **zljiks*	B
	誨	*huì*	< *xwojH*	< **hmi(k)s*	B
	載	*zài*	< *tsojH*	< **tsi(k)s*	B
230.2	隅	*yú*	< *ngju*	< **ng(r)jo*	A
	趨	*qū*	< *tshju*	< **tshjo*	A
	食	*sì*	< *ziH*	< **zljiks*	B
	誨	*huì*	< *xwojH*	< **hmi(k)s*	B
	載	*zài*	< *tsojH*	< **tsi(k)s*	B
230.3	側	[*cè*]	< *tsrik*	< **tsrjik*	A
	極	*jí*	< *gik*	< **g(r)jik*	A
	食	*sì*	< *ziH*	< **zljiks*	B
	誨	*huì*	< *xwojH*	< **hmi(k)s*	B
	載	*zài*	< *tsojH*	< **tsi(k)s*	B

231 *Xiǎo yǎ* 小雅: *Hù yè* 瓠葉

231.1	亨	*pēng*	< *phæng*	< **phrang*	A
	嘗	*cháng*	< *dzyang*	< **djang*	A
231.2	首	*shǒu*	< *syuwX*	< **hlju?*	A
	燔	*fán*	< *bjon*	< **bjan*	B
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	獻	*xiàn*	< *xjonH*	< **hngjans*	B
231.3	首	*shǒu*	< *syuwX*	< **hlju?*	A
	炙	*zhì*	< *tsyek*	< **tjAk*	B
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	酢	*zuò*	< *dzak*	< **dzak*	B
231.4	首	*shǒu*	< *syuwX*	< **hlju?*	A
	炮	*páo*	< *bæw*	< **bru*	B
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	醻	*chóu*	< *dzyuw*	< **dju*	B

232 *Xiǎo yǎ* 小雅: *Chán chán zhī shí* 漸漸之石

232.1	高	*gāo*	< *kaw*	< **kaw*	A
	勞	*láo*	< *law*	< **C-raw*	A
	朝	*cháo*	< *drjew*	< **fitrjaw*	A
232.2	卒	*zú*	< *tswit*	< **Stjut*	A
	沒	*mò*	< *mwot*	< **mut*	A
	出	*chū*	< *tsyhwit*	< **thjut*	A

232.3	波	*bō*	< *pa*	< **paj*	A
	沱	*tuó*	< *da*	< **laj*	A
	他	[*tā*]	< *tha*	< **hlaj*	A

233 *Xiǎo yǎ* 小雅: *Tiáo zhī huā* 苕之華

233.1	黃	*huáng*	< *hwang*	< **g^{w}ang*	A
	傷	*shāng*	< *syang*	< **hljang*	A
233.2	青	[*qīng*]	< *tseng*	< **tseng*	A
	生	*shēng*	< *srjæng*	< **srjeng*	A
233.3	首	*shǒu*	< *syuwX*	< **hlju?*	A
	罶	*liǔ*	< *ljuwX*	< **C-rju?*	A
	飽	*bǎo*	< *pæwX*	< **pru?*	A

234 *Xiǎo yǎ* 小雅: *Hé cǎo bù huáng* 何草不黃

234.1	黃	*huáng*	< *hwang*	< **g^{w}ang*	A
	行	*xíng*	< *hæng*	< **grang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
234.2	玄	*xuán*	< *hwen*	< **g^{w}in*	A
	矜	*guān*	< *kwɛn*	< **k^{w}rin*	A
	民	*mín*	< *mjin*	< **mjin*	A
234.3	虎	*hǔ*	< *xuX*	< * *a?*(?)	A
	野	*yě*	< *yæX*	< **ljA?*	A
	夫	*fū*	< *pju*	< **p(r)ja*	A
	暇	[*xiá*]	< *hæH*	< **gras*	A
234.4	狐	*hú*	< *hu*	< **g^{w}a*	A
	草	*cǎo*	< *tshawX*	< **tshu?*	B
	車	*jū*	< *kjo*	< **k(r)ja*	A
	道	*dào*	< *dawX*	< **lu?*	B

235 *Dà yǎ* 大雅: *Wén wáng* 文王

235.1	天	*tiān*	< *then*	< **hlin*	A
	新	*xīn*	< *sin*	< **sjin*	A
	時	*shí*	< *dzyi*	< **dji(?)*	B
	右	*yòu*	< *hjuwX/H*	< **wjiʔ(s)*	B

235.2	已	*yǐ*	< *yiX*	< **lji?*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	A
	世	*shì*	< *syejH*	< **hljaps*	B
	士	*shì*	< *dzriX*	< **fisrji?*	A
	世	*shì*	< *syejH*	< **hljaps*	B
235.3	翼	*yì*	< *yik*	< **ljik*	A
	國	*guó*	< *kwok*	< **k^{w}ik*	A
	生	*shēng*	< *srjæng*	< **srjeng*	B
	楨	[*zhēn*]	< *trjeng*	< **trjeng*	B
	寧	*níng*	< *neng*	< **neng*	B
235.4	止	*zhǐ*	< *tsyiX*	< **tji?*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	A
	億	*yì*	< *ʔik*	< **ʔ(r)jik*	B
	服	*fú*	< *bjuwk*	< **bjik*	B
235.5	常	*cháng*	< *dzyang*	< **djang*	A
	京	*jīng*	< *kjæng*	< **krjang*	A
	尋	*xǔ*	< *xjuX*	< **hw(r)ja?*	B
	祖	*zǔ*	< *tsuX*	< **tsa?*	B
235.6	德	*dé*	< *tok*	< **tik*	A
	福	*fú*	< *pjuwk*	< **pjik*	A
	帝	*dì*	< *tejH*	< **teks*	B
	易	*yì*	< *yeH*	< **ljeks*	B
235.7	身	*shēn*	< *syin*	< **hljin*	A
	天	*tiān*	< *then*	< **hlin*	A
	臭	*chòu*	< *tsyhuwH*	< **KHjus*	B
	孚	[*fú*]	< [*phju*]	< **ph(r)ju*	B

236 *Dà yǎ* 大雅: *Dà míng* 大明

236.1	上	*shàng*	< *dzyangH*	< **djangs*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
236.2	商	*shāng*	< *syang*	< **h(l)jang*	A
	京	*jīng*	< *kjæng*	< **krjang*	A
	行	*xíng*	< *hæng*	< **grang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
236.3	翼	*yì*	< *yik*	< **ljik*	A
	福	*fú*	< *pjuwk*	< **pjik*	A
	國	*guó*	< *kwok*	< **k^{w}ik*	A

236.4	集	*jí*	< *dzip*	< **dzjup*	A
	合	*hé*	< *hop*	< **gop*	A
	涘	*sì*	< *zrix*	< **zrjɨʔ*	B
	止	*zhǐ*	< *tsyix*	< **tjɨʔ*	B
	子	*zǐ*	< *tsix*	< **tsjɨʔ*	B
236.5	妹	*mèi*	< *mwojH*	< **mɨts*	A
	渭	*wèi*	< *hjwijH*	< **wjɨts*	A
	梁	*liáng*	< *ljang*	< **C-rjang*	B
	光	*guāng*	< *kwang*	< **k^{w}ang*	B
236.6	天	*tiān*	< *then*	< **hlin*	A
	王	*wáng*	< *hjwang*	< **wjang*	B
	京	*jīng*	< *kjæng*	< **krjang*	B
	莘	*shēn*	< *srin*	< **srjin*	A
	行	*xíng*	< *hæng*	< **grang*	B
	王	*wáng*	< *hjwang*	< **wjang*	B
	商	*shāng*	< *syang*	< **h(l)jang*	B
236.7	旅	*lǚ*	< *ljox*	< **g-rjaʔ*	A
	林	*lín*	< *lim*	< **C-rjɨm*	B
	野	*yě*	< *yæx*	< **ljAʔ*	A
	興	*xīng*	< *xing*	< **x(r)jɨng*	B
	女	*rǔ*	< *nyox*	< **njaʔ*	A
	心	*xīn*	< *sim*	< **sjɨm*	B
236.8	洋	*yáng*	< *yang*	< **(l)jang*	A
	煌	*huáng*	< *hwang*	< **wang*	A
	彭	*bāng*	< *pang*	< **pang*	A
	揚	*yáng*	< *yang*	< **ljang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	商	*shāng*	< *syang*	< **h(l)jang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A

237 *Dà yǎ* 大雅: *Mián* 緜

237.1	陟	*dié*	< *det*	< **lit*	A
	漆	*qī*	< *tshit*	< **tshjit*	A
	穴	*xué*	< *hwet*	< **wit*	A
	室	*shì*	< *syit*	< **stjit*	A
237.2	父	*fǔ*	< *pjux*	< **p(r)jaʔ*	A
	馬	*mǎ*	< *mæx*	< **mraʔ*	A
	滸	*hǔ*	< *xux*	< **hngaʔ*	A
	下	*xià*	< *hæx*	< **graʔ*	A

	女	*nǚ*	< *nrjoX*	< **nrja?*	A
	宇	*yǔ*	< *hjuX*	< **w(r)ja?*	A
237.3	嘸	*wǔ*	< [*mjuX*]	< **m(j)i*	A
	飴	*yí*	< *yi*	< **lji*	A
	謀	*móu*	< *mjuw*	< **mji*	A
	龜	*guī*	< *kwij*	< **k*^{w}*rji*	A
	時	*shí*	< *dzyi*	< **dji(?)*	A
	茲	*zī*	< *tsi*	< **tsji*	A
237.4	止	*zhǐ*	< *tsyiX*	< **tji?*	A
	右	*yòu*	< *hjuwX/H*	< **wji?(s)*	A
	理	*lǐ*	< *liX*	< **C-rji?*	A
	畝	*mǔ*	< *muwX*	< **m(r)o/i?*	A
	事	*shì*	< *dzriH*	< **fisrji?(s)*	A
237.5	徒	*tú*	< *du*	< **da*	A
	家	*jiā*	< *kæ*	< **kra*	A
	直	*zhí*	< *drik*	< **drjik*	B
	載	*zài*	< *tsojH*	< **tsi(k)s*	B
	翼	*yì*	< *yik*	< **ljik*	B
237.6	陘	*réng*	< *nying*	< **njing*	A
	薨	*hōng*	< *xwong*	< **hming*	A
	登	*dēng*	< *tong*	< **ting*	A
	馮	*píng*	< *bing*	< **brjing*	A
	興	*xīng*	< *xing*	< **x(r)jing*	A
	勝	*shēng*	< *sying*	< **hljing*	A
237.7	伉	*kàng*	< *khangH*	< **khangs*	A
	將	*qiāng*	< *tshjang*	< **tshjang*	A
	行	*xíng*	< *hæng*	< **grang*	A
237.8	殄	[*tiǎn*]	< *denX*	< **din?*	A
	愠	*yùn*	< *ʔjunH*	< **ʔjuns*	B
	隕	*yǔn*	< *hwinX*	< **wrjin(?)*	A
	問	*wèn*	< *mjunH*	< **mjuns*	B
	拔	*bèi*	< *bajH*	< **bots*	C
	駾	[*tuì*]	< *dwajH*	< **lots*	C
	兌	[*duì*]	< *thwajH*	< **hlots*	C
	喙	[*huì*]	< *xjwojH*	< **xjots*	C
237.9	成	*chéng*	< *dzyeng*	< **djeng*	A
	生	*shēng*	< *srjæng*	< **srjeng*	A
	附	*fù*	< *bjuH*	< **b(r)jos*	B
	後	*hòu*	< *huwH*	< **fi(r)os*	B

	奏	*zòu*	< *tsuwH*	< **tso(k)s*	B
	侮	*wǔ*	< *mjuX*	< **m(r)jo?(s)*	B

238 *Dà yǎ* 大雅: *Yù pǔ* 棫樸

238.1	檖	[*yóu*]	< *yuwX*	< **ju?*	A
	趣	*qù*	< *tshjuH*	< **tshjos*	A
238.2	王	*wáng*	< *hjwang*	< **wjang*	A
	璋	*zhāng*	< *tsyang*	< **tjang*	A
	峨	*é*	< *nga*	< **ngaj*	B
	宜	*yí*	< *ngje*	< **ng(r)jaj*	B
238.3	楫	[*jí*]	< [*tsjep*]	< **tsjɨp*	A
	及	*jí*	< *gip*	< **g(r)jɨp*	A
238.4	天	*tiān*	< *then*	< **hlin*	A
	人	*rén*	< *nyin*	< **njin*	A
238.5	章	*zhāng*	< *tsyang*	< **tjang*	A
	相	*xiāng*	< *sjang*	< **sjang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	方	*fāng*	< *pjang*	< **pjang*	A

239 *Dà yǎ* 大雅: *Hàn lù* 旱麓

239.1	濟	*jǐ*	< *tsejX*	< **tsɨj?*	A
	弟	[*tì*]	< *dejX*	< **dɨj?*	A
239.2	中	*zhōng*	< *trjuwng*	< **k-ljung*	A
	降	*jiàng*	< *kæwngH*	< **krungs*	A
239.3	天	*tiān*	< *then*	< **hlin*	A
	淵	*yuān*	< *?wen*	< **ʔʷin*	A
	人	*rén*	< *nyin*	< **njin*	A
239.4	載	*zài*	< *tsojH*	< **tsɨ(k)s*	A
	備	*bèi*	< *bijH*	< **brjɨks*	A
	祀	*sì*	< *zix*	< **zjɨk(?)*	A
	福	*fú*	< *pjuwk*	< **pjɨk*	A
239.5	燎	*liào*	< *ljewH*	< **C-rjaws*	A
	勞	[*láo*]	< *lawH*	< **C-raws*	A
239.6	枚	*méi*	< *mwoj*	< **mɨj*	A
	回	*huí*	< *hwoj*	< **wɨj*	A

240 *Dà yǎ* 大雅: *Sīzhāi* 思齊

240.1	母	*mǔ*	< *muwX*	< **m(r)o/i?*	A
	婦	*fù*	< *bjuwX*	< **bji?*	A
	音	*yīn*	< *ʔim*	< **ʔ(r)jim*	B
	男	*nán*	< *nom*	< **nim*	B
240.2	公	*gōng*	< *kuwng*	< **kong*	A
	恫	*tōng*	< *thuwng*	< **thong*	A
	妻	*qī*	< *tshej*	< **tshij*	B
	弟	*dì*	< *dejX*	< **di/ij?*	B
	邦	*bāng*	< *pæwng*	< **prong*	A
240.3	宮	*gōng*	< *kjuwng*	< **k(r)jung*	A
	廟	*miào*	< *mjewH*	< **m(r)jaws*	B
	臨	*lín*	< *lim*	< **b-rjum*	A
	保	*bǎo*	< *pawX*	< **pu?*	B
240.4	式	*shì*	< *syik*	< **hljik*	A
	入	*rù*	< *nyip*	< **njup*	A
	造	*zào*	< *dzawX*	< **dzu?*	B
	士	*shì*	< *dzriX*	< **fisrji?*	B

241 *Dà yǎ* 大雅: *Huáng yǐ* 皇矣

241.1	赫	*hè*	< *xæk*	< **xrak*	A
	莫	*mò*	< *mak*	< **mak*	A
	獲	*huò*	< *hwɛk*	< **wrak*	A
	度	*duó*	< *dak*	< **lak*	A
	廓	*kuò*	< *khwak*	< **k^{w}hak*	A
	宅	*zhái*	< *dræk*	< **drak*	A
241.2	屏	*bǐng*	< *pjiengX*	< **pjeng?*	A
	翳	*yì*	< *ʔejH*	< **ʔelijs*	B
	平	*píng*	< *bjæng*	< **brjeng*	A
	冽	*lì*	< *ljejH*	< **C-rjets* (?)	B
	辟	*bì*	< *bjiek*	< **bjek*	C
	椐	[*jū*]	< *khjo*	< **kh(r)ja*	D
	剔	*tī*	< *thek*	< **hlek*	C
	柘	*zhè*	< *tsyæH*	< **tjAks*	D
	路	*lù*	< *luH*	< **g-raks*	D
	固	*gù*	< *kuH*	< **kas*	D
241.3	拔	*bèi*	< *bajH*	< **bots*	A
	兑	*duì*	< *dwajH*	< **lots*	A

	對	*duì*	< *twojH*	< **k-lups*	B
	季	*jì*	< *kjwijH*	< **k*^{w}*jits*	B
	兄	*xiōng*	< *xjwæng*	< **hwrjang*	C
	慶	*qìng*	< *khjængH*	< **khrjang(s)*	C
	光	*guāng*	< *kwang*	< **k*^{w}*ang*	C
	喪	*sàng*	< *sangH*	< **smang(s)*	C
	方	*fāng*	< *pjang*	< **pjang*	C
241.4	心	*xīn*	< *sim*	< **sjɨm*	A
	音	*yīn*	< *ʔim*	< **ʔ(r)jɨm*	A
	悔	*huǐ*	< *xwojX*	< **hmɨʔ*	B
	祉	[*zhǐ*]	< *trhiX*	< **thrjɨʔ*	B
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	B
241.5	援	*yuán*	< *hjwon*	< **wjan*	A
	羨	*xiàn*	< *zjenH*	< **zjans* (?)	A
	岸	*àn*	< *nganH*	< **ngans*	A
	恭	*gōng*	< *kjowng*	< **krjong*	B
	邦	*bāng*	< *pæwng*	< **prong*	B
	共	*gōng*	< *kjowng*	< **k(r)jong*	B
	怒	[*nù*]	< *nuX*	< **naʔ*	C
	旅	*lǚ*	< *ljoX*	< **g-rjaʔ*	C
	旅	*lǚ*	< *ljoX*	< **g-rjaʔ*	C
	祜	*hù*	< *huX*	< **gaʔ*	C
	下	*xià*	< *hæX*	< **graʔ*	C
241.6	京	*jīng*	< *kjæng*	< **krjang*	A
	疆	*jiāng*	< *kjang*	< **kjang*	A
	岡	*gāng*	< *kang*	< **kang*	A
	阿	*ē*	< *ʔa*	< **ʔaj*	B
	泉	*quán*	< *dzjwen*	< **Sg*^{w}*jan*	C
	池	*chí*	< *drje*	< **lrjaj*	B
	原	*yuán*	< *ngjwon*	< **ng*^{w}*jan*	C
	陽	*yáng*	< *yang*	< **ljang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
241.7	德	*dé*	< *tok*	< **tɨk*	A
	色	*sè*	< *srik*	< **srjɨk*	A
	革	*gé*	< *kɛk*	< **krɨk*	A
	則	*zé*	< *tsok*	< **tsɨk*	A
	王	*wáng*	< *hjwang*	< **wjang*	B
	方	*fāng*	< *pjang*	< **pjang*	B
	兄	*xiōng*	< *xjwæng*	< **hwrjang*	B

	衝	*chōng*	< *tsyhowng*	< **thjong*	C
	墉	[*yōng*]	< *yowng*	< **ljong*	C
241.8	閑	*xián*	< [*hɛn*]	< **gran*	A
	言	*yán*	< *ngjon*	< **ngjan*	A
	連	*lián*	< *ljen*	< **C-rjan*	A
	安	*ān*	< *ʔan*	< **ʔan*	A
	附	*fù*	< *bjuH*	< **b(r)jos*	B
	侮	*wǔ*	< *mjuX*	< **m(r)joʔ(s)*	B
	弗	*fú*	< *pjut*	< **pjut*	C
	仡	*yì*	< *ngjɨt*	< **ngjɨt*	C
	肆	*sì*	< *sijH*	< **sljɨps*	C
	忽	*hū*	< *xwot*	< **hmut*	C
	拂	*fú*	< *bjut*	< **bjut*	C

242 *Dà yǎ* 大雅: *Líng tái* 靈臺

242.1	營	*yíng*	< *yweng*	< **wjeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
242.2	亟	*jí*	< *kik*	< **k(r)jɨk*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	囿	*yòu*	< *hjuwH*	< **wjɨ(k)s*	A
	伏	*fú*	< *bjuwk*	< **bjɨk*	A
242.3	濯	*zhuó*	< *dræwk*	< **lrewk*	A
	鶴	*hè*	< *hæwk*	< **grawk*	A
	沼	[*zhǎo*]	< *tsyewH*	< **tjaws*	A
	躍	*yuè*	< *yak*	< **lja/ewk*	A
242.4	樅	*cōng*	< *tshjowng*	< **tshjong*	A
	鏞	[*yōng*]	< *yowng*	< **ljong*	A
	鍾	*zhōng*	< *tsyowng*	< **tjong*	A
	鏞	*yōng*	< *ʔjowng*	< **ʔ(r)jong*	A
242.5	鍾	*zhōng*	< *tsyowng*	< **tjong*	A
	鏞	*yōng*	< *ʔjowng*	< **ʔ(r)jong*	A
	逢	*péng*	< *buwng*	< **bong*	A
	公	*gōng*	< *kuwng*	< **kong*	A

243 *Dà yǎ* 大雅: *Xià wǔ* 下武

243.1	王	*wáng*	< *hjwang*	< **wjang*	A
	京	*jīng*	< *kjæng*	< **krjang*	A

243.2	求	*qiú*	< *gjuw*	< **grju*	A
	孚	[*fú*]	< [*phju*]	< **ph(r)ju*	A
243.3	式	*shì*	< *syik*	< **hljik*	A
	則	*zé*	< *tsok*	< **tsik*	A
243.4	德	*dé*	< *tok*	< **tik*	A
	服	*fú*	< *bjuwk*	< **bjik*	A
243.5	許	*xǔ*	< *xjoX*	< **hng(r)ja?*	A
	武	*wǔ*	< *mjuX*	< **Np(r)ja?*	A
	祜	*hù*	< *huX*	< **ga?*	A
243.6	賀	*hè*	< *haH*	< **gajs*	A
	佐	[*zuǒ*]	< *tsaH*	< **tsajs*	A

244 *Dà yǎ* 大雅: *Wén wáng yǒu shēng* 文王有聲

244.1	聲	*shēng*	< *syeng*	< **xjeng*	A
	聲	*shēng*	< *syeng*	< **xjeng*	A
	寧	*níng*	< *neng*	< **neng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
244.2	功	*gōng*	< *kuwng*	< **kong*	A
	崇	*chóng*	< *dzrjuwng*	< **dzrjung*	A
	豐	*fēng*	< [*phjuwng*]	< **ph(r)jong* (?)	A
244.3	洫	*xù*	< *xjwit*	< **hwjit*	A
	匹	*pǐ*	< *phjit*	< **phjit*	A
	猶	*yóu*	< *yuw*	< **ju*	B
	孝	*xiào*	< *xæwH*	< **xrus*	B
244.4	垣	*yuán*	< *hjwon*	< **wjan*	A
	翰	*hàn*	< *hanH*	< **gans*	A
244.5	績	*jī*	< *tsek*	< **tsek*	A
	辟	*bì*	< *pjiek*	< **pjek*	A
244.6	雝	*yōng*	< *ʔjowng*	< **ʔ(r)jong*	A
	東	*dōng*	< *tuwng*	< **tong*	A
	北	*běi*	< *pok*	< **pik*	B
	服	*fú*	< *bjuwk*	< **bjik*	B
244.7	王	*wáng*	< *hjwang*	< **wjang*	A
	京	*jīng*	< *kjæng*	< **krjang*	A
	正	*zhèng*	< *tsyengH*	< **tjengs*	B
	成	*chéng*	< *dzyeng*	< **djeng*	B

244.8	芑	*qǐ*	< *khiX*	< **kh(r)jɨʔ*	A
	仕	*shì*	< *dzriX*	< **fisrjɨʔ*	A
	謀	*móu*	< *mjuw*	< **mjɨ*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A

245 *Dà yǎ* 大雅: *Shēng mín* 生民

245.1	祀	*sì*	< *ziX*	< **zjɨk(ʔ)*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	敏	*mǐn*	< *minX*	< **mrjɨ(n)ʔ*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	夙	*sù*	< *sjuwk*	< **sjuk*	B
	育	*yù*	< *yuwk*	< **ljuk*	B
	稷	*jì*	< *tsik*	< **tsjɨk*	B
245.2	月	*yuè*	< *ngjwot*	< **ng^{w}jat*	A
	達	*tà*	< *that*	< **hlat*	A
	害	*hài*	< *hajH*	< **fikat(s)*	A
	靈	*líng*	< *leng*	< **C-reng*	B
	寧	*níng*	< *neng*	< **neng*	B
	祀	*sì*	< *ziX*	< **zjɨk(ʔ)*	C
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	C
245.3	字	*zì*	< *dziH*	< **fitsjɨ(ʔ)s*	A
	林	*lín*	< *lim*	< **C-rjɨm*	B
	林	*lín*	< *lim*	< **C-rjɨm*	B
	冰	*bīng*	< *ping*	< **prjɨng*	B
	翼	*yì*	< *yik*	< **ljɨk*	A
	去	*qù*	< *khjoH*	< **kh(r)jas*	C
	呱	*gū*	< *ku*	< **k^{w}a*	C
245.4	訏	*xū*	< *xju*	< **hw(r)ja*	A
	路	*lù*	< *luH*	< **g-raks*	A
	匐	*fú*	< *bok/bjuwk*	< **b(j)ik*	B
	嶷	*nì*	< *ngik*	< **ng(r)jɨk*	B
	食	*shí*	< *zyik*	< **Ljɨk*	B
	旆	[*pèi*]	< *bajH*	< **bots*	C
	穟	*suì*	< *zwijH*	< **zjuts*	C
	幪	*měng*	< *muwngX*	< **mong?*	D
	唪	*běng*	< *puwngX*	< **pong?*	D
245.5	道	*dào*	< *dawX*	< **lu?*	A
	草	*cǎo*	< *tshawX*	< **tshu?*	A
	茂	[*mào*]	< *muwH*	< **m(r)juʔ(s)*	A
	苞	*bāo*	< *pæw*	< **pru*	A

	褎	*xiù*	< *zjuwH*	< **zjus*	A
	秀	*xiù*	< *sjuwH*	< **sljus*	A
	好	*hǎo*	< *xawX*	< **xu?*	A
	栗	*lì*	< *lit*	< **C-rjit*	B
	室	*shì*	< *syit*	< **stjit*	B
245.6	秭	*pī*	< *phij(X)*	< **phrji(?)*	A
	芑	*qǐ*	< *khiX*	< **kh(r)ji?*	A
	秭	*pī*	< *phij(X)*	< **phrji(?)*	A
	畝	*mǔ*	< *muwX*	< **m(r)o/i?*	A
	芑	*qǐ*	< *khiX*	< **kh(r)ji?*	A
	負	*fù*	< *bjuwX*	< **fipji(k)?*	A
	祀	*sì*	< *ziX*	< **zjik(?)*	A
245.7	揄	*yóu*	< *yuw*	< **lju*	A
	蹂	*róu*	< *nyuw*	< **nju*	A
	叟	*sōu*	< *srjuw*	< **srju*	A
	浮	*fú*	< *bjuw*	< **b(r)ju*	A
	惟	*wéi*	< *ywij*	< **wjij*	B
	脂	*zhī*	< *tsyij*	< **kjij*	B
	軷	[*bá*]	< *bat*	< **bat*	C
	烈	*liè*	< *ljet*	< **C-rjat*	C
	歲	*suì*	< *sjwejH*	< **swjat(s)*	C
245.8	登	*dēng*	< *tong*	< **ting*	A
	升	*shēng*	< *sying*	< **h(l)jing*	A
	歆	*xīn*	< *xim*	< **x(r)jim*	A
	時	*shí*	< *dzyi*	< **dji(?)*	B
	祀	*sì*	< *ziX*	< **zjik(?)*	B
	悔	*huǐ*	< *xwojX*	< **hmi?*	B
	今	*jīn*	< *kim*	< **k(r)jim*	A

246 *Dà yǎ* 大雅: *Háng wěi* 行葦

246.1	葦	*wěi*	< *hjwijX*	< **wjij?*	A
	履	[*lǚ*]	< *lijX*	< **C-rjij?*	A
	體	*tǐ*	< *thejX*	< **hrij?*	A
	泥	*nǐ*	< *nejX*	< **nij?*	A
246.2	弟	*dì*	< *dejX*	< **di/ij?*	A
	爾	*ěr*	< *nyeX*	< **njij?*	A
	几	*jǐ*	< *kijX*	< **krjij?*	A
246.3	席	*xí*	< *zjek*	< **zljAk*	A
	御	*yù*	< *ngjoH*	< **ng(r)jaks*	A

	酢	*zuò*	< *dzak*	< **dzak*	A
	咢	*jiǎ*	< *kæX*	< **kraʔ*	A
246.4	炙	*zhì*	< *tsyek*	< **tjAk*	A
	膮	*jué*	< *gjak*	< **gjak*	A
	鸍	*è*	< *ngak*	< **ngak*	A
246.5	堅	*jiān*	< *ken*	< **kin*	A
	鈞	*jūn*	< *kjwin*	< **k^{w}jin*	A
	均	*jūn*	< *kjwin*	< **k^{w}jin*	A
	賢	*xián*	< *hen*	< **gin*	A
246.6	句	[*gōu*]	< *kuwH*	< **k(r)os*	A
	鍭	[*hóu*]	< *huwH*	< **g(r)os*	A
	樹	*shù*	< *dzyuH*	< **djos*	A
	侮	*wǔ*	< *mjuX*	< **m(r)joʔ(s)*	A
246.7	主	*zhǔ*	< *tsyuX*	< **tjoʔ*	A
	醹	[*rú*]	< *nyuX*	< **njoʔ*	A
	斗	*dǒu*	< *tuwX*	< **toʔ*	A
	肴	*gǒu*	< *kuwX*	< **k(r)oʔ*	A
246.8	背	*bèi*	< *pwojH*	< **pɨk(s)*	A
	翼	*yì*	< *yik*	< **ljɨk*	A
	祺	*qí*	< *gi*	< **g(r)jɨ*	A
	福	*fú*	< *pjuwk*	< **pjɨk*	A

247 *Dà yǎ* 大雅: *Jì zuì* 既醉

247.1	德	*dé*	< *tok*	< **tɨk*	A
	福	*fú*	< *pjuwk*	< **pjɨk*	A
247.2	將	*jiāng*	< *tsjang*	< **tsjang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
247.3	融	*róng*	< *yuwng*	< **ljung*	A
	終	*zhōng*	< *tsyuwng*	< **tjung*	A
	俶	*chù*	< *tsyhuwk*	< **thjiwk*	B
	告	*gù*	< *kowk*	< **kuk*	B
247.4	何	*hé*	< *ha*	< **gaj*	A
	嘉	*jiā*	< *kæ*	< **kraj*	A
	儀	*yí*	< *ngje*	< **ng(r)jaj*	A
247.5	時	*shí*	< *dzyi*	< **djɨ(ʔ)*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	匱	[*kuì*]	< *gwijH*	< **grjuts*	B
	類	*lèi*	< *lwijH*	< **C-rjut/ps*	B

247.6	壺	*kǔn*	< *khwonX*	< **k^{w}hin?*	A
	胤	*yìn*	< *yinH*	< **(l)jins*	A
247.7	祿	*lù*	< *luwk*	< **b-rok*	A
	僕	[*pú*]	< *buwk*	< **bok*	A
247.8	士	*shì*	< *dzriX*	< **fisrjɨ?*	A
	士	*shì*	< *dzriX*	< **fisrjɨ?*	A
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	A

248 *Dà yǎ* 大雅: *Fú yī* 鳧鷖

248.1	涇	*jīng*	< *keng*	< **keng*	A
	寧	*níng*	< *neng*	< **neng*	A
	清	*qīng*	< *tshjeng*	< **tshjeng*	A
	馨	[*xīn*]	< *xeng*	< **xeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
248.2	沙	*shā*	< *sræ*	< **sCraj*	A
	宜	*yí*	< *ngje*	< **ng(r)jaj*	A
	多	*duó*	< *ta*	< **taj*	A
	嘉	*jiā*	< *kæ*	< **kraj*	A
	爲	*wèi*	< *hjweH*	< **w(r)jajs*	A
248.3	渚	*zhǔ*	< *tsyoX*	< **tja?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
	湑	*xǔ*	< *sjoX*	< **sngja?*	A
	脯	*fǔ*	< *pjuX*	< **p(r)ja?*	A
	下	*xià*	< *hæX*	< **gra?*	A
248.4	潀	[*zhōng*]	< *dzuwng*	< **dzung*	A
	宗	*zōng*	< *tsowng*	< **tsung*	A
	宗	*zōng*	< *tsowng*	< **tsung*	A
	降	*xiáng*	< *hæwng*	< **fikrung*	A
	崇	*chóng*	< *dzrjuwng*	< **dzrjung*	A
248.5	壺	*mén*	< *mwon*	< **min*	A
	熏	*xūn*	< *xjun*	< **xjun*	A
	欣	*xīn*	< *xjɨn*	< **xjɨn*	A
	芬	*fēn*	< *phjun*	< **phjin*	A
	艱	*jiān*	< *kɛn*	< **krin*	A

249 *Dà yǎ* 大雅: *Xià lè* 下樂

249.1	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	德	*dé*	< *tok*	< **tɨk*	A
	人	*rén*	< *nyin*	< **njin*	B
	天	*tiān*	< *then*	< **hlin*	B
	命	*mìng*	< *mjængH*	< **mrjing(s)*	C
	申	*shēn*	< *syin*	< **hljin*	C
249.2	福	*fú*	< *pjuwk*	< **pjɨk*	A
	億	*yì*	< *ʔik*	< **ʔ(r)jik*	A
	皇	*huáng*	< *hwang*	< **wang*	B
	王	*wáng*	< *hjwang*	< **wjang*	B
	忘	*wàng*	< *mjang(H)*	< **mjang*	B
	章	*zhāng*	< *tsyang*	< **tjang*	B
249.3	抑	*yì*	< *ʔik*	< **ʔ(r)jik*	A
	秩	*zhì*	< *drit*	< **lrjit*	A
	匹	*pǐ*	< *phjit*	< **phjit*	A
	疆	*jiāng*	< *kjang*	< **kjang*	B
	綱	*gāng*	< *kang*	< **kang*	B
249.4	紀	*[jì]*	< *kiX*	< **k(r)jɨʔ*	A
	友	*yǒu*	< *hjuwX*	< **wjɨʔ*	A
	士	*shì*	< *dzriX*	< **fisrjɨʔ*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	位	*wèi*	< *hwijH*	< **(w)rjɨps*	B
	堅	*xì*	< *xjɨjH*	< **xjɨts*	B

250 *Dà yǎ* 大雅: *Gōng liú* 公劉

250.1	康	*kāng*	< *khang*	< **khang*	A
	疆	*jiāng*	< *kjang*	< **kjang*	A
	倉	*cāng*	< *tshang*	< **tshang*	A
	糧	*liáng*	< *ljang*	< **C-rjang*	A
	囊	*náng*	< *nang*	< **nang*	A
	光	*guāng*	< *kwang*	< **k^{w}ang*	A
	張	*zhāng*	< *trjang*	< **trjang*	A
	揚	*yáng*	< *yang*	< **ljang*	A
	行	*xíng*	< *hæng*	< **grang*	A
250.2	原	*yuán*	< *ngjwon*	< **ng^{w}jan*	A
	繁	*fán*	< *bjon*	< **bjan*	A
	宣	*xuān*	< *sjwen*	< **swjan*	A
	歎	*[tàn]*	< *than*	< **hnan*	A

	巘	*yǎn*	< *ngjenX*	< **ng(r)jan?*	A
	原	*yuán*	< *ngjwon*	< **ng^{w}jan*	A
	瑤	*yáo*	< *yew*	< **ljaw*	B
	刀	*dāo*	< *taw*	< **taw*	B
250.3	泉	*quán*	< *dzjwen*	< **Sg^{w}jan*	A
	原	*yuán*	< *ngjwon*	< **ng^{w}jan*	A
	岡	*gāng*	< *kang*	< **kang*	B
	京	*jīng*	< *kjæng*	< **krjang*	B
	野	*yě*	< *yæX*	< **ljA?*	C
	處	*chǔ*	< *tsyhoX*	< **KHja?*	C
	旅	*lǚ*	< *ljoX*	< **g-rja?*	C
	語	*yǔ*	< *ngjoX*	< **ng(r)ja?*	C
250.4	依	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	濟	*jǐ*	< *tsejX*	< **tsɨj?*	A
	几	*jǐ*	< *kijX*	< **krjɨj?*	A
	依	*yī*	< *ʔjɨj*	< **ʔjɨj*	A
	曹	*cáo*	< *dzaw*	< **dzu*	B
	牢	*láo*	< *law*	< **C-ru*	B
	匏	*páo*	< *bæw*	< **bru*	B
	飲	*yìn*	< *ʔimH*	< **ʔ(r)jums*	C
	宗	*zōng*	< *tsowng*	< **tsung*	C
250.5	長	*cháng*	< *drjang*	< **ɬitrjang*	A
	岡	*gāng*	< *kang*	< **kang*	A
	陽	*yáng*	< *yang*	< **ljang*	A
	泉	*quán*	< *dzjwen*	< **Sg^{w}jan*	B
	單	*dān*	< *tan*	< **tan*	B
	原	*yuán*	< *ngjwon*	< **ng^{w}jan*	B
	糧	*liáng*	< *ljang*	< **C-rjang*	A
	陽	*yáng*	< *yang*	< **ljang*	A
	荒	*huāng*	< *xwang*	< **hmang*	A
250.6	館	[*guǎn*]	< *kwanH*	< **kons*	A
	亂	*luàn*	< *lwanH*	< **C-rons*	A
	鍛	*duàn*	< *twanH*	< **tons*	A
	理	*lǐ*	< *liX*	< **C-rjɨ?*	B
	有	*yǒu*	< *hjuwX*	< **wjɨ?*	B
	澗	*jiàn*	< *kænH*	< **krans*	C
	澗	*jiàn*	< *kænH*	< **krans*	C
	密	*mì*	< *mit*	< **mrjit*	D
	即	*jí*	< *tsik*	< **tsjik*	D

251 *Dà yǎ* 大雅: *Jiǒng zhuó* 泂酌

251.1	茲	*zī*	< *tsi*	< **tsjɨ*	A
	饎	*chì*	< *tsyhiH*	< **KHjɨʔ(s)*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	母	*mǔ*	< *muwX*	< **m(r)o/ɨʔ*	A
251.2	茲	*zī*	< *tsi*	< **tsjɨ*	A
	罍	*léi*	< *lwoj*	< **C-ruj*	B
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	B
251.3	茲	*zī*	< *tsi*	< **tsjɨ*	A
	溉	*gài*	< *kojH*	< **kɨts*	B
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	壐	*xì*	< *xjɨjH*	< **xjɨts*	B

252 *Dà yǎ* 大雅: *Juǎn ē* 卷阿

252.1	阿	*ē*	< *ʔa*	< **ʔaj*	A
	南	*nán*	< *nom*	< **nɨm*	B
	歌	*gē*	< *ka*	< **kaj*	A
	音	*yīn*	< *ʔim*	< **ʔ(r)jɨm*	B
252.2	游	*yóu*	< *yuw*	< **ju*	A
	休	*xiū*	< *xjuw*	< **x(r)ju*	A
	酋	*qiú*	< *dzjuw*	< **dzju*	A
252.3	厚	*hòu*	< *huwX*	< **g(r)oʔ*	A
	主	*zhǔ*	< *tsyuX*	< **tjoʔ*	A
252.4	長	*cháng*	< *drjang*	< **ɬitrjang*	A
	康	*kāng*	< *khang*	< **khang*	A
	常	*cháng*	< *dzyang*	< **djang*	A
252.5	翼	*yì*	< *yik*	< **ljɨk*	A
	德	*dé*	< *tok*	< **tɨk*	A
	翼	*yì*	< *yik*	< **ljɨk*	A
	則	*zé*	< *tsok*	< **tsɨk*	A
252.6	卬	*áng*	< *ngang*	< **ngang*	A
	璋	*zhāng*	< *tsyang*	< **tjang*	A
	望	*wàng*	< *mjangH*	< **mjangs*	A
	網	*gāng*	< *kang*	< **kang*	A
252.7	鼿	*huì*	< *xwajH*	< **hwats*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	B

	藹	[ǎi]	< *ʔajH*	< **ʔats*	A
	士	*shì*	< *dzrix*	< **fisrjɨʔ*	B
	使	*shǐ*	< *srix*	< **srjɨʔ*	B
	子	*zǐ*	< *tsix*	< **tsjɨʔ*	B
252.8	翽	*huì*	< *xwajH*	< **hwats*	A
	天	*tiān*	< *then*	< **hlin*	B
	藹	[ǎi]	< *ʔajH*	< **ʔats*	A
	人	*rén*	< *nyin*	< **njin*	B
	命	*mìng*	< *mjængH*	< **mrjing(s)*	B
	人	*rén*	< *nyin*	< **njin*	B
252.9	鳴	*míng*	< *mjæng*	< **mrjeng*	A
	岡	*gāng*	< *kang*	< **kang*	B
	生	*shēng*	< *srjæng*	< **srjeng*	A
	陽	*yáng*	< *yang*	< **ljang*	B
	萋	*qī*	< *tshej*	< **tshɨj*	C
	喈	*jiē*	< *kɛj*	< **krɨj*	C
252.10	車	*jū*	< *kjo*	< **k(r)ja*	A
	多	*duō*	< *ta*	< **taj*	B
	馬	*mǎ*	< *mæx*	< **mraʔ*	A
	馳	*chí*	< *drje*	< **lrjaj*	B
	多	*duō*	< *ta*	< **taj*	B
	歌	*gē*	< *ka*	< **kaj*	B

253 *Dà yǎ* 大雅: *Mín láo* 民勞

253.1	康	*kāng*	< *khang*	< **khang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	良	*liáng*	< *ljang*	< **C-rjang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
253.2	休	*xiū*	< *xjuw*	< **x(r)ju*	A
	逑	*qiú*	< *gjuw*	< **g(r)ju*	A
	恤	*náo*	< *nræw*	< **nru* (?)	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	A
	休	*xiū*	< *xjuw*	< **x(r)ju*	A
253.3	息	*xī*	< *sik*	< **sjɨk*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	A
	極	*jí*	< *gik*	< **g(r)jɨk*	A
	慝	*tè*	< *thok*	< **hnɨk*	A
	德	*dé*	< *tok*	< **tɨk*	A

253.4	愒	*qì*	< *khjejH*	< **khrjats*	A
	泄	*yì*	< *yejH*	< **ljats*	A
	厲	*lì*	< *ljejH*	< **C-rjats*	A
	敗	*bài*	< *bæjH*	< **fiprats*	A
	大	[*dà*]	< *dajH*	< **lats*	A
253.5	安	*ān*	< *ʔan*	< **ʔan*	A
	殘	*cán*	< *dzan*	< **dzan*	A
	綣	*quǎn*	< *khjwonX*	< **khjonʔ*	B
	反	*fǎn*	< *pjonX*	< **pjanʔ*	B
	諫	*jiàn*	< *kænH*	< **krans*	B

254 *Dà yǎ* 大雅: *Bǎn* 板

254.1	板	*bǎn*	< *pænX*	< **pranʔ*	A
	癉	[*dàn*]	< *tanX*	< **tanʔ*	A
	然	*rán*	< *nyen*	< **njan*	A
	遠	*yuǎn*	< *hjwonX*	< **wjanʔ*	A
	管	*guǎn*	< *kwanX*	< **k^{w}anʔ*	A
	亶	*dǎn*	< *tanX*	< **tanʔ*	A
	遠	*yuǎn*	< *hjwonX*	< **wjanʔ*	A
	諫	*jiàn*	< *kænH*	< **krans*	A
254.2	難	*nán*	< *nan*	< **nan*	A
	憲	*xiàn*	< *xjonH*	< **xjans*	A
	蹶	*guì*	< *gjwejH*	< **g^{w}rjats*	B
	泄	*yì*	< *yejH*	< **ljats*	B
	輯	*jí*	< *dzip*	< **dzjup*	C
	洽	[*qià*]	< *hɛp*	< **grop*	C
	怿	*yì*	< *yek*	< **ljAk*	D
	莫	*mò*	< *mak*	< **mak*	D
254.3	寮	*liáo*	< *lew*	< **C-rew*	A
	囂	*áo*	< *ngaw*	< **ngaw*	A
	笑	*xiào*	< *sjewH*	< **sjaws*	A
	堯	*ráo*	< *nyew*	< **ngjew*	A
254.4	虐	*nüè*	< *ngjak*	< **ng(r)jawk*	A
	謔	*xuè*	< *xjak*	< **hng(r)jawk*	A
	蹻	*jué*	< *gjak*	< **fik(r)jawk*	A
	耄	*mào*	< *mawH*	< **maw(k)s*	A
	謔	*xuè*	< *xjak*	< **hng(r)jawk*	A
	熇	*hè*	< *xowk*	< **xawk*	A
	藥	*yào*	< *yak*	< **rawk*	A

254.5	嚌	[qí]	< *dzejH*	< **dzijs*	A
	毗	*pí*	< *bjij*	< **bjij*	A
	迷	*mí*	< *mej*	< **mij*	A
	尸	*shī*	< *syij*	< **hljij*	A
	屎	*xī*	< *xjij*	< **xJij* (?)	A
	葵	*kuí*	< *gjwij*	< **g^{w}jij*	A
	資	*zī*	< *tsij*	< **tsjij*	A
	師	*shī*	< *srij*	< **srjij*	A
254.6	篪	*chí*	< *drje*	< **lrje*	A
	圭	*guī*	< *kwej*	< **k^{w}e*	A
	攜	[xié]	< *hwej*	< **we*	A
	益	*yì*	< *ʔjiek*	< **ʔjek*	B
	易	*yì*	< *yek*	< **ljek*	B
	辟	*pì*	< *phjiek*	< **phjek*	B
	辟	*pì*	< *phjiek*	< **phjek*	B
254.7	藩	*fān*	< *pjon*	< **pjan*	A
	垣	*yuán*	< *hjwon*	< **wjan*	A
	屏	*píng*	< *beng*	< **beng*	B
	翰	*hàn*	< *hanH*	< **gans*	A
	寧	*níng*	< *neng*	< **neng*	B
	城	*chéng*	< *dzyeng*	< **djeng*	B
	壞	*huài*	< *hwɛjH*	< **fikrujs*	C
	畏	*wèi*	< *ʔjwijH*	< **ʔjuj(s)*	C
254.8	怒	[nù]	< *nuX*	< **naʔ*	A
	豫	*yù*	< *yoH*	< **ljas*	A
	渝	*yú*	< *yu*	< **ljo*	B
	驅	*qū*	< *khju*	< **kh(r)jo*	B
	明	*míng*	< *mjæng*	< **mrjang*	C
	王	*wáng*	< *hjwang*	< **wjang*	C
	旦	*dàn*	< *tanH*	< **tans*	D
	衍	[yǎn]	< *yenH*	< **rans*	D

255 *Dà yǎ* 大雅: *Dàng* 蕩

255.1	帝	*dì*	< *tejH*	< **teks*	A
	辟	*bì*	< *pjiek*	< **pjek*	A
	帝	*dì*	< *tejH*	< **teks*	A
	辟	*bì*	< *pjiek*	< **pjek*	A
	諶	*chén*	< *dzyim*	< **Gjum*	B
	終	*zhōng*	< *tsyuwng*	< **tjung*	B

255.2	克	*kè*	< *khok*	< **khɨk*	A
	服	*fú*	< *bjuwk*	< **bjɨk*	A
	德	*dé*	< *tok*	< **tɨk*	A
	力	*lì*	< *lik*	< **C-rjɨk*	A
255.3	類	*lèi*	< *lwijH*	< **C-rjut/ps*	A
	慰	[*duì*]	< *drwijH*	< **g-ljups*	A
	對	*duì*	< *twojH*	< **k-lups*	A
	内	*nèi*	< *nwojH*	< **nups*	A
	祝	*zhòu*	< *tsyuwH*	< **tjuks*	B
	究	[*jiū*]	< *kjuwH*	< **k(r)jus*	B
255.4	國	*guó*	< *kwok*	< **k^{w}ɨk*	A
	德	*dé*	< *tok*	< **tɨk*	A
	德	*dé*	< *tok*	< **tɨk*	A
	側	[*cè*]	< *tsrik*	< **tsrjɨk*	A
	明	*míng*	< *mjæng*	< **mrjang*	B
	卿	*qīng*	< *khjæng*	< **khrjang*	B
255.5	式	*shì*	< *syik*	< **hljɨk*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	晦	*huì*	< *xwojH*	< **hmɨ(k)ɣ(s)*	A
	呼	*hū*	< *xu*	< **hwa*	B
	夜	*yè*	< *yæH*	< **(l)jAks*	B
255.6	商	*shāng*	< *syang*	< **h(l)jang*	A
	螗	*táng*	< *dang*	< **g-lang*	A
	羹	*gēng*	< *kæng*	< **krang*	A
	喪	*sàng*	< *sangH*	< **smang(s)*	A
	行	*xíng*	< *hæng*	< **grang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
255.7	時	*shí*	< *dzyi*	< **djɨ(ʔ)*	A
	舊	*jiù*	< *gjuwH*	< **g^{w}jɨɣ(s)*	A
	刑	*xíng*	< *heng*	< **geng*	B
	聽	*tīng*	< *theng*	< **hleng*	B
	傾	*qīng*	< *khjwieng*	< **k^{w}hjeng*	B
255.8	揭	*jiē*	< *kjot*	< **kjat*	A
	害	*hài*	< *hajH*	< **fikat(s)*	A
	撥	*bō*	< *bat*	< **bat*	A
	世	*shì*	< *syejH*	< **hljaps*	A

256 *Dà yǎ* 大雅: *Yì* 抑

256.1	隅	*yú*	< *ngju*	< **ng(r)jo*	A
	愚	*yú*	< *ngju*	< **ng(r)jo*	A
	疾	*jí*	< *dzit*	< **dzjit*	B
	戾	*lì*	< *lejH*	< **C-rets*	B
256.2	訓	*xùn*	< *xjunH*	< **xjuns*	A
	順	*shùn*	< *zywinH*	< **ɦsKjuns*	A
	告	*gù*	< *kowk*	< **kuk*	B
	則	*zé*	< *tsok*	< **tsɨk*	B
256.3	政	*zhèng*	< *tsyengH*	< **tjengs*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	B
	紹	*shào*	< *dzyewX*	< **djaw?*	B
	刑	*xíng*	< *heng*	< **geng*	A
256.4	尚	*shàng*	< *dzyangH*	< **djangs*	A
	亡	*wáng*	< *mjang*	< **mjang*	A
	章	*zhāng*	< *tsyang*	< **tjang*	A
	馬	*mǎ*	< *mæX*	< **mra?*	B
	兵	*bīng*	< *pjæng*	< **prjang*	A
	作	*zuò*	< *tsak*	< **tsak*	B
	方	*fāng*	< *pjang*	< **pjang*	A
256.5	度	*duó*	< *dak*	< **lak*	A
	虞	*yú*	< *ngju*	< **ng^{w}(r)ja*	A
	儀	*yí*	< *ngje*	< **ng(r)jaj*	B
	嘉	*jiā*	< *kæ*	< **kraj*	B
	磨	*mó*	< *ma*	< **maj*	C
	爲	*wéi*	< *hjwe*	< **w(r)jaj*	C
256.6	舌	*shé*	< *zyet*	< **Ljat*	A
	逝	*shì*	< *dzyejH*	< **djats*	A
	醻	*chóu*	< *dzyuw*	< **Gju*	B
	報	*bào*	< *pawH*	< **pus*	B
	友	*yǒu*	< *hjuwX*	< **wjɨ?*	C
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	C
	繩	*shéng*	< *zying*	< **Ljɨng*	D
	承	*chéng*	< *dzying*	< **djɨng*	D
256.7	顏	*yán*	< *ngæn*	< **ngran*	A
	愆	*qiān*	< *khjen*	< **khrjan*	A
	漏	*lòu*	< *luwH*	< **C-ros*	B
	覯	*gòu*	< *kuwH*	< **k(r)os*	B
	格	*gé*	< *kæk*	< **krak*	C

	度	*duó*	< *dak*	< **lak*	C
	射	*yì*	< *yek*	< **ljAk*	C
256.8	嘉	*jiā*	< *kæ*	< **kraj*	A
	儀	*yí*	< *ngje*	< **ng(r)jaj*	A
	賊	*zéi*	< *dzok*	< **dzɨk*	B
	則	*zé*	< *tsok*	< **tsɨk*	B
	李	*lǐ*	< *liX*	< **C-rjɨʔ*	C
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	C
256.9	絲	*sī*	< *si*	< **sjɨ*	A
	基	*jī*	< *ki*	< **k(r)jɨ*	A
	僭	*jiàn*	< *ts(h)emH*	< **ts(h)ɨ/ɨms*	B
	心	*xīn*	< *sim*	< **sjɨm*	B
256.10	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	否	*fǒu*	< *pjuwX*	< **pjɨʔ*	A
	事	*shì*	< *dzriH*	< **fisrjɨʔ(s)*	A
	耳	*ěr*	< *nyiX*	< **njɨʔ*	A
	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	盈	*yíng*	< *yeng*	< **(l)jeng*	B
	成	*chéng*	< *dzyeng*	< **djeng*	B
256.11	昭	*zhāo*	< *tsyew*	< **tjaw*	A
	樂	*lè*	< *lak*	< **C-rawk*	A
	慤	*cǎo*	< *tshawX*	< **tshawʔ*	A
	貌	[*miǎo*]	< *mæwk*	< **mrawk*	A
	教	*jiào*	< *kæwH*	< **kraw(k)s*	A
	虐	*nüè*	< *ngjak*	< **ng(r)jawk*	A
	耄	*mào*	< *mawH*	< **maw(k)s*	A
256.12	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	謀	*móu*	< *mjuw*	< **mjɨ*	A
	悔	*huǐ*	< *xwojX*	< **hmɨʔ*	A
	難	*nàn*	< *nanH*	< **nans*	B
	國	*guó*	< *kwok*	< **k^{w}ɨk*	C
	遠	*yuǎn*	< *hjwonX*	< **wjanʔ*	B
	式	*tè*	< *thok*	< **hlɨk*	C
	德	*dé*	< *tok*	< **tɨk*	C
	棘	*jí*	< *kik*	< **krjɨk*	C

257 *Dà yǎ* 大雅: *Sāng róu* 桑柔

257.1	柔	*róu*	< *nyuw*	< **nju*	A
	旬	*xún*	< *zwin*	< **fiswjin*	B
	劉	*liú*	< *ljuw*	< **C-rju*	A
	民	*mín*	< *mjin*	< **mjin*	B
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	A
	填	*chén*	< *drin*	< **drjin*	B
	天	*tiān*	< *then*	< **hlin*	B
	矜	[*jīn*]	< *king*	< **kjing*	B
257.2	駾	*kuí*	< *gwij*	< **g^{w}rjɨj*	A
	隤	*piān*	< *ph(ji)en*	< **phin*	B
	夷	*yí*	< *yij*	< **ljɨj*	A
	泯	*mǐn*	< *mjinX*	< **mjinʔ*	B
	黎	*lí*	< *lej*	< **C-rij*	A
	燼	*jìn*	< *dzinH*	< **dzjins*	B
	哀	*āi*	< *ʔoj*	< **ʔij*	A
	頻	*pín*	< *bjin*	< **bjin*	B
257.3	將	*jiāng*	< *tsjang*	< **tsjang*	A
	往	*wǎng*	< *hjwangX*	< **wjangʔ*	A
	維	*wéi*	< *ywij*	< **wjij*	B
	競	*jìng*	< *gjængH*	< **grjangs*	A
	階	*jiē*	< *kɛj*	< **krij*	B
	梗	*gěng*	< *kængX*	< **krangʔ*	A
257.4	慇	*yīn*	< *ʔjin*	< **ʔjin*	A
	宇	*yǔ*	< *hjuX*	< **w(r)jaʔ*	B
	辰	*chén*	< *dzyin*	< **djin*	A
	怒	[*nù*]	< *nuX*	< **naʔ*	B
	處	*chǔ*	< *tsyhoX*	< **KHjaʔ*	B
	瘖	*mín*	< *min*	< **mrjin(ʔ)*	A
	圉	*yǔ*	< *ngjoX*	< **ng(r)jaʔ*	B
257.5	毖	*bì*	< *pijH*	< **prjits*	A
	削	*xuē*	< *sjak*	< **s(l)jewk*	B
	恤	*xù*	< *swit*	< **swjit*	A
	爵	*jué*	< *tsjak*	< **tsjewk*	B
	熱	*rè*	< *nyet*	< **ngjet*	A
	濯	*zhuó*	< *dræwk*	< **lrewk*	B
	淑	*shū*	< *dzyuwk*	< **djiwk*	B
	溺	*nì*	< *nek*	< **newk*	B
257.6	風	*fēng*	< *pjuwng*	< **p(r)jɨ/um*	A
	僾	*ài*	< *ʔojH*	< **ʔits*	B

	心	*xīn*	< *sim*	< **sjɨm*	A
	逮	*dài*	< *dojH*	< **(g-)lɨps*	B
	穡	*sè*	< *srik*	< **srjɨk*	C
	食	*shí*	< *zyik*	< **Ljɨk*	C
	寶	*bǎo*	< *pawX*	< **pu?*	D
	好	*hǎo*	< *xawX*	< **xu?*	D
257.7	王	*wáng*	< *hjwang*	< **wjang*	A
	賊	*zéi*	< *dzok*	< **dzɨk*	B
	痒	*yáng*	< *yang*	< **(l)jang*	A
	國	*guó*	< *kwok*	< **k^{w}ɨk*	B
	荒	*huāng*	< *xwang*	< **hmang*	A
	力	*lì*	< *lik*	< **C-rjɨk*	B
	蒼	*cāng*	< *tshang*	< **srang* (?)	A
257.8	瞻	*zhān*	< *tsyem*	< **tjam*	A
	相	*xiāng*	< *sjang*	< **sjang*	A
	臧	*zāng*	< *tsang*	< **tsang*	A
	腸	*cháng*	< *drjang*	< **g-ljang*	A
	狂	*kuáng*	< *gjwang*	< **g^{w}jang*	A
257.9	林	*lín*	< *lim*	< **C-rjɨm*	A
	鹿	*lù*	< *luwk*	< **C-rok*	B
	譖	*jiàn*	< *tsemH*	< **tsi/ɨms* (?)	A
	穀	*gǔ*	< *kuwk*	< **kok*	B
	谷	*gǔ*	< *kuwk*	< **kok*	B
257.10	里	*lǐ*	< *liX*	< **C-rjɨ?*	A
	喜	*xǐ*	< *xiX*	< **x(r)jɨ?*	A
	能	*néng*	< *nong*	< **nɨ(ng)*	A
	忌	*jì*	< *giH*	< **g(r)jɨʔ(s)*	A
257.11	迪	*dí*	< *dek*	< **liwk*	A
	復	*fù*	< *bjuwk*	< **b(r)juk*	A
	毒	*dú*	< *dowk*	< **duk*	A
257.12	谷	*gǔ*	< *kuwk*	< **kok*	A
	穀	*gǔ*	< *kuwk*	< **kok*	A
	垢	[*gòu*]	< *kuwX*	< **k(r)o?*	A
257.13	隧	*suì*	< *zwijH*	< **zjuts*	A
	類	*lèi*	< *lwijH*	< **C-rjut/ps*	A
	對	*duì*	< *twojH*	< **k-lups*	A
	醉	*zuì*	< *tswijH*	< **tsjuts*	A
	悖	*bèi*	< *bwojH*	< **buts*	A

257.14	作	*zuò*	< *tsak*	< **tsak*	A
	獲	*huò*	< *hwɐk*	< **wrak*	A
	赫	*hè*	< *xæk*	< **xrak*	A
257.15	極	*jí*	< *gik*	< **g(r)jik*	A
	背	*bèi*	< *pwojH*	< **pik(s)*	A
	克	*kè*	< *khok*	< **khik*	A
	力	*lì*	< *lik*	< **C-rjik*	A
257.16	可	*kě*	< *khaX*	< **khaj?*	A
	言	*lì*	< *ljeH*	< **C-rjajs*	A
	歌	*gē*	< *ka*	< **kaj*	A

258 *Dà yǎ* 大雅: *Yún hàn* 雲漢

258.1	天	*tiān*	< *then*	< **hlin*	A
	人	*rén*	< *nyin*	< **njin*	A
	臻	*zhēn*	< *tsrin*	< **tsrjin*	A
	性	*shēng*	< *srjæng*	< **srjeng*	B
	聽	*tīng*	< *theng*	< **hleng*	B
258.2	甚	*shèn*	< *dzyimX*	< **Gjɨlum?*	A
	蟲	*chóng*	< *drjuwng*	< **lrjung*	A
	宮	*gōng*	< *kjuwng*	< **k(r)jung*	A
	宗	*zōng*	< *tsowng*	< **tsung*	A
	臨	*lín*	< *lim*	< **b-rjum*	A
	躬	*gōng*	< *kjuwng*	< **k(r)jung*	A
258.3	推	*tuī*	< *thwoj*	< **thuj*	A
	雷	*léi*	< *lwoj*	< **C-ruj*	A
	遺	*yí*	< *ywij*	< **ljuj*	A
	遺	*yí*	< *ywij*	< **ljuj*	A
	畏	*wèi*	< *ʔjwɨjH*	< **ʔjuj(s)*	A
	摧	[*cuī*]	< *dzwoj*	< **dzuj*	A
258.4	沮	[*jǔ*]	< *dzjoX*	< **dzja?*	A
	所	*suǒ*	< *srjoX*	< **s(k)rja?*	A
	顧	*gù*	< *kuH*	< **kaʔ(s)*	A
	助	*zhù*	< *dzrjoH*	< **dzrjas*	A
	祖	*zǔ*	< *tsuX*	< **tsa?*	A
	予	*yú*	< [*yo*]	< **lja?*	A
258.5	川	*chuān*	< *tsyhwen*	< **KHjul/on*	A
	焚	*fén*	< *bjun*	< **bjun*	A
	薰	*xūn*	< *xjun*	< **xjun*	A

	聞	*wén*	< *mjun*	< **mjun*	A
	遯	*dùn*	< *dwonH*	< **luns*	A
258.6	去	*qù*	< *khjoH*	< **kh(r)jas*	A
	故	*gù*	< *kuH*	< **kaʔ(s)*	A
	莫	*mù*	< *muH*	< **maks*	A
	虞	*yú*	< *ngju*	< **ng^{w}(r)ja*	A
	怒	[*nù*]	< *nuX*	< **naʔ*	A
258.7	紀	[*jǐ*]	< *kiX*	< **k(r)jɨʔ*	A
	宰	*zǎi*	< *tsojX*	< **tsɨʔ*	A
	右	*yòu*	< *hjuwX/H*	< **wjɨʔ(s)*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	里	*lǐ*	< *liX*	< **C-rjɨʔ*	A
258.8	星	*xīng*	< *seng*	< **seng*	A
	贏	*yíng*	< *yeng*	< **(l)jeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
	正	*zhēng*	< *tsyeng*	< **tjeng*	A
	寧	*níng*	< *neng*	< **neng*	A

259 *Dà yǎ* 大雅: *Sōng gāo* 崧高

259.1	天	*tiān*	< *then*	< **hlin*	A
	神	*shén*	< *zyin*	< **Ljin*	A
	申	*shēn*	< *syin*	< **hljin*	A
	翰	*hàn*	< *hanH*	< **gans*	B
	蕃	*fān*	< *pjon*	< **pjan*	B
	宣	*xuān*	< *sjwen*	< **swjan*	B
259.2	事	*shì*	< *dzriH*	< **fisrjɨʔ(s)*	A
	式	*shì*	< *syik*	< **hljik*	A
	伯	*bó*	< *pæk*	< **prak*	B
	宅	*zhái*	< *dræk*	< **drak*	B
	邦	*bāng*	< *pæwng*	< **prong*	C
	功	*gōng*	< *kuwng*	< **kong*	C
259.3	邦	*bāng*	< *pæwng*	< **prong*	A
	庸	[*yōng*]	< *yowng*	< **ljong*	A
	田	*tián*	< *den*	< **din*	B
	人	*rén*	< *nyin*	< **njin*	B
259.4	營	*yíng*	< *yweng*	< **wjeng*	A
	城	*chéng*	< *dzyeng*	< **djeng*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
	藐	[*miǎo*]	< *mæwk*	< **mrawk*	B

	蹻	*jué*	< *gjak*	< **fik(r)jawk*	B
	濯	*zhuó*	< *dræwk*	< **lrewk*	B
259.5	馬	*mǎ*	< *mæx*	< **mra?*	A
	土	*tǔ*	< *thux*	< **hla?*	A
	寶	*bǎo*	< *pawx*	< **pu?*	B
	舅	*jiù*	< *gjuwx*	< **g(r)ju?*	B
	保	*bǎo*	< *pawx*	< **pu?*	B
259.6	鄙	*méi*	< *mij*	< **mrjij*	A
	歸	*guī*	< *kjwij*	< **k^{w}jij*	A
	疆	*jiāng*	< *kjang*	< **kjang*	B
	張	*zhāng*	< *trjang*	< **trjang*	B
	行	*xíng*	< *hæng*	< **grang*	B
259.7	番	*[fān]*	< *pa*	< **paj*	A
	嘽	*tān*	< *than*	< **than*	A
	翰	*hàn*	< *hanH*	< **gans*	A
	憲	*xiàn*	< *xjonH*	< **xjans*	A
259.8	德	*dé*	< *tok*	< **tik*	A
	直	*zhí*	< *drik*	< **drjik*	A
	國	*guó*	< *kwok*	< **k^{w}ik*	A
	碩	*shuò*	< *dzyek*	< **djAk*	B
	伯	*bó*	< *pæk*	< **prak*	B

260 *Dà yǎ* 大雅: *Zhēng mín* 烝民

260.1	則	*zé*	< *tsok*	< **tsik*	A
	德	*dé*	< *tok*	< **tik*	A
	下	*xià*	< *hæx*	< **gra?*	B
	甫	*fǔ*	< *pjux*	< **p(r)ja?*	B
260.2	德	*dé*	< *tok*	< **tik*	A
	則	*zé*	< *tsok*	< **tsik*	A
	色	*sè*	< *srik*	< **srjik*	A
	翼	*yì*	< *yik*	< **ljik*	A
	式	*shì*	< *syik*	< **hljik*	A
	力	*lì*	< *lik*	< **C-rjik*	A
	若	*ruò*	< *nyak*	< **njak*	B
	賦	*fù*	< *pjuH*	< **p(r)jas*	B
260.3	考	*kǎo*	< *khawx*	< **khu?*	A
	保	*bǎo*	< *pawx*	< **pu?*	A
	舌	*shé*	< *zyet*	< **Ljat*	B

	外	*wài*	< *ngwajH*	< **ng^{w}ats*	B
	發	*fā*	< *pjot*	< **pjat*	B
260.4	將	*jiāng*	< *tsjang*	< **tsjang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	身	*shēn*	< *syin*	< **hljin*	B
	人	*rén*	< *nyin*	< **njin*	B
260.5	茹	[*rú*]	< *nyoX*	< **nja?*	A
	吐	*tǔ*	< *thuX*	< **hla?*	A
	甫	*fǔ*	< *pjuX*	< **p(r)ja?*	B
	茹	[*rú*]	< *nyoX*	< **nja?*	B
	吐	*tǔ*	< *thuX*	< **hla?*	B
	寡	*guǎ*	< *kwæX*	< **k^{w}ra?*	B
	禦	*yù*	< *ngjoX*	< **ng(r)ja?*	B
260.6	舉	*jǔ*	< *kjoX*	< **k(r/l)ja?*	A
	圖	*tú*	< *du*	< **d/la*	A
	舉	*jǔ*	< *kjoX*	< **k(r/l)ja?*	A
	助	*zhù*	< *dzrjoH*	< **dzrjas*	A
	補	*bǔ*	< *puX*	< **pa?*	A
260.7	業	*yè*	< *ngjæp*	< **ng(r)jap*	A
	捷	*jié*	< *dzjep*	< **dzjap*	A
	及	*jí*	< *gip*	< **g(r)jɨp*	A
	彭	*bāng*	< *pang*	< **pang*	B
	鏘	*qiāng*	< *tshjang*	< **tshjang*	B
	方	*fāng*	< *pjang*	< **pjang*	B
260.8	騤	*kuí*	< *gwij*	< **g^{w}rɨj*	A
	嗜	*jiē*	< *kɛj*	< **krɨj*	A
	齊	*qí*	< *dzej*	< **fits(h)ij*	A
	歸	*guī*	< *kjwij*	< **k^{w}jɨj*	A
	風	*fēng*	< *pjuwng*	< **p(r)jɨ/um*	B
	心	*xīn*	< *sim*	< **sjɨm*	B

261 *Dà yǎ* 大雅: *Hán yì* 韓奕

261.1	甸	*diàn*	< *denH*	< **dins*	A
	道	*dào*	< *dawX*	< **lu?*	B
	命	*mìng*	< *mjængH*	< **mrjing(s)*	A
	考	*kǎo*	< *khawX*	< **khu?*	B
	解	[*xiè*]	< *kɛiH*	< **kreks*	C
	易	*yì*	< *yek*	< **ljek*	C
	辟	*bì*	< *pjiek*	< **pjek*	C

261.2	張	*zhāng*	< *trjang*	< **trjang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	章	*zhāng*	< *tsyang*	< **tjang*	A
	衡	*héng*	< *hæng*	< **grang*	A
	鍚	*yáng*	< *yang*	< **ljang*	A
	幭	[*miè*]	< *mek*	< **mek*	B
	厄	*è*	< *ngjo ʔek bu*	< **ʔrek*	B
261.3	祖	*zǔ*	< *tsjoX*	< **tsaʔ*	A
	屠	*tú*	< *du*	< **da*	A
	壺	*hú*	< *hu*	< **g/ɦa*	A
	魚	*yú*	<	< **ng(r)ja*	A
	蒲	*pú*	<	< **ba*	A
	車	*jū*	<	< **k(r)ja*	A
	且	*jū*	< *tsjo*	< **tsja*	A
	胥	*xū*	< *sjo*	< **sngja*	A
261.4	子	*zǐ*	< *tsiX*	< **tsjɨʔ*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	里	*lǐ*	< *liX*	< **C-rjɨʔ*	A
	彭	*bāng*	< *pang*	< **pang*	B
	鏘	*qiāng*	< *tshjang*	< **tshjang*	B
	光	*guāng*	< *kwang*	< **k^{w}ang*	B
	雲	*yún*	< *hjun*	< **wjɨn*	C
	門	*mén*	< *mwon*	< **mɨn*	C
261.5	到	*dào*	< *tawH*	< **taws*	A
	樂	*lè*	< *lak*	< **C-rawk*	A
	土	*tǔ*	< *thuX*	< **hlaʔ*	B
	訏	*xǔ*	< *xjuX*	< **hw(r)jaʔ*	B
	甫	*fǔ*	< *pjuX*	< **p(r)jaʔ*	B
	噳	*yǔ*	< *ngjuX*	< **ng^{w}(r)jaʔ*	B
	虎	*hǔ*	< *xuX*	< **xaʔ*(?)	B
	居	*jū*	< *kjo*	< **k(r)ja*	C
	譽	[*yù*]	< *yo*	< **lja*	C
261.6	完	[*wán*]	< *hwan*	< **ɦkon*	A
	蠻	*mán*	< *mæn*	< **mron*	A
	貊	*mò*	< *mæk*	< **mrak*	B
	伯	*bó*	< *pæk*	< **prak*	B
	壑	*hè*	< *xak*	< **xak*	B
	籍	*jí*	< *dzjek*	< **dzjAk*	B
	皮	*pí*	< *bje*	< **b(r)jaj*	C
	黰	[*pí*]	< *pje*	< **p(r)jaj*	C

262 *Dà yǎ* 大雅: *Jiāng Hàn* 江漢

262.1	浮	*fú*	< *bjuw*	< **b(r)ju*	A
	滔	*tāo*	< *thaw*	< **hlu*	A
	遊	*yóu*	< *yuw*	< **ju*	A
	求	*qiú*	< *gjuw*	< **grju*	A
	車	*jū*	< *kjo*	< **k(r)ja*	B
	旗	*yú*	< *yo*	< **lja*	B
	舒	*shū*	< *syo*	< **hlja*	B
	鋪	*pū*	< *phu*	< **pha*	B
262.2	湯	*shāng*	< *syang*	< **hljang*	A
	洸	*guāng*	< *kwang*	< **k^{w}ang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	平	*píng*	< *bjæng*	< **brjeng*	B
	定	*dìng*	< *dengH*	< **dengs*	B
	爭	*zhēng*	< *tsreng*	< **tsr(j)eng*	B
	寧	*níng*	< *neng*	< **neng*	B
262.3	滸	*hǔ*	< *xuX*	< **hnga?*	A
	虎	*hǔ*	< *xuX*	< **xa?* (?)	A
	土	*tǔ*	< *thuX*	< **hla?*	A
	棘	*jí*	< *kik*	< **krjik*	B
	極	*jí*	< *gik*	< **g(r)jik*	B
	理	*lǐ*	< *liX*	< **C-rji?*	C
	海	*hǎi*	< *xojX*	< **hmi?*	C
262.4	宣	*xuān*	< *sjwen*	< **swjan*	A
	翰	*hàn*	< *hanH*	< **gans*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	B
	似	*sì*	< *ziX*	< **zlji?*	B
	祉	[*zhǐ*]	< *trhiX*	< **thrji?*	B
262.5	人	*rén*	< *nyin*	< **njin*	A
	田	*tián*	< *den*	< **din*	A
	命	*mìng*	< *mjængH*	< **mrjing(s)*	A
	命	*mìng*	< *mjængH*	< **mrjing(s)*	A
	年	*nián*	< *nen*	< **nin*	A
262.6	首	*shǒu*	< *syuwX*	< **hlju?*	A
	休	*xiū*	< *xjuw*	< **x(r)ju*	A
	考	*kǎo*	< *khawX*	< **khu?*	A
	壽	*shòu*	< *dzyuwX*	< **dju?*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	B
	已	*yǐ*	< *yiX*	< **lji?*	B

	德	*dé*	< *tok*	< **tɨk*	C
	國	*guó*	< *kwok*	< **k^{w}ɨk*	C

263 *Dà yǎ* 大雅: *Cháng wǔ* 常武

263.1	祖	*zǔ*	< *tsuX*	< **tsa?*	A
	父	*fǔ*	< *pjuX*	< **p(r)ja?*	A
	戒	*jiè*	< *kɛjH*	< **krɨk(s)*	B
	國	*guó*	< *kwok*	< **k^{w}ɨk*	B
263.2	父	*fù*	< *bjuX*	< **b(r)ja?*	A
	旅	*lǚ*	< *ljoX*	< **g-rja?*	A
	浦	*pǔ*	< *phuX*	< **pha?*	A
	土	*tǔ*	< *thuX*	< **hla?*	A
	處	*chǔ*	< *tsyhoX*	< **KHja?*	A
	緒	*xù*	< *zjoX*	< **zja?* (?)	A
263.3	遊	*yóu*	< *yuw*	< **ju*	A
	騷	*sāo*	< *saw*	< **su*	A
	霆	*tíng*	< *deng*	< **leng*	B
	驚	*jīng*	< *kjæng*	< **krjeng*	B
263.4	武	*wǔ*	< *mjuX*	< **Np(r)ja(k)?*	A
	怒	[*nù*]	< *nuX*	< **na?*	A
	虎	*hǔ*	< *xuX*	< **xa?* (?)	A
	虜	*lǔ*	< *luX*	< **C-ra?*	A
	浦	*pǔ*	< *phuX*	< **pha?*	A
	所	*suǒ*	< *srjoX*	< **s(k)rja?*	A
263.5	嘽	*tān*	< *than*	< **than*	A
	翰	*hàn*	< *hanH*	< **gans*	A
	漢	*hàn*	< *xanH*	< **xans*	A
	苞	*bāo*	< *pæw*	< **pru*	B
	流	*liú*	< *ljuw*	< **C-rju*	B
	翼	*yì*	< *yik*	< **ljɨk*	C
	克	*kè*	< *khok*	< **khɨk*	C
	國	*guó*	< *kwok*	< **k^{w}ɨk*	C
263.6	塞	*sāi*	< *sok*	< **sɨk*	A
	來	*lái*	< *loj*	< **C-rɨ(k)*	A
	同	*tóng*	< *duwng*	< **dong*	B
	功	*gōng*	< *kuwng*	< **kong*	B
	平	*píng*	< *bjæng*	< **brjeng*	C
	庭	*tíng*	< *deng*	< **leng*	C

	回	*huí*	< *hwoj*	< **wɨj*	D
	歸	*guī*	< *kjwɨj*	< **k^wjɨj*	D

264 *Dà yǎ* 大雅: *Zhān yǎng* 瞻卬

264.1	天	*tiān*	< *then*	< **hlin*	A
	惠	*huì*	< *hwejH*	< **wets*	B
	寧	*níng*	< *neng*	< **neng*	A
	厲	*lì*	< *ljejH*	< **C-rjats*	B
	定	*dìng*	< *dengH*	< **dengs*	A
	瘵	*zhài*	< *tsrɛjH*	< **tsr(j)ets*	B
	疾	*jí*	< *dzit*	< **dzjit*	B
	屆	*jiè*	< *kɛjH*	< **krets*	B
	收	*shōu*	< *syuw*	< **xjiw*	C
	瘳	*chōu*	< *trhjuw*	< **hrjiw*	C
264.2	田	*tián*	< *den*	< **din*	A
	人	*rén*	< *nyin*	< **njin*	A
	奪	*duó*	< *dwat*	< **lot*	B
	說	*shuì*	< *sywejH*	< **hljots*	B
	成	*chéng*	< *dzyeng*	< **djeng*	C
	傾	*qīng*	< *khjwieng*	< **k^whjeng*	C
264.3	鴟	*chī*	< *tsyhij*	< **thjij*	A
	階	*jiē*	< *kɛj*	< **krij*	A
	天	*tiān*	< *then*	< **hlin*	B
	人	*rén*	< *nyin*	< **njin*	B
	誨	*huì*	< *xwojH*	< **hmɨ(k)s*	C
	寺	*sì*	< *ziH*	< **sdjɨs* (?)	C
264.4	式	*tè*	< *thok*	< **hlɨk*	A
	背	*bèi*	< *pwojH*	< **pik(s)*	A
	極	*jí*	< *gik*	< **g(r)jɨk*	A
	慝	*tè*	< *thok*	< **hnɨk*	A
	倍	*bèi*	< *bwojX*	< **bi?*	B
	識	*shí*	< *syik*	< **stjɨk*	A
	事	*shì*	< *dzriH*	< **fisrjɨʔ(s)*	B
	織	*zhī*	< *tsyik*	< **tjɨk*	A
264.5	刺	*cì*	< *tshjeH*	< **tshjek(s)*	A
	富	*fù*	< *pjuwH*	< **pjɨk(s)*	B
	狄	*dí*	< *dek*	< **lek*	A
	忌	*jì*	< *giH*	< **g(r)jɨʔ(s)*	B
	祥	*xiáng*	< *zjang*	< **z(l)jang*	C
	類	*lèi*	< *lwijH*	< **C-rjut/ps*	D

	亡	*wáng*	< *mjang*	< **mjang*	C
	瘁	[*cuì*]	< *dzwijH*	< **dzjuts*	D
264.6	罔	*wǎng*	< *mjangX*	< **mjang?*	A
	優	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	B
	亡	*wáng*	< *mjang*	< **mjang*	A
	憂	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	B
	罔	*wǎng*	< *mjangX*	< **mjang?*	A
	幾	*jī*	< *kjɨj*	< **kjɨj*	C
	亡	*wáng*	< *mjang*	< **mjang*	A
	悲	*bēi*	< *pij*	< **prjɨj*	C
264.7	深	*shēn*	< *syim*	< **hljɨm*	A
	今	*jīn*	< *kim*	< **k(r)jɨm*	A
	後	*hòu*	< *huwX*	< **fi(r)o?*	B
	鞏	*gǒng*	< *kjowngX*	< **k(r)jong?*	B
	後	*hòu*	< *huwX*	< **fi(r)o?*	B

265 *Dà yǎ* 大雅: *Shào mín* 召旻

265.1	喪	*sàng*	< *sangH*	< **smang(s)*	A
	亡	*wáng*	< *mjang*	< **mjang*	A
	荒	*huāng*	< *xwang*	< **hmang*	A
265.2	訌	[*hòng*]	< *huwng*	< **gong*	A
	共	*gōng*	< *kjowng*	< **k(r)jong*	A
	邦	*bāng*	< *pæwng*	< **prong*	A
265.3	玷	[*diàn*]	< *temX*	< **tem?*	A
	貶	*biǎn*	< *pjemX*	< **prjem?*	A
265.4	茂	[*mào*]	< *muwH*	< **m(r)juʔ(s)*	A
	止	*zhǐ*	< *tsyiX*	< **tjɨ?*	A
265.5	富	*fù*	< *pjuwH*	< **pjɨk(s)*	A
	時	*shí*	< *dzyi*	< **djɨ(?)*	B
	疚	*jiù*	< *kjuwH*	< **k^{w}jɨ(k)s*	A
	茲	*zī*	< *tsi*	< **tsjɨ*	B
	替	*tì*	< *thejH*	< **thij/ts*	C
	引	*yǐn*	< *yinX*	< **ljin?*	C
265.6	竭	*jié*	< *gjot*	< **gjat*	A
	竭	*jié*	< *gjot*	< **gjat*	A
	中	*zhōng*	< *trjuwng*	< **k-ljung*	B
	害	*hài*	< *hajH*	< **fikat(s)*	A
	弘	*hóng*	< *hwong*	< **g^{w}ɨng*	B
	躬	*gōng*	< *kjuwng*	< **k(r)jung*	B

265.7	里	*lǐ*	< *lix*	< **C-rjɨʔ*	A
	里	*lǐ*	< *lix*	< **C-rjɨʔ*	A
	哉	*zāi*	< *tsoj*	< **tsɨ*	A
	舊	*jiù*	< *gjuwH*	< **g^{w}jɨʔ(s)*	A

266 *Zhōu sòng* 周頌: *Qīng miào* 清廟

[no rhymes]

267 *Zhōu sòng* 周頌: *Wéi tiān zhī mìng* 維天之命

267.1	收	*sh u*	< *syuw*	< **xjiw*	A
	篤	*dǔ*	< *towk*	< **tuk*	A

268 *Zhōu sòng* 周頌: *Wéi qīng* 維清

268.1	禋	*yīn*	< *ʔjin*	< **ʔjin*	A
	成	*chéng*	< *dzyeng*	< **djeng*	A
	禎	[*zhēn*]	< *trjeng*	< **trjeng*	A

269 *Zhōu sòng* 周頌: *Liè wén* 烈文

269.1	公	*gōng*	< *kuwng*	< **kong*	A
	疆	*jiāng*	< *kjang*	< **kjang*	A
	邦	*bāng*	< *pæwng*	< **prong*	A
	功	*gōng*	< *kuwng*	< **kong*	A
	皇	*huáng*	< *hwang*	< **wang*	A
	人	*rén*	< *nyin*	< **njin*	B
	訓	*xùn*	< *xjunH*	< **xjuns*	B
	刑	*xíng*	< *heng*	< **geng*	B

270 *Zhōu sòng* 周頌: *Tiān zuò* 天作

270.1	荒	*huāng*	< *xwang*	< **hmang*	A
	康	*kāng*	< *khang*	< **khang*	A
	行	*xíng*	< *hæng*	< **grang*	A

271 *Zhōu sòng* 周頌: *Hào tiān yǒu chéng mìng* 昊天有成命

[no rhymes]

272 *Zhōu sòng* 周頌: *Wǒ jiāng* 我將

272.1	方	*fāng*	< *pjang*	< **pjang*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	饗	*xiǎng*	< *xjangX*	< **xjang?*	A

273 *Zhōu sòng* 周頌: *Shí mài* 時邁

[no rhymes]

274 *Zhōu sòng* 周頌: *Zhí jìng* 執競

274.1	王	*wáng*	< *hjwang*	< **wjang*	A
	康	*kāng*	< *khang*	< **khang*	A
	皇	*huáng*	< *hwang*	< **wang*	A
	康	*kāng*	< *khang*	< **khang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	喤	[*huáng*]	< *hwæng*	< **wrang*	A
	將	*qiāng*	< *tshjang*	< **tshjang*	A
	穰	*ráng*	< *nyang*	< **njang*	A
	簡	*jiǎn*	< [*kɛnX*]	< **kran?*	B
	反	*fǎn*	< *pjonX*	< **pjan?*	B
	反	*fǎn*	< *pjonX*	< **pjan?*	B

275 *Zhōu sòng* 周頌: *Sī wén* 思文

275.1	稷	*jì*	< *tsik*	< **tsjik*	A
	天	*tiān*	< *then*	< **hlin*	B
	民	*mín*	< *mjin*	< **mjin*	B
	極	*jí*	< *gik*	< **g(r)jik*	A

276 *Zhōu sòng* 周頌: *Chén gōng* 臣工

276.1	工	*gōng*	< *kuwng*	< **kong*	A
	公	*gōng*	< *kuwng*	< **kong*	A

277 *Zhōu sòng* 周頌: *Yī xī* 噫嘻

[no rhymes]

278 *Zhōu sòng* 周頌: *Zhèn lù* 振鷺

278.1	雝	*yōng*	< *ʔjowng*	< **ʔ(r)jong*	A
	容	*róng*	< *yowng*	< **(l)jong*	A
	惡	*è*	< *ʔak*	< **ʔak*	B
	斁	*yì*	< *yek*	< **ljAk*	B
	夜	*yè*	< *yæH*	< **(l)jAks*	B
	譽	*yù*	< *yoH*	< **ljas*	B

279 *Zhōu sòng* 周頌: *Fēng nián* 豐年

279.1	黍	*shǔ*	< *syoX*	< **hjaʔ*	A
	稌	[*tú*]	< *duX*	< **laʔ*	A
	秭	*zǐ*	< *tsijX*	< **tsjijʔ*	B
	醴	*lǐ*	< *lejX*	< **C-rijʔ*	B
	妣	*bǐ*	< *pjijX*	< **pjijʔ*	B
	禮	*lǐ*	< *lejX*	< **C-rijʔ*	B
	皆	*jiē*	< *kɛj*	< **krij*	B

280 *Zhōu sòng* 周頌: *Yǒu gǔ* 有瞽

280.1	瞽	*gǔ*	< *kuX*	< **kaʔ*	A
	虡	*jù*	< *gjoX*	< **g(r)jaʔ*	A
	羽	*yǔ*	< *hjuX*	< **w(r)jaʔ*	A
	鼓	*gǔ*	< *kuX*	< **kaʔ*	A
	圉	*yǔ*	< *ngjoX*	< **ng(r)jaʔ*	A
	舉	*jǔ*	< *kjoX*	< **k(r/l)jaʔ*	A
	聲	*shēng*	< *syeng*	< **xjeng*	B
	鳴	*míng*	< *mjæng*	< **mrjeng*	B
	聽	*tīng*	< *theng*	< **hleng*	B
	成	*chéng*	< *dzyeng*	< **djeng*	B

281 *Zhōu sòng* 周頌: *Qián* 潛

281.1	汎	*jū*	< *ts(h)jo*	< **ts(h)ja*	A
	魚	*yú*	< *ngjo*	< **ng(r)ja*	A
	鮪	*wěi*	< *hwijx*	< **wrjɨʔ*	B
	鯉	*lǐ*	< *lix*	< **C-rjɨʔ*	B
	祀	*sì*	< *zix*	< **zjɨk(ʔ)*	C
	福	*fú*	< *pjuwk*	< **pjɨk*	C

282 *Zhōu sòng* 周頌: *Yōng* 雝

282.1	雝	*yōng*	< *ʔjowng*	< **ʔ(r)jong*	A
	肅	*sù*	< *sjuwk*	< **sjiwk*	B
	公	*gōng*	< *kuwng*	< **kong*	A
	穆	*mù*	< *mjuwk*	< **m(r)jiwk*	B
	牡	*mǔ*	< *muwx*	< **m(r)juʔ*	C
	祀	*sì*	< *zix*	< **zjɨk(ʔ)*	D
	考	*kǎo*	< *khawx*	< **khuʔ*	C
	子	*zǐ*	< *tsix*	< **tsjɨʔ*	D
	人	*rén*	< *nyin*	< **njin*	E
	后	*hòu*	< *huwx*	< **g(r)oʔ*	F
	天	*tiān*	< *then*	< **hlin*	E
	後	*hòu*	< *huwx*	< **ɦi(r)oʔ*	F
	壽	*shòu*	< *dzyuwx*	< **djuʔ*	G
	祉	[*zhǐ*]	< *trhix*	< **thrjɨʔ*	H
	考	*kǎo*	< *khawx*	< **khuʔ*	G
	母	*mǔ*	< *muwx*	< **m(r)o/iʔ*	H

283 *Zhōu sòng* 周頌: *Zàijiàn* 載見

283.1	王	*wáng*	< *hjwang*	< **wjang*	A
	章	*zhāng*	< *tsyang*	< **tjang*	A
	陽	*yáng*	< *yang*	< **ljang*	A
	央	*yāng*	< *ʔjang*	< **ʔjang*	A
	鶴	*qiāng*	< *tshjang*	< **tshjang*	A
	光	*guāng*	< *kwang*	< **k^{w}ang*	A
	考	*kǎo*	< *khawx*	< **khuʔ*	B
	享	*xiǎng*	< *xjangx*	< **xjangʔ*	A
	壽	*shòu*	< *dzyuwx*	< **djuʔ*	B
	保	*bǎo*	< *pawx*	< **puʔ*	B
	祜	*hù*	< *hux*	< **gaʔ*	C
	嘏	[*gǔ*]	< *kæx*	< **kraʔ*	C

284 *Zhōu sòng* 周頌: *Yǒu kè* 有客

284.1	馬	*mǎ*	< *mæX*	< **mra?*	A
	且	[*jū*]	< *tshjoX*	< **tshja?*	A
	旅	*lǚ*	< *ljoX*	< **g-rja?*	A
	馬	*mǎ*	< *mæX*	< **mra?*	A
	追	*zhuī*	< *trwij*	< **ɽjuj*	B
	綏	[*suí*]	< *swij*	< **snjuj*	B
	威	*wēi*	< *ʔjwij*	< **ʔjuj*	C
	夷	*yí*	< *yij*	< **ljɨj*	C

285 *Zhōu sòng* 周頌: *Wǔ* 武

[no rhymes]

286 *Zhōu sòng* 周頌: *Mǐn yú xiǎo zǐ* 閔予小子

286.1	造	*zào*	< *dzawX*	< **dzu?*	A
	考	*kǎo*	< *khawX*	< **khu?*	A
	孝	*xiào*	< *xæwH*	< **xrus*	A
	庭	*tíng*	< *deng*	< **leng*	B
	敬	*jìng*	< *kjængH*	< **krjengs*	B
	王	*wáng*	< *hjwang*	< **wjang*	C
	忘	*wàng*	< *mjang(H)*	< **mjang*	C

287 *Zhōu sòng* 周頌: *Fǎng luò* 訪落

287.1	艾	*ài*	< *ngajH*	< **ngats*	B
	渙	*huàn*	< *xwanH*	< **hwans*	B
	難	*nán*	< *nan*	< **nan*	B
	下	*xià*	< *hæX*	< **gra?*	C
	家	*jiā*	< *kæ*	< **kra*	C

288 *Zhōu sòng* 周頌: *Jìng zhī* 敬之

288.1	之	*zhī*	< *tsyi*	< **tjɨ*	A
	思	*sī*	< *si*	< **sjɨ*	A
	哉	*zāi*	< *tsoj*	< **tsɨ*	A
	士	*shì*	< *dzrix*	< **fisrjɨ?*	A
	茲	*zī*	< *tsi*	< **tsjɨ*	A

子	*zǐ*	< *tsiX*	< **tsjiʔ*	A
止	*zhǐ*	< *tsyiX*	< **tjiʔ*	A
將	*jiāng*	< *tsjang*	< **tsjang*	B
明	*míng*	< *mjæng*	< **mrjang*	B
行	*xíng*	< *hæng*	< **grang*	B

289 *Zhōu sòng* 周頌: *Xiǎo bì* 小毖

289.1	鳥	[*niǎo*]	< *tewX*	< **tiwʔ*	A
	蓼	*liǎo*	< *lewX*	< **C-riwʔ*	A

290 *Zhōu sòng* 周頌: *Zài shān* 載芟

290.1	柞	*zé*	< *tsræk*	< **tsrak*	A
	澤	*shì*	< *syek*	< **hljAk*	A
	耘	*yún*	< *hjun*	< **wjin*	B
	畛	*zhěn*	< *tsyinX*	< **tjinʔ*	B
	伯	*bó*	< *pæk*	< **prak*	C
	旅	*lǚ*	< *ljoX*	< **g-rjaʔ*	C
	以	*yǐ*	< *yiX*	< **ljiʔ*	D
	婦	*fù*	< *bjuwX*	< **bjiʔ*	D
	士	*shì*	< *dzriX*	< **fisrjiʔ*	D
	耜	*sì*	< *ziX*	< **zljiʔ*	D
	畝	*mǔ*	< *muwX*	< **m(r)o/iʔ*	D
	活	*huó*	< *hwat*	< **g^{w}at*	E
	達	*dá*	< *dat*	< **lat*	E
	傑	*jié*	< *gjet*	< **grjat*	E
	苗	*miáo*	< *mjew*	< **m(r)jaw*	F
	麃	*biāo*	< *pjew*	< **p(r)jaw*	F
	濟	*jǐ*	< *tsejX*	< **tsijʔ*	G
	秭	*zǐ*	< *tsijX*	< **tsjijʔ*	G
	醴	*lǐ*	< *lejX*	< **C-rijʔ*	G
	妣	*bǐ*	< *pjijX*	< **pjijʔ*	G
	禮	*lǐ*	< *lejX*	< **C-rijʔ*	G
	香	*xiāng*	< *xjang*	< **xjang*	H
	光	*guāng*	< *kwang*	< **k^{w}ang*	H
	馨	[*xīn*]	< *xeng*	< **xeng*	I
	寧	*níng*	< *neng*	< **neng*	I

291 *Zhōu sòng* 周頌: *Liáng sì* 良耜

291.1	耜	*sì*	< *ziX*	< **zljɨʔ*	A
	畝	*mǔ*	< *muwX*	< **m(r)oljɨʔ*	A
	女	*rǔ*	< *nyoX*	< **njaʔ*	B
	筥	*jǔ*	< *kjoX*	< **krjaʔ*	B
	黍	*shǔ*	< *syoX*	< **hjaʔ*	B
	糾	[*jiū*]	< *kjiwX*	< **k(r)jiwʔ*	C
	趙	[*tiǎo*]	< *dewX*	< **lewʔ*	C
	蓼	*liǎo*	< *lewX*	< **C-riwʔ*	C
	朽	*xiǔ*	< *xjuwX*	< **x(r)juʔ*	D
	茂	[*mào*]	< *muwH*	< **m(r)juʔ(s)*	D
	栉	*zhì*	< *trit*	< **trjit*	E
	栗	*lì*	< *lit*	< **C-rjit*	E
	櫛	*zhì*	< *tsrit*	< **tsrjit*	E
	室	*shì*	< *syit*	< **stjit*	E
	盈	*yíng*	< *yeng*	< **(l)jeng*	F
	寧	*níng*	< *neng*	< **neng*	F
	角	*jiǎo*	< *kæwk*	< **krok*	G
	續	*xù*	< *zjowk*	< **zljok*	G

292 *Zhōu sòng* 周頌: *Sī yī* 絲衣

292.1	紑	[*fóu*]	< *phjuw*	< **phjɨ*	A
	俅	*qiú*	< *gjuw*	< **g(r)ju*	A
	基	*jī*	< *ki*	< **k(r)jɨ*	A
	牛	*niú*	< *ngjuw*	< **ng^{w}jɨ*	A
	鼎	*zī*	< *tsi*	< **tsjɨ*	A
	觩	*qiú*	< *gjiw*	< **g(r)jiw* (?)	B
	柔	*róu*	< *nyuw*	< **nju*	B
	休	*xiū*	< *xjuw*	< **x(r)ju*	B

293 *Zhōu sòng* 周頌: *Zhuó* 酌

[no rhymes]

294 *Zhōu sòng* 周頌: *Huán* 桓

294.1	王	*wáng*	< *hjwang*	< **wjang*	A
	士	*shì*	< *dzriX*	< **fisrjɨʔ*	B

方	*fāng*	< *pjang*	< **pjang*	A
之	*zhī*	< *tsyi*	< **tjɨ*	B

295 *Zhōu sòng* 周頌: *Lài* 賚

295.1	止	*zhǐ*	< *tsyiX*	< **tjɨʔ*	A
	之	*zhī*	< *tsyi*	< **tjɨ*	A
	思	*sī*	< *si*	< **sjɨ*	A
	定	*dìng*	< *dengH*	< **dengs*	B
	命	*mìng*	< *mjængH*	< **mrjing(s)*	B
	思	*sī*	< *si*	< **sjɨ*	A

296 *Zhōu sòng* 周頌: *Pán* 般

[no rhymes]

297 *Lǔ sòng* 魯頌: *Jiōng* 駉

297.1	馬	*mǎ*	< *mæX*	< **mraʔ*	A
	野	*yě*	< *yæX*	< **ljAʔ*	A
	者	*zhě*	< *tsyæX*	< **tjAʔ*	A
	皇	*huáng*	< *hwang*	< **wang*	B
	黃	*huáng*	< *hwang*	< **g^{w}ang*	B
	彭	*bāng*	< *pang*	< **pang*	B
	彊	*jiāng*	< *kjang*	< **kjang*	B
	臧	*zāng*	< *tsang*	< **tsang*	B
297.2	馬	*mǎ*	< *mæX*	< **mraʔ*	A
	野	*yě*	< *yæX*	< **ljAʔ*	A
	者	*zhě*	< *tsyæX*	< **tj˙Aʔ*	A
	駓	*pī*	< *ph/bij*	< **ph/brjɨ*	B
	騏	*qí*	< *gi*	< **g(r)jɨ*	B
	伾	*pī*	< *phij*	< **phrjɨ*	B
	期	[*qī*]	< *gi*	< **g(r)jɨ*	B
	才	*cái*	< *dzoj*	< **dzɨ*	B
297.3	馬	*mǎ*	< *mæX*	< **mraʔ*	A
	野	*yě*	< *yæX*	< **ljAʔ*	A
	者	*zhě*	< *tsyæX*	< **tjAʔ*	A
	駱	*luò*	< *lak*	< **C-rak*	B
	雒	*luò*	< *lak*	< **C-rak*	B
	繹	*yì*	< *yek*	< **ljAk*	B

	斁	*yì*	< *yek*	< **ljAk*	B
	作	*zuò*	< *tsak*	< **tsak*	B
297.4	馬	*mǎ*	< *mæX*	< **mra?*	A
	野	*yě*	< *yæX*	< **ljA?*	A
	者	*zhě*	< *tsyæX*	< **tjA?*	A
	叚	*xiá*	< *hæ*	< **gra*	B
	魚	*yú*	< *ngjo*	< **ng(r)ja*	B
	祛	*qū*	< *khjo*	< **kh(r)ja*	B
	邪	*xié*	< *zjæ*	< **z(ng)jA*	B
	徂	*cú*	< *dzu*	< **dza*	B

298 *Lǔ sòng* 魯頌: *Yǒu bì* 有駜

298.1	黃	*huáng*	< *hwang*	< **g^{w}ang*	A
	明	*míng*	< *mjæng*	< **mrjang*	A
	下	*xià*	< *hæX*	< **gra?*	B
	舞	*wǔ*	< *mjuX*	< **m(r)ja?*	B
298.2	牡	*mǔ*	< *muwX*	< **m(r)ju?*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	飛	*fēi*	< *pjɨj*	< **pjɨj*	B
	歸	*guī*	< *kjwɨj*	< **k^{w}jɨj*	B
298.3	駉	*xuān*	< *xwen(H)*	< **hwen(s)*	A
	燕	*yàn*	< *ʔenH*	< **ʔens*	A
	始	*shǐ*	< *syiX*	< **hljɨ?*	B
	有	*yǒu*	< *hjuwX*	< **wjɨ?*	B
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	B

299 *Lǔ sòng* 魯頌: *Pàn shuǐ* 泮水

299.1	芹	*qín*	< *gjɨn*	< **gjɨn*	A
	旂	*qí*	< *gjɨj*	< **gjɨj*	A
	茂	[*pèi*]	< *bajH*	< **bots*	B
	噦	*huì*	< *xwajH*	< **hwats*	B
	大	[*dà*]	< *dajH*	< **lats*	B
	邁	*mài*	< *mæjH*	< **mrats*	B
299.2	藻	*zǎo*	< *tsawX*	< **tsaw?*	A
	蹻	[*jué*]	< *kjewX*	< **k(r)jaw(k)?*	A
	蹻	[*jué*]	< *kjewX*	< **k(r)jaw(k)?*	A
	昭	[*zhāo*]	< *tsyewX*	< **tjaw?*	A

	笑	*xiào*	< *sjewH*	< **sjaws*	A
	教	*jiào*	< *kæwH*	< **kraw(k)s*	A
299.3	茆	*mǎo*	< *mæwX*	< **mru?*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	酒	*jiǔ*	< *tsjuwX*	< **tsju?*	A
	老	*lǎo*	< *lawX*	< **C-ru?*	A
	道	*dào*	< *dawX*	< **lu?*	A
	醜	*chǒu*	< *tsyhuwX*	< **thju?*	A
299.4	德	*dé*	< *tok*	< **tɨk*	A
	則	*zé*	< *tsok*	< **tsɨk*	A
	武	*wǔ*	< *mjuX*	< **Np(r)ja(k)?*	B
	祖	*zǔ*	< *tsuX*	< **tsa?*	B
	祐	*hù*	< *huX*	< **ga?*	B
299.5	德	*dé*	< *tok*	< **tɨk*	A
	服	*fú*	< *bjuwk*	< **bjɨk*	A
	馘	*guó*	< *kwɛk*	< **k^{w}rɨk*	A
	陶	*yáo*	< [*yew*]	< **lju*	B
	囚	*qiú*	< *zjuw*	< **zju*	B
299.6	心	*xīn*	< *sim*	< **sjɨm*	A
	南	*nán*	< *nom*	< **nɨm*	A
	皇	*huáng*	< *hwang*	< **wang*	B
	揚	*yáng*	< *yang*	< **ljang*	B
	詶	*xiōng*	< *xjowng*	< **x(r)jong*	C
	功	*gōng*	< *kuwng*	< **kong*	C
299.7	觫	*qiú*	< *gjiw*	< **g(r)jiw* (?)	A
	搜	*sōu*	< *srjuw*	< **srju*	A
	博	*bó*	< *pak*	< **pak*	B
	斁	*yì*	< *yek*	< **ljAk*	B
	逆	*nì*	< *ngjæk*	< **ngrjak*	B
	獲	*huò*	< *hwɛk*	< **wrak*	B
299.8	林	*lín*	< *lim*	< **C-rjɨm*	A
	罽	*shèn*	< *zyimX*	◆ **sGjilum?* (?)	A
	音	*yīn*	< *ʔim*	< **ʔ(r)jɨm*	A
	琛	*chēn*	< *trhim*	< **hlrjɨm*	A
	金	*jīn*	< *kim*	< **k(r)jɨm*	A

300 *Lǔ sòng* 魯頌: *Bì gōng* 閟宮

300.1	枚	*méi*	< *mwoj*	< **mɨj*	A
	回	*huí*	< *hwoj*	< **wɨj*	A

	依	*yī*	< *ʔjij*	< **ʔjij*	A
	遲	*chí*	< *drij*	< **drjij*	A
	稷	*jì*	< *tsik*	< **tsjɨk*	B
	福	*fú*	< *pjuwk*	< **pjɨk*	B
	穆	*lù*	< *ljuwk*	< **C-rjiwk*	B
	麥	*mài*	< *mɛk*	< **mrɨk*	B
	國	*guó*	< *kwok*	< **k^{w}ɨk*	B
	穉	*sè*	< *srik*	< **srjɨk*	B
	黍	*shǔ*	< *syoX*	< **hja?*	C
	稷	*jì*	< *gjoX*	< **g(r)ja?*	C
	土	*tǔ*	< *thuX*	< **hla?*	C
	緒	*xù*	< *zjoX*	< **zja?* (?)	C
300.2	王	*wáng*	< *hjwang*	< **wjang*	A
	陽	*yáng*	< *yang*	< **ljang*	A
	商	*shāng*	< *syang*	< **h(l)jang*	A
	武	*wǔ*	< *mjuX*	< **Np(r)ja(k)?*	B
	緒	*xù*	< *zjoX*	< **zja?* (?)	B
	野	*yě*	< *yæX*	< **ljA?*	B
	虞	*yú*	< *ngju*	< **ng^{w}(r)ja*	B
	女	*rǔ*	< *nyoX*	< **nja?*	B
	旅	*lǚ*	< *ljoX*	< **g-rja?*	B
	父	*fù*	< *bjuX*	< **b(r)ja?*	B
	魯	*lǔ*	< *luX*	< **C-ra?*	B
	宇	*yǔ*	< *hjuX*	< **w(r)ja?*	B
	輔	[*fǔ*]	< *bjuX*	< **b(r)ja?*	B
300.3	公	*gōng*	< *kuwng*	< **kong*	A
	東	*dōng*	< *tuwng*	< **tong*	A
	庸	[*yōng*]	< *yowng*	< **ljong*	A
	子	*zǐ*	< *tsiX*	< **tsjɨ?*	B
	祀	*sì*	< *ziX*	< **zjɨk(?)*	B
	耳	*ěr*	< *nyiX*	< **njɨ?*	B
	解	[*xiè*]	< *kɛiH*	< **kreks*	C
	式	*tè*	< *thok*	< **hlɨk*	D
	帝	*dì*	< *tejH*	< **teks*	C
	稷	*jì*	< *tsik*	< **tsjɨk*	D
	犧	*xī*	< *xje*	< **hng(r)jaj*	E
	宜	*yí*	< *ngje*	< **ng(r)jaj*	E
	多	*duō*	< *ta*	< **taj*	E
	祖	*zǔ*	< *tsuX*	< **tsa?*	F
	女	*rǔ*	< *nyoX*	< **nja?*	F
300.4	嘗	*cháng*	< *dzyang*	< **djang*	A
	衡	*héng*	< *hæng*	< **grang*	A

	剛	*gāng*	< *kang*	< **kang*	A
	將	*qiāng*	< *tshjang*	< **tshjang*	A
	羹	*gēng*	< *kæng*	< **krang*	A
	房	*fáng*	< *bjang*	< **bjang*	A
	洋	*yáng*	< *yang*	< **(l)jang*	A
	慶	*qìng*	< *khjængH*	< **khrjang(s)*	A
	昌	*chāng*	< *tsyhang*	< **thjang*	A
	臧	*zāng*	< *tsang*	< **tsang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	常	*cháng*	< *dzyang*	< **djang*	A
	崩	*bēng*	< *pong*	< **ping*	B
	騰	*téng*	< *dong*	< **ling*	B
	朋	*péng*	< *bong*	< **bing*	B
	陵	*líng*	< *ling*	< **b-rjing*	B
300.5	乘	*shèng*	< *zyingH*	< **Ljings*	A
	螣	*téng*	< *dong*	< **ling*	A
	弓	*gōng*	< *kjuwng*	< **k^{w}jing*	A
	緄	*qīn*	< *tshim*	< **tshjil/im*	A
	增	*zēng*	< *tsong*	< **tsing*	A
	膺	*yīng*	< *ʔing*	< **ʔ(r)jing*	A
	懲	*chéng*	< *dring*	< **drjing*	A
	承	*chéng*	< *dzying*	< **djing*	A
	熾	*chì*	< *tsyhiH*	< **thjik(s)*	B
	富	*fù*	< *pjuwH*	< **pjik(s)*	B
	背	*bèi*	< *pwojH*	< **pik(s)*	B
	試	*shì*	< *syiH*	< **hljik(s)*	B
	大	[*dà*]	< *dajH*	< **lats*	C
	艾	*ài*	< *ngajH*	< **ngats*	C
	歲	*suì*	< *sjwejH*	< **swjat(s)*	C
	害	*hài*	< *hajH*	< **fikat(s)*	C
300.6	嚴	*yán*	< *ngæm*	< **ngram*	A
	詹	*zhān*	< *tsyem*	< **tjam*	A
	蒙	*méng*	< *muwng*	< **mong*	B
	東	*dōng*	< *tuwng*	< **tong*	B
	邦	*bāng*	< *pæwng*	< **prong*	B
	同	*tóng*	< *duwng*	< **dong*	B
	從	*cóng*	< *dzjowng*	< **dzjong*	B
	功	*gōng*	< *kuwng*	< **kong*	B
300.7	繹	*yì*	< *yek*	< **ljAk*	A
	宅	*zhái*	< *dræk*	< **drak*	A
	邦	*bāng*	< *pæwng*	< **prong*	B
	貊	*mò*	< *mæk*	< **mrak*	A

	從	*cóng*	< *dzjowng*	< **dzjong*	B
	諾	*nuò*	< *nak*	< **nak*	A
	若	*ruò*	< *nyak*	< **njak*	A
300.8	嘏	[*gǔ*]	< *kæX*	< **kra?*	A
	魯	*lǔ*	< *luX*	< **C-ra?*	A
	許	*xǔ*	< *xjoX*	< **hng(r)ja?*	A
	宇	*yǔ*	< *hjuX*	< **w(r)ja?*	A
	喜	*xǐ*	< *xiX*	< **x(r)ji?*	B
	母	*mǔ*	< *muwX*	< **m(r)o/i?*	B
	士	*shì*	< *dzriX*	< **fisrji?*	B
	有	*yǒu*	< *hjuwX*	< **wji?*	B
	祉	[*zhǐ*]	< *trhiX*	< **thrji?*	B
	齒	*chǐ*	< *tsyhiX*	< **thji?*	B
300.9	柏	*bǎi*	< *pæk*	< **prak*	A
	度	*duó*	< *dak*	< **lak*	A
	尺	*chǐ*	< *tsyhek*	< **thjAk*	A
	烏	*xì*	< *sjek*	< **sjAk*	A
	碩	*shuò*	< *dzyek*	< **djAk*	A
	奕	*yì*	< *yek*	< **jAk*	A
	作	*zuò*	< *tsak*	< **tsak*	A
	碩	*shuò*	< *dzyek*	< **djAk*	A
	若	*ruò*	< *nyak*	< **njak*	A

301 *Shāng sòng* 商頌: *Nuó* 那

301.1	猗	*yī*	< *ʔje*	< **ʔ(r)jaj*	A
	那	*nuó*	< *na*	< **naj*	A
	鼓	*gǔ*	< *kuX*	< **ka?*	B
	祖	*zǔ*	< *tsuX*	< **tsa?*	B
	假	*jiǎ*	< *kæX*	< **kra?*	B
	成	*chéng*	< *dzyeng*	< **djeng*	C
	聲	*shēng*	< *syeng*	< **xjeng*	C
	平	*píng*	< *bjæng*	< **brjeng*	C
	聲	*shēng*	< *syeng*	< **xjeng*	C
	聲	*shēng*	< *syeng*	< **xjeng*	C
	鞗	*yì*	< *yek*	< **ljAk*	D
	奕	*yì*	< *yek*	< **jAk*	D
	客	*kè*	< *khæk*	< **khrak*	D
	懌	*yì*	< *yek*	< **ljAk*	D
	昔	*xī*	< *sjek*	< **sjAk*	D
	作	*zuò*	< *tsak*	< **tsak*	D

夕	*xī*	< *zjek*	< **z(l)jAk*	D
恪	*kè*	< *khak*	< **khak*	D
嘗	*cháng*	< *dzyang*	< **djang*	E
將	*jiāng*	< *tsjang*	< **tsjang*	E

302 *Shāng sòng* 商頌: *Liè zǔ* 烈祖

302.1	祖	*zǔ*	< *tsuX*	< **tsa?*	A
	祜	*hù*	< *huX*	< **ga?*	A
	所	*suǒ*	< *srjoX*	< **s(k)rja?*	A
	酤	[*gū*]	< *huX*	< **ga?*	A
	成	*chéng*	< *dzyeng*	< **djeng*	B
	平	*píng*	< *bjæng*	< **brjeng*	B
	爭	*zhēng*	< *tsrɛng*	< **tsr(j)eng*	B
	疆	*jiāng*	< *kjang*	< **kjang*	C
	衡	*héng*	< *hæng*	< **grang*	C
	鶴	*qiāng*	< *tshjang*	< **tshjang*	C
	享	*xiǎng*	< *xjangX*	< **xjang?*	C
	將	*jiāng*	< *tsjang*	< **tsjang*	C
	康	*kāng*	< *khang*	< **khang*	C
	穰	*ráng*	< *nyang*	< **njang*	C
	饗	*xiāng*	< *xjangX*	< **xjang?*	C
	疆	*jiāng*	< *kjang*	< **kjang*	C
	嘗	*cháng*	< *dzyang*	< **djang*	C
	將	*jiāng*	< *tsjang*	< **tsjang*	C

303 *Shāng sòng* 商頌: *Xuán niǎo* 玄鳥

303.1	商	*shāng*	< *syang*	< **h(l)jang*	A
	芒	*máng*	< *mang*	< **mang*	A
	湯	*tāng*	< *thang*	< **hlang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	有	*yǒu*	< *hjuwX*	< **wji?*	B
	殆	*dài*	< *dojX*	< **li?*	B
	子	*zǐ*	< *tsiX*	< **tsji?*	B
	勝	*shēng*	< *sying*	< **hljing*	C
	乘	*shèng*	< *zyingH*	< **Ljings*	C
	承	*chéng*	< *dzying*	< **djing*	C
	里	*lǐ*	< *liX*	< **C-rji?*	D
	止	*zhǐ*	< *tsyiX*	< **tji?*	D
	海	*hǎi*	< *xojX*	< **hmi?*	D

	祁	*qí*	< *gij*	< **grjɨj*	E
	河	*hé*	< *ha*	< **gaj*	E
	宜	*yí*	< *ngje*	< **ng(r)jaj*	E
	何	*hè*	< *haX*	< **gaj?*	E

304 *Shāng sòng* 商頌: *Cháng fā* 長發

304.1	商	*shāng*	< *syang*	< **h(l)jang*	A
	祥	*xiáng*	< *zjang*	< **z(l)jang*	A
	芒	*máng*	< *mang*	< **mang*	A
	方	*fāng*	< *pjang*	< **pjang*	A
	疆	*jiāng*	< *kjang*	< **kjang*	A
	長	*cháng*	< *drjang*	< **ɦtrjang*	A
	將	*jiāng*	< *tsjang*	< **tsjang*	A
	商	*shāng*	< *syang*	< **h(l)jang*	A
304.2	撥	*bō*	< *pat*	< **pat*	A
	達	*dá*	< *dat*	< **lat*	A
	達	*dá*	< *dat*	< **lat*	A
	越	*yuè*	< *hjwot*	< **wjat*	A
	發	*fā*	< *pjot*	< **pjat*	A
	烈	*liè*	< *ljet*	< **C-rjat*	A
	截	*jié*	< *dzet*	< **dzet*	A
304.3	違	*wéi*	< *hjwɨj*	< **wjɨj*	A
	齊	*qí*	< *dzej*	< **ɦtsɨj*	A
	遲	*chí*	< *drij*	< **drjɨj*	A
	躋	*jī*	< *tsej*	< **tsɨj*	A
	遲	*chí*	< *drij*	< **drjɨj*	A
	祗	*zhī*	< *tsyij*	< **tjɨj*	A
	圍	*wéi*	< *hjwɨj*	< **wjɨj*	A
304.4	球	*qiú*	< *gjuw*	< **grju*	A
	旒	*liú*	< *ljuw*	< **C-rju*	A
	休	*xiū*	< *xjuw*	< **x(r)ju*	A
	梂	*qiú*	< *gjuw*	< **g(r)ju*	A
	柔	*róu*	< *nyuw*	< **nju*	A
	優	*yōu*	< *ʔjuw*	< **ʔ(r)ju*	A
	遒	[*qiú*]	< *tsjuw*	< **tsju*	A
304.5	共	*gōng*	< *kjowng*	< **k(r)jong*	A
	厖	*máng*	< *mæwng*	< **mrong*	A
	龍	*lóng*	< *ljowng*	< **C-rjong*	A
	勇	*yǒng*	< *yowngX*	< **ljong?*	A
	動	*dòng*	< *duwngX*	< **dong?*	A

	竦	*sǒng*	< *sjowngX*	< **sjong?*	A
	總	*zǒng*	< *tsuwngX*	< **tsong?*	A
304.6	旆	[*pèi*]	< *bajH*	< **bots*	A
	鉞	*yuè*	< *hjwot*	< **wjat*	A
	烈	*liè*	< *ljet*	< **C-rjat*	A
	曷	*hé*	< *hat*	< **fikat*	A
	蘖	[*niè*]	< *ngat*	< **ngat*	A
	達	*dá*	< *dat*	< **lat*	A
	截	*jié*	< *dzet*	< **dzet*	A
	伐	*fá*	< *bjot*	< **bjat*	A
	桀	*jié*	< *gjet*	< **grjat*	A
304.7	葉	*yè*	< *yep*	< **ljap*	A
	業	*yè*	< *ngjæp*	< **ng(r)jap*	A
	子	*zǐ*	< *tsiX*	< **tsji?*	B
	士	*shì*	< *dzriX*	< **fisrji?*	B
	衡	*héng*	< *hæng*	< **grang*	C
	王	*wáng*	< *hjwang*	< **wjang*	C

305 *Shāng sòng* 商頌: *Yīnwǔ* 殷武

305.1	武	*wǔ*	< *mjuX*	< **Np(r)ja(k)?*	A
	楚	*chǔ*	< *tsrhjoX*	< **tsrhja?*	A
	阻	*zǔ*	< *tsrjoX*	< **tsrja?*	A
	旅	*lǚ*	< *ljoX*	< **g-rja?*	A
	所	*suǒ*	< *srjoX*	< **s(k)rja?*	A
	緒	*xù*	< *zjoX*	< **zja?* (?)	A
305.2	鄉	*xiāng*	< *xjang*	< **xjang*	A
	湯	*tāng*	< *thang*	< **hlang*	A
	羌	*qiāng*	< *khjang*	< **kh(l)jang*	A
	享	*xiǎng*	< *xjangX*	< **xjang?*	A
	王	*wáng*	< *hjwang*	< **wjang*	A
	常	*cháng*	< *dzyang*	< **djang*	A
305.3	辟	*bì*	< *pjiek*	< **pjek*	A
	績	*jī*	< *tsek*	< **tsek*	A
	辟	*bì*	< *pjiek*	< **pjek*	A
	適	[*shì*]	< *drek*	< **drek*	A
	解	[*xiè*]	< *kɛiH*	< **kreks*	A
305.4	監	*jiān*	< *kæm*	< **kram*	A
	嚴	*yán*	< *ngjæm*	< **ng(r)jam*	A
	濫	*làn*	< *lamH*	< **g-rams*	A

	國	*guó*	< *kwok*	< *k^{w}ɨk*	B
	福	*fú*	< *pjuwk*	< **pjɨk*	B
305.5	翼	*yì*	< *yik*	< **ljɨk*	A
	極	*jí*	< *gik*	< **g(r)jɨk*	A
	聲	*shēng*	< *syeng*	< **xjeng*	B
	靈	*líng*	< *leng*	< **C-reng*	B
	寧	*níng*	< *neng*	< **neng*	B
	生	*shēng*	< *srjæng*	< **srjeng*	B
305.6	山	*shān*	< *sren*	< **srjan*	A
	丸	[*wán*]	< *hwan*	< **wan*	A
	遷	*qiān*	< *tshjen*	< **tshjan*	A
	虔	*qián*	< *gjen*	< **grjan*	A
	梴	*chān*	< *trhjen*	< **hlrjan*	A
	閑	*xián*	< [*hɐn*]	< **gran*	A
	安	*ān*	< *ʔan*	< **ʔan*	A

Appendix C

The rhyme words of the *Shījīng*

This appendix is an alphabetical list of all the rhyme words of the *Shījīng*, including their modern pronunciations (in *pīnyīn* romanization), Middle Chinese transcriptions, and Old Chinese reconstructions. (In Middle and Old Chinese forms, *æ* is alphabetized after *a*, *ɛ* after *e*, *ɦ* after *h*, *ɨ* after *i*, and *ŭ* after *u*; glottal stops, brackets, and parentheses are ignored.) Some of the Old Chinese reconstructions are tentative, especially as regards the initial consonants. Cross-references are added to connect variant pronunciations.

In addition, each entry includes a reference in parentheses to the item's position in Karlgren's *Grammata serica recensa* (1957), and a list of references to all places in the *Shījīng* where the word is used as a rhyme. A *Shījīng* reference of the form "287.1B" indicates that the word is used as a rhyme in Ode 287, stanza 1, in the rhyme sequence labeled "B". (The letter "A" is used for the first rhyme sequence in a stanza, even if there is no "B" or "C".) If a word occurs more than once in a rhyme sequence, it is given a separate reference for each occurrence. The *Shījīng* rhyme sequences themselves may be found in Appendix B.

Square brackets around a form indicate that the form is not predictable from earlier stages by the usual rules; for example, in the third entry, "譪 [*ǎi*] < *ʔajH* < **ʔats*", the square brackets in "[*ǎi*]" indicate that the pronunciation *ǎi* is irregular; we would expect *ài*, with the fourth tone, since the Middle Chinese form *ʔajH* is *qùshēng*. Similarly, the entry "三 *sān* < [*sam*] < **sum*" indicates that the Middle Chinese reading *sam* is irregular; the rhymes of this word indicate an Old Chinese pronunciation **sum*, which would regularly give MC *som*, not *sam*.

阿 *ā* see *ē* < *ʔa*

哀 *āi* < *ʔoj* < **ʔij* (550h): 167.6A, 193.1B, 195.2A, 204.8A, 257.2A

譪 [*ǎi*] < *ʔajH* < **ʔats* (313a′): 252.7A, 252.8A

艾 *ài* < *ngajH* < **ngats* (347c): 72.3A, 182.2A, 216.3A, 287.1B, 300.5C (see also *yì* < *ngjojH*)

愛 *ài* < *ʔojH* < **ʔits* (508a): 228.4A

僾 *ài* < *ʔojH* < **ʔits* (508d): 257.6B

安 *ān* < *ʔan* < **ʔan* (146a): 177.5A, 241.8A, 253.5A, 305.6A

岸 *àn* < *nganH* < **ngans* (139e′): 58.6A, 241.5A

卬 *áng* < *ngang* < **ngang* (699a): 252.6A

敖 *áo* < *ngaw* < **ngaw* (1130a): 57.3A, 67.2A, 105.4A, 161.2A, 179.3A (see also *ào* < *ngawH*)

驁 *áo* < *ngaw* < **ngaw* (1130f): 181.3A

奡 *áo* < *ngaw* < **ngaw* (1140a): 179.3A, 193.7A, 254.3A

奧 *ào* see *yù* < *ʔjuwk*

燠 *ào* see *yù* < *ʔjuwk*

敖 *ào* < *ngawH* < **ngaws* (1130a): 30.1A, 215.4A (see also *áo* < *ngaw*)

豝 *bā* < *pæ* < **pra* (39d): 25.1A

拔 *bá* see *bèi* < *bajH*

軷 [*bá*] < *bat* < **bat* (276e): 245.7C

茇 [*bá*] < *bat* < **bat* (276g): 16.1A

白 *bái* < *bæk* < **brak* (782a): 214.3A

柏 *bǎi* < *pæk* < **prak* (782j): 217.1B, 300.9A

敗 *bài* < *bæjH* < **fiprats* (320f): 253.4A (see also *bài* < *pæjH*)

敗 *bài* < *pæjH* < **prats* (320f): 16.2A, 195.5B (see also *bài* < *bæjH*)

拜 *bài* < *pɛjH* < **prots* (328a): 16.3A

板 *bǎn* < *pænX* < **pranʔ* (262j): 254.1A

阪 [*bǎn*] < *pjonX* < **pjanʔ* (262g): 89.1A, 165.3A

彭 *bāng* < *pang* < **pang* (750a): 105.3A, 205.3A, 236.8A, 260.7B, 261.4B, 297.1B (see also *péng* < *bæng*)

邦 *bāng* < *pæwng* < **prong* (1197e): 191.10A, 213.3B, 222.4A, 240.2A, 241.5B, 259.2C, 259.3A, 265.2A, 269.1A, 300.6B, 300.7B

傍 *bàng* see [*páng*] < *pæng*

包 *bāo* < *pæw* < **pru* (1113a): 23.1B

苞 *bāo* < *pæw* < **pru* (1113c): 189.1B, 245.5A, 263.5B

保 *bǎo* < *pawX* < **puʔ* (1057a): 115.2A, 240.3B, 259.5B, 260.3A, 283.1B

寶 *bǎo* < *pawX* < **puʔ* (1059a): 257.6D, 259.5B

鴇 *bǎo* < *pawX* < **puʔ* (1060b): 78.3A

飽 *bǎo* < *pæwX* < **pruʔ* (1113d): 135.2A, 209.6C, 233.3A

暴 *bào* < *bawH* < **bawks* (1136a): 30.1A, 58.5B, 198.3B

報 *bào* < *pawH* < **pus* (1058a): 29.2A, 64.1B, 64.2B, 64.3B, 82.3C, 256.6B

悲 *bēi* < *pij* < **prɨj* (579u): 14.3A, 147.2A, 154.2C, 156.1B, 159.4A, 162.1A, 167.6A, 169.2B, 169.2C, 208.2A, 264.6C

陂 *bēi* < *pje* < **p(r)jaj* (25i): 145.1A

卑 *bēi* < *pjie* < **pje* (874a): 229.8A

北 *běi* < *pok* < **pɨk* (909a): 48.2A, 200.6A, 244.6B

拔 *bèi* < *bajH* < **bots* (276h): 237.8C, 241.3A

備 *bèi* < *bijH* < **brjiks* (984d): 209.5A, 239.4A

悖 *bèi* < *bwojH* < **buts* (491d): 257.13A

背 *bèi* < *bwojH* < **fipiks* (909e): 62.4A (see also *bèi* < *pwojH*)

倍 *bèi* < *bwojX* < **bi?* (999c′): 264.4B

背 *bèi* < *pwojH* < **pik(s)* (909e): 246.8A, 257.15A, 264.4A, 300.5B (see also *bèi* < *bwojH*)

奔 *bēn* < *pwon* < **pun* (438a): 49.1A, 49.2B, 73.2A

祊 *bēng* < *pæng* < **prang* (740j′): 209.2A

崩 *bēng* < *pong* < **ping* (886m): 166.6A, 190.3A, 193.3B, 300.4B

埲 *běng* < *puwngX* < **pong?* (1197d′): 245.4D

比 [*bǐ*] < *bjijH* < **bjijs* (566g): 119.1B, 119.2B

匕 *bǐ* < *pjijX* < **pjij?* (565a): 203.1A

妣 *bǐ* < *pjijX* < **pjij?* (566n): 279.1B, 290.1G

辟 *bì* < *bjieH* < **bjeks* (853a): 107.2A (see also *bì* < *pjiek*, *bì* < *bjiek*, *pì* < *phjiek*)

辟 *bì* < *bjiek* < **bjek* (853a): 241.2C (see also *bì* < *bjieH*, *bì* < *pjiek*, *pì* < *phjiek*)

怭 *bì* < *bjit* < **bjit* (405d): 220.3B

毖 *bì* < *pijH* < **prjits* (405k): 257.5A

閟 *bì* < *pijH* < **prjits* (405n): 54.2B

辟 *bì* < *pjiek* < **pjek* (853a): 244.5A, 255.1A, 255.1A, 261.1C, 305.3A, 305.3A (see also *bì* < *bjieH*, *bì* < *bjiek*, *pì* < *phjiek*)

璧 *bì* < *pjiek* < **pjek* (853d): 55.3A

畀 *bì* < *pjijH* < **pjits* (521a): 53.1B

珌 *bì* < *pjit* < **pjit* (405c): 213.2B

韠 *bì* < *pjit* < **pjit* (407m): 147.3A

貶 *biǎn* < *pjemX* < **prjem?* (641d): 265.3A

弁 *biàn* < *bjenH* < **brjons* (220a): 102.3B

變 *biàn* < *pjenH* < **prjons* (178o): 106.3B

瀌 *biāo* < *b/pjew* < **b/p(r)jaw* (1170c): 223.7A

麃 *biāo* < *pjew* < **p(r)jaw* (1170a): 79.2A, 290.1F

儦 *biāo* < *pjew* < **p(r)jaw* (1170b): 105.4A

鑣 *biāo* < *pjew* < **p(r)jaw* (1170e): 57.3A, 127.3B

摽 *biào* < *bjiewX* < **bjew?* (1157l): 26.4A

賓 *bīn* < *pjin* < **pjin* (389a): 210.3B

濱 *bīn* < *pjin* < **pjin* (389j): 15.1A, 205.2B

掤 *bīng* < *ping* < **prjing* (886n): 78.3C
冰 *bīng* < *ping* < **prjing* (899b): 195.6B, 196.6B, 245.3B
兵 *bīng* < *pjæng* < **prjang* (759a): 31.1A, 133.3B, 256.4A
怲 [*bǐng*] < *pjængH* < **prjangs* (757g): 217.2B
屏 *bǐng* < *pjiengX* < **pjeng?* (824f): 241.2A (see also *píng* < *beng*)
撥 *bō* < *bat* < **bat* (275d): 255.8A (see also *bō* < *pat*)
波 *bō* < *pa* < **paj* (251): 232.3A
發 *bō* < *pat* < **pat* (275c): 57.4A (see also *fā* < *pjot*)
撥 *bō* < *pat* < **pat* (275d): 304.2A (see also *bō* < *bat*)
博 *bó* < *pak* < **pak* (771a): 299.7B
襮 *bó* < *pak* < **pawk* (1136d): 116.1A
伯 *bó* < *pæk* < **prak* (782i): 85.1A, 85.2A, 259.2B, 259.8B, 261.6B, 290.1C
柏 *bó* see *bǎi* < *pæk*
駁 *bó* < *pæwk* < **pra/ewk* (1127a): 132.2A
薄 [*bó*] < *phak* < **phak* (771p): 105.1A
卜 *bǔ* < *puwk* < **pok* (1210a): 196.5B
補 *bǔ* < *puX* < **pa?* (102c′): 260.6A

偲 *cāi* < *tshoj* < **tshɨ* (973f): 103.3A
才 *cái* < *dzoj* < **dzɨ* (943a): 297.2B
采 *cǎi* < *tshojX* < **srɨ(k)?* (942a): 1.4A, 8.1A, 129.3A, 196.3A
餐 *cān* < *tshan* < **tshan* (154c): 86.1A, 112.1A
驂 *cān* < *tshom* < **srum* (647c): 128.2B
殘 *cán* < *dzan* < **dzan* (155c): 253.5A
慘 *cǎn* < *tshomX* < **srum?* (647e): 143.3A
粲 *càn* < *tshanH* < **tshans* (154b): 75.1B, 75.2B, 75.3B, 80.3A, 124.3A
鶬 *cāng* see *qiāng* < *tshjang*
倉 *cāng* < *tshang* < **tshang* or **srang* (?) (703a): 211.4A, 250.1A
蒼 *cāng* < *tshang* < **srang* (703e): 129.1A, 257.7A
藏 *cáng* < *dzang* < **fisrang* or *fitshang* (?) (727g′): 175.1A, 228.4B (see also *zàng* < *dzangH*)
曹 *cáo* < *dzaw* < **dzu* (1053a): 250.4B
漕 *cáo* < *dzaw* < **dzu* (1053e): 39.4B, 54.1B
慒 *cǎo* < *tshawX* < **tshaw?* (1134l): 256.11A

草 *cǎo* < *tshawX* < **tshu?* (1049b): 174.2A, 179.2A, 197.2A, 200.5A, 234.4B, 245.5A

慅 *cǎo* < *tshawX* < **tshu?* (1112e): 143.2A

側 [*cè*] < *tsrik* < **tsrjik* (906c): 1.3A, 19.2A, 45.2A, 63.3A, 112.2A, 199.8A, 230.3A, 255.4A

差 *chā* < *tsrhɛi*} < **tshrjaj* (5f): 137.2A

柴 *chái* see *zì* < *dzjeH*

儕 *chài* < *trhæjH* < **hrjats* (326a): 225.4A

梴 *chān* < *trhjen* < **hlrjan* (203d): 305.6A

襜 *chān* < *tsyhem* < **thjam* (619e): 226.2A

廛 *chán* < *drjen* < **drjan* (204a): 112.1A

讒 *chán* < *dzrɛm* < **dzrjom* (612d): 198.2A

嬋 *chǎn* < *tsyhenX* < **thjan?* (147u): 169.3B

昌 *chāng* < *tsyhang* < **thjang* (724a): 88.2A, 96.2A, 97.3A, 106.1A, 300.4A

場 *cháng* < *drjang* < **g-ljang* (720x): 154.8C, 156.2D

陽 *cháng* < *drjang* < **g-ljang* (720y): 257.8A

長 *cháng* < *drjang* < **fitrjang* (721a): 46.2A, 106.1A, 129.1A, 198.3A, 203.5A, 250.5A, 252.4A, 304.1A

裳 *cháng* < *dzyang* < **djang* (725d): 27.2A, 58.4B, 63.1A, 88.3A, 100.1A, 107.1A, 130.2A, 133.3B, 154.3D, 159.1A, 189.8A

常 *cháng* < *dzyang* < **djang* (725e): 121.3A, 193.2A, 235.5A, 252.4A, 300.4A, 305.2A

嘗 *cháng* < *dzyang* < **djang* (725f): 121.3A, 166.4A, 209.2A, 231.1A, 300.4A, 301.1E, 302.1C

朝 *cháo* < *drjew* < **fitrjaw* (1143a): 57.3A, 146.1A, 232.1A (see also *zhāo* < *trjew*)

巢 *cháo* < *dzræw* < **dzraw* (1169a): 142.1A

車 *chē* see *jū* < *kjo*

哆 *chě* < *tsyhæX* < **thjAj?* (3k): 200.2A

徹 *chè* < *trhjet* < **thrjet* (286c): 193.8C

琛 *chēn* < *trhim* < **hlrjim* (666e): 299.8A

陳 *chén* < *drin* < **drjin* (373a): 199.3A, 211.1A

填 *chén* < *drin* < **drjin* (375u): 257.1B

塵 *chén* < *drin* < **drjin* (374a): 206.1A

堪 *chén* < *dzyim* < **Gjilum* (658b): 229.4B

諶 *chén* < *dzyim* < **Gjum* (658c): 255.1B

辰 *chén* < *dzyin* < **djin* (455a): 257.4A

晨 *chén* < *dzyin* < **djin* (455h): 182.3A

臣 *chén* < *dzyin* < **gjin* (377a): 205.2B

乘 *chéng* see *shèng* < *zyingH*

懲 *chéng* < *dring* < **drjɨng* (891b): 183.3A, 192.5A, 193.3B, 300.5A

程 *chéng* < *drjeng* < **lrjeng* (835t): 195.4A

酲 *chéng* < *drjeng* < **lrjeng* (835v): 191.6A

成 *chéng* < *dzyeng* < **djeng* (818a): 4.3A, 12.3A, 106.2A, 179.8A, 191.6A, 195.4A, 227.4A, 227.5A, 237.9A, 242.1A, 244.1A, 244.7B, 248.1A, 256.10B, 258.8A, 259.4A, 264.2C, 268.1A, 280.1B, 301.1C, 302.1B

城 *chéng* < *dzyeng* < **djeng* (818e): 7.1B, 53.3A, 254.7B, 259.4A

承 *chéng* < *dzying* < **djɨng* (896c): 166.6A, 256.6D, 300.5A, 303.1C

騁 *chěng* < *trhjengX* < **hlrjeng?* (817a): 191.7A

蚩 *chī* < *tsyhi* < **thjɨ* (962d): 58.1A

鴟 *chī* < *tsyhij* < **thjij* (590s): 264.3A

治 *chí* < *dri* < **lrjɨ* (976z): 27.3A

坻 *chí* < *drij* < **drjɨj* (590l): 129.2A

遲 *chí* < *drij* < **drjɨj* (596d): 35.2A, 138.1A, 154.2C, 162.1A, 167.6A, 168.6A, 209.5C, 300.1A, 304.3A, 304.3A

池 *chí* < *drje* < **lrjaj* (4t): 139.1A, 190.2A, 241.6B

馳 *chí* < *drje* < **lrjaj* (4x): 179.6A, 252.10B

篪 *chí* < *drje* < **lrje* (870c): 199.7B, 254.6A

哆 *chǐ* see *chě* < *tsyhæX*

恥 *chǐ* < *trhiX* < **hnrjɨ?* (959a): 202.3A, 220.5A

扯 *chǐ* < *trhjeX* < **hlrjaj?* (4d'): 197.7B

尺 *chǐ* < *tsyhek* < **thjAk* (794a): 300.9A

侈 *chǐ* < *tsyheX* < **thjaj?* (3i): 200.2A

齒 *chǐ* < *tsyhiX* < **thjɨ?* (961l): 52.2A, 300.8B

飭 *chì* < *trhik* < **hrjɨk* (921g): 177.1B

饎 *chì* < *tsyhiH* < **KHjɨʔ(s)* (955m): 251.1A

熾 *chì* < *tsyhiH* < **thjɨk(s)* (920l): 177.1B, 300.5B

沖 [*chōng*] < *drjuwng* < **g-ljung* (1007p): 154.8A, 173.4A

傭 *chōng* < *trhjowng* < **hlrjong* (1185y): 191.5A

忡 *chōng* < *trhjuwng* < **kh-ljung* (1007n): 14.1A, 31.2A, 168.5A

衝 *chōng* < *tsyhowng* < **thjong* (1188j): 241.7C

充 *chōng* < *tsyhuwng* < **thjo/ung* (?) (1011a): 84.2A

重 *chóng* < *drjowng* < **drjong* (1188a): 206.3A

蟲 *chóng* < *drjuwng* < **lrjung* (1009c): 14.1A, 168.5A, 258.2A

崇 *chóng* < *dzrjuwng* < **dzrjung* (1003h): 244.2A, 248.4A

妯 *chōu* < *trhjuw* < **hlrju* (1079e): 208.3A

抽 *chōu* < *trhjuw* < **hlrju* (1079f): 79.3A

瘳 *chōu* < *trhjuw* < **hrjiw* (1069k): 90.2A, 264.1C

仇 *chóu* see *qiú* < *gjuw*

裯 *chóu* < *drjuw* < **drju* (1083n): 21.2B

疇 *chóu* < *dzyuw* < **dju* (1090o): 175.3A, 191.8B, 197.7A, 231.4B

讎 *chóu* < *dzyuw* < **Gju* (1091a): 35.5A, 178.4A, 256.6B

醜 *chóu* < *dzyuw(x)* < **dju(?)* (1090p): 81.2A

醜 *chǒu* see *chóu* < *dzyuw(x)*

醜 *chǒu* < *tsyhuwx* < **thju?* (1089a): 46.1A, 178.4A, 180.1A, 193.1A, 299.3A

臭 *chòu* < *tsyhuwH* < **KHjus* (1088a): 235.7B

椓 *chū* < *trhjo* < **hlrja* (?) (1242b): 154.6C, 188.1A

出 [*chū*] < *tsyhwijH* < **thjuts* (496a): 194.5A (see also *chū* < *tsyhwit*)

出 *chū* < *tsyhwit* < **thjut* (496a): 29.4A, 232.2A (see also [*chū*] < *tsyhwijH*)

除 *chú* see *zhù* < *drjoH*

蹰 *chú* < *drju* < **drjo* (127n): 42.1A

芻 [*chú*] < *tsrhju* < **tshrjo* (132a): 118.2A

楚 *chǔ* < *tsrhjox* < **tsrhja?* (88a): 9.2A, 50.2A, 68.2A, 92.1B, 118.3A, 124.1A, 131.3A, 150.1A, 220.1A, 305.1A

處 *chǔ* < *tsyhox* < **KHja?* (85a): 19.3A, 22.2A, 31.3A, 37.2A, 38.1A, 124.1A, 150.1A, 154.5A, 159.2A, 162.2B, 167.3C, 173.1A, 187.3A, 189.2A, 193.4C, 214.1A, 227.3A, 248.3A, 250.3C, 257.4B, 263.2A (see also *chù* < *tsyhoH*)

處 *chù* < *tsyhoH* < **KHjas* (85a): 29.1A, 207.4A (see also *chǔ* < *tsyhox*)

俶 *chù* < *tsyhuwk* < **thjiwk* (1031h): 247.3B

川 *chuān* < *tsyhwen* < **KHju/on* (462a): 258.5A

牀 *chuáng* < *dzrjang* < **dzrjang* (727r): 189.8A, 205.4B

吹 *chuī* < *tsyhwe* < **thjoj* (30a): 85.1B

春 *chūn* < *tsyhwin* < **thjun* (463a): 23.1A

錞 *chún* see *duì* < *dwojH*

鶉 *chún* < *dzywin* < **djun* (464j): 49.1A, 49.2B, 112.3A

淳 *chún* < *zywin* < **fistjun* (?) (455v): 71.3B, 112.3A

惾 [*chuò*] < *trjwet* < **trjot* (295d): 14.2A
綽 *chuò* < *tsyhak* < **thjawk* (1126g): 55.3B
雌 *cī* < *tshje* < **tshje* (358f): 197.5A
雌 *cǐ* see *cī* < *tshje*
茨 *cǐ* < *dzij* < **dzjij* (555i): 213.1B
泚 *cǐ* < *tshjeX* < **tshjej?* (358h): 43.1A
伿 *cì* < *tshijH* < **tshjijs* (555c): 119.1B, 119.2B, 179.5A
刺 *cì* < *tshjeH* < **tshjek(s)* (868d): 107.2A, 264.5A
樅 *cōng* < *tshjowng* < **tshjong* (1191i): 242.4A
聰 *cōng* < *tshuwng* < **tshong* (1199f): 70.3A, 185.3A
漱 *cóng* see [*zhōng*] < *dzuwng*
從 *cóng* < *dzjowng* < **dzjong* (1191d): 17.3B, 101.2B, 125.3A, 180.2B, 195.1B, 222.4A, 300.6B, 300.7B
且 *cú* < *dzu* < **dza* (46a): 93.2A, 95.1B, 95.2B (see also *jū* < *tsjo*)
徂 *cú* < *dzu* < **dza* (46i′): 297.4B
蹙 [*cù*] < *tsjuwk* < **Stjiwk* (1031t): 207.3A
摧 [*cuī*] < *dzwoj* < **dzuj* (575l′): 40.3A, 258.3A (see also *cuò* < *tshwaH*)
崔 [*cuī*] < *dzwoj* < **Sduj* (575d′): 3.2A, 101.1A, 201.3A
洒 *cuǐ* see *xǐ* < *sejX*
萃 [*cuì*] < *dzwijH* < **dzjups* (490m): 141.2A
瘁 [*cuì*] < *dzwijH* < **dzjuts* (490k): 168.2B, 194.4A, 194.5A, 202.2A, 264.5D
存 *cún* < [*dzwon*] < **dzin* (432a): 93.1A
磋 *cuō* < *tsha* < **tshaj* (5j): 55.1A
瑳 [*cuō*] < *tshaX* < **tshaj?* (5i): 59.3A
撮 *cuō* < *tshwat* < **tshot* (325e): 225.2A
瘥 *cuó* < *dza* < **dzaj* (5l): 191.2A
錯 *cuò* < *tshak* < **tshak* (798s): 184.1C, 209.3A
摧 *cuò* < *tshwaH* < **tshojs* (575l′): 216.4A (see also [*cuī*] < *dzwoj*)

達 *dá* < *dat* < **lat* (271b): 290.1E, 304.2A, 304.2A, 304.6A (see also *tà* < *that*)
怛 *dá* < *tat* < **tat* (149g): 102.2B, 149.1A
荅 *dá* < *top* < **k-lup* (676b): 194.4A
大 [*dà*] < *dajH* < **lats* (317a): 253.4A, 299.1B, 300.5C
逮 *dài* < *dojH* < **(g-)lips* (509c): 257.6B

怠 *dài* < *dojX* < **li?* (976k′): 220.5A

殆 *dài* < *dojX* < **li?* (9761′): 191.4B, 194.6A, 303.1B

帶 *dài* < *tajH* < **tats* (315a): 63.2A

單 *dān* < *tan* < **tan* (147a): 250.5B

湛 *dān* < *tom* < **k-lim* (658l): 161.3A, 164.7B, 220.2B

耽 *dān* < *tom* < **tum* (656l): 58.3B, 58.3C, 58.3C

亶 *dǎn* < *tanX* < **tan?* (148a): 254.1A

黮 *dàn* see *shèn* < *zyimX*

啖 *dàn* see *tán* < *dam*

萏 *dàn* < *domX* < **(g-)lom?* (672j): 145.3A

旦 *dàn* < *tanH* < **tans* (149a): 34.3A, 58.6A, 82.1A, 124.3A, 254.8D

癉 [*dàn*] < *tanX* < **tan?* (147l): 254.1A

蕩 *dàng* < *dangX* < **lang?* (720p′): 101.2A

刀 *dāo* < *taw* < **taw* (1131a): 61.2A, 210.5B, 250.2B

忉 *dāo* < *taw* < **taw* (1131c): 102.1B, 142.1A, 146.1A

蹈 [*dǎo*] < *dawH* < **lus* (1078l): 224.1A, 224.2A

倒 *dǎo* < *tawX* < **taw?* (1132c): 100.1B

擣 *dǎo* < *tawX* < **tu?* (1090r): 197.2A

禱 *dǎo* < *tawX* < **tu?* (1090s): 180.1A

倒 *dào* see *dǎo* < *tawX*

翿 [*dào*] < *daw* < **du* (1090z): 67.2A

陶 *dào* < *dawH* < **b-lus* (1047d): 79.3A (see also *yáo* < [*yew*])

悼 *dào* < *dawH* < **dawks* (1126l): 30.1A, 58.5B, 146.3A

盜 *dào* < *dawH* < **daw(k)s* (1133a): 198.3B

翿 *dào* < *dawH* < **lus* (1090z): 136.3A

道 *dào* < *dawX* < **lu?* (1048a): 46.1A, 46.1A, 97.2A, 136.3A, 195.3A, 197.2A, 234.4B, 245.5A, 261.1B, 299.3A

稻 *dào* < *dawX* < **lu?* (1078h): 154.6B

到 *dào* < *tawH* < **taws* (1132a): 261.5A

得 *dé* < *tok* < **tik* (905d): 1.3A, 101.4A, 101.4B, 158.1A, 192.7A, 199.8A

德 *dé* < *tok* < **tik* (919k): 58.4C, 113.2B, 166.5A, 174.3A, 194.1A, 202.4B, 220.4D, 229.7B, 235.6A, 241.7A, 243.4A, 247.1A, 249.1A, 252.5A, 253.3A, 255.2A, 255.4A, 255.4A, 256.12C, 259.8A, 260.1A, 260.2A, 262.6C, 299.4A, 299.5A

登 *dēng* < *tong* < **ting* (883e): 237.6A, 245.8A

的 *dí* see *dì* < *tek*

髭 [*dí*] < *dejH* < **le(k)s* (4e′): 47.2A

狄 *dí* < *dek* < **lek* (856a): 264.5A

翟 *dí* < *dek* < **lewk* (1124a): 38.2B, 47.2A

迪 *dí* < *dek* < **liwk* (1079q): 257.11A

坻 *dǐ* see *chí* < *drij*

氐 *dǐ* < *tejX* < **tij?* (590a): 191.3A

底 [*dǐ*] < *tsyijX* < **tjij?* (590c): 195.2A

砥 [*dǐ*] < *tsyijX* < **tjij?* (590o): 203.1A

棣 *dì* < *dejH* < **lips* (509f): 132.3A

弟 *dì* < *dejX* < **di/ij?* (591a): 35.2B, 39.2A, 51.1B, 71.1A, 71.2A, 71.3A, 92.1A, 92.2A, 110.3B, 164.1A, 173.3A, 183.1A, 209.5C, 240.2B, 246.2A (see also [*tì*] < *dejX*)

地 *dì* < [*dijH*] < **lrjajs* (?) (4b′): 189.9A

帝 *dì* < *tejH* < **teks* (877a): 47.2A, 235.6B, 255.1A, 255.1A, 300.3C

的 *dì* < *tek* < **tewk* (1120h): 220.1F

顚 *diān* < *ten* < **tin* (375m): 100.2B, 125.1A, 126.1A

簟 *diàn* < *demX* < **lim?* (646j): 189.6A

甸 *diàn* < *denH* < **dins* (362g): 210.1A, 261.1A

電 *diàn* < *denH* < **dins* (385m): 193.3A

玷 [*diàn*] < *temX* < **tem?* (618l): 265.3A

弔 *diào* < *tewH* < **ti/ew(k)s* (1165a): 149.2A

垤 *dié* < *det* < **dit* (413n): 156.3B

耋 *dié* < *det* < **dit* (413r): 126.2A

咥 *dié* < *det* < **lit* (402i): 237.1A

丁 *dīng* see *zhēng* < *trɛng*

定 *dìng* < *dengH* < **dengs* (833z): 167.2D, 191.6A, 262.2B, 264.1A, 295.1B (see also *dìng* < *tengH*)

定 *dìng* < *tengH* < **tengs* (833z): 11.2A (see also *dìng* < *dengH*)

冬 *dōng* < *towng* < **tung* (1002a): 35.6A

東 *dōng* < *tuwng* < **tong* (1175a): 21.1B, 37.3A, 48.3A, 51.1A, 62.2A, 125.3A, 156.1A, 156.2A, 156.3A, 156.4A, 179.1A, 203.2A, 244.6A, 300.3A, 300.6B

蝀 [*dōng*] < *tuwngX* < **tong?* (1175h): 51.1A

動 *dòng* < *duwngX* < **dong?* (1188m): 304.5A

斗 *dǒu* < *tuwX* < **to?* (116a): 246.7A

豆 *dòu* < *duwH* < **dos* (118a): 164.6A

都 *dū* < *tu* < **ta* (45e'): 53.2A, 83.1A, 84.1A, 194.7A

闍 *dū* < *tu* < **ta* (45h'): 93.2A

毒 *dú* < *dowk* < **duk* (1016a): 35.5B, 257.11A

獨 *dú* < *duwk* < **dok* (1224i): 192.13A, 229.1B

讀 *dú* < *duwk* < **lok* (1023m): 46.3A, 46.3A

篤 *dǔ* < *towk* < **tuk* (1019g): 117.2A, 267.1A

堵 *dǔ* < *tuX* < **ta?* (45y): 189.2A

度 *dù* < *duH* < **laks* (801a): 108.1A, 108.1A, 209.3A (see also *duó* < *dak*)

土 *dù* < *duX* < **la?* (62a): 155.2A (see also *tǔ* < *thuX*)

杜 *dù* < *duX* < **la?* (62g): 119.1A, 169.1A, 169.2A

鍛 *duàn* < *twanH* < **tons* (172c): 250.6A

敦 *duī* < *twoj* < **tuj* (464p): 40.3A

敦 *duì* see *duī* < *twoj*

憝 [*duì*] < *drwijH* < **g-ljups* (511i): 255.3A

兌 *duì* < *dwajH* < **lots* (324a): 241.3A (see also [*duì*] < *thwajH*)

錞 *duì* < *dwojH* < **dujs* (464g): 128.3A

兌 [*duì*] < *thwajH* < **hlots* (324a): 237.8C (see also *duì* < *dwajH*)

祋 *duì* < *twajH* < **tots* (323a): 151.1A

對 *duì* < *twojH* < **k-lups* (511a): 241.3B, 255.3A, 257.13A

敦 *dūn* see *duī* < *twoj*

錞 *dūn* see *duì* < *dwojH*

遯 *dùn* < *dwonH* < **luns* (428d): 258.5A

多 *duō* < *ta* < **taj* (3a): 132.1B, 132.2B, 132.3B, 170.1B, 170.4A, 191.2A, 198.6C, 248.2A, 252.10B, 252.10B, 300.3E

掇 *duō* < *twat* < **tot* (295h): 8.2A

度 *duó* < *dak* < **lak* (801a): 163.4A, 198.4A, 241.1A, 256.5A, 256.7C, 300.9A (see also *dù* < *duH*)

奪 *duó* < *dwat* < **lot* (274a): 264.2B

阿 *ē* < *ʔa* < **ʔaj* (1m): 56.2A, 176.1A, 190.2A, 228.1A, 230.1A, 241.6B, 252.1A

俄 *é* < *nga* < **ngaj* (2h): 220.4C

峨 *é* < *nga* < **ngaj* (2k): 238.2B

莪 *é* < *nga* < **ngaj* (2m): 176.1A

吪 *é* < *ngwa* < **ng^{w}aj* (19d): 70.1A, 157.2A

訛 *é* < *ngwa* < **ng^{w}aj* (19e): 190.2A

惡 *è* < *ʔak* < **ʔak* (805h): 191.8A, 194.2B, 278.1B (see also *wù* < *ʔuʜ*)

厄 *è* < *ʔek* < **ʔrek* (844a): 261.2B

咢 *è* < *ngak* < **ngak* (788f): 246.4A

恩 *ēn* < *ʔon* < **ʔin* (370j): 155.1A

爾 *ěr* < *nyeX* < **njɨjʔ* (359a): 246.2A

邇 *ěr* < *nyeX* < **njɨjʔ* (359c): 10.3A, 169.4C

耳 *ěr* < *nyiX* < **njɨʔ* (981a): 37.4A, 256.10A, 300.3B

發 *fā* < *pjot* < **pjat* (275c): 99.2A, 149.1A, 154.1B, 202.5A, 204.3A, 260.3B, 304.2A (see also *bō* < *pat*)

茷 *fá* see [*pèi*] < *bajʜ*

伐 *fá* < *bjot* < **bjat* (307a): 16.1A, 304.6A

髮 *fà* < *pjot* < **pjot* (276i): 225.2A

幡 *fān* < *phjon* < **phjan* (195d): 200.4A, 220.3A

蕃 *fān* < *pjon* < **pjan* (195m): 259.1B

藩 *fān* < *pjon* < **pjan* (195s): 254.7A

蕃 *fán* see *fān* < *pjon*

袢 *fán* < *bjon* < **bjan* (181m): 47.3A

燔 *fán* < *bjon* < **bjan* (195i): 231.2B

樊 *fán* < *bjon* < **bjan* (263b): 219.1A

繁 *fán* < *bjon* < **bjan* (265b): 250.2A

反 *fǎn* < *pjonX* < **pjanʔ* (262a): 54.2A, 58.6A, 220.3A, 223.1A, 253.5B, 274.1B, 274.1B

方 *fāng* < *pjang* < **pjang* (740a): 9.1C, 9.2C, 9.3C, 12.2A, 29.3A, 108.2A, 129.1A, 168.3A, 168.3A, 177.4B, 205.3A, 211.2A, 223.4A, 234.1A, 236.1A, 238.5A, 241.3C, 241.6A, 241.7B, 253.1A, 255.6A, 256.4A, 260.7B, 262.2A, 272.1A, 274.1A, 294.1A, 300.4A, 303.1A, 304.1A

房 *fáng* < *bjang* < **bjang* (740y): 67.1A, 300.4A

防 *fáng* < *bjang* < **bjang* (740z): 131.2A

魴 *fáng* < *bjang* < **bjang* (740b′): 138.2A, 159.1A

菲 *fēi* see *fěi* < *phjɨjX*

霏 *fēi* < *phjɨj* < **phjɨj* (579j): 41.2A, 167.6A

騑 *fēi* < *phjɨj* < **phjɨj* (579k): 162.1A, 162.2A

飛 *fēi* < *pjɨj* < **pjɨj* (580a): 2.1B, 26.5A, 28.1A, 28.2A, 28.3A, 156.4B, 189.4B, 298.2B

腓 *féi* < *bjɨj* < **bjɨj* (579q): 167.5A, 204.2A

斐 *fěi* < *phjɨjx* < **phjɨj?* (579i): 200.1A

菲 *fěi* < *phjɨjx* < **phjɨj?* (579l): 35.1C

肺 *fèi* see *pèi* < *phajH*

芾 *fèi* see *fú* < *pjut*

吠 *fèi* < *bjojH* < **bjots* (348a): 23.3A

芬 *fēn* < *phjun* < **phjɨn* (471i): 248.5A

雰 *fēn* < *phjun* < **phjɨn* (471j): 210.2A

焚 *fén* < *bjun* < **bjun* (474a): 258.5A

丰 *fēng* < *phjowng* < **ph(r)jong* (1197a): 88.1A

葑 *fēng* < *phjowng* < **ph(r)jong* (1197k): 48.3A, 125.3A

豐 *fēng* < [*phjuwng*] < **ph(r)jong* (?) (1014a): 244.2A

風 *fēng* < *pjuwng* < **p(r)jɨ/um* (625h): 27.4A, 35.1A, 132.1A, 199.4A, 257.6A, 260.8B

逢 *féng* see *péng* < *buwng*

馮 *féng* see *píng* < *bing*

縫 *féng* < *bjowng* < **b(r)jong* (1197x): 18.3A

紑 [*fóu*] < *phjuw* < **phjɨ* (999g): 292.1A

否 *fǒu* < *pjuwx* < **pjɨ?* (999e): 2.3B, 34.4A, 34.4A, 195.5A, 211.3A, 220.5A, 256.10A

缶 *fǒu* < *pjuwx* < **p(r)ju?* (1107a): 136.3A

膚 *fū* < *pju* < **prja* (69g): 160.1A, 160.2A

夫 *fū* < *pju* < **p(r)ja* (101a): 7.1A, 7.2A, 7.3A, 154.6C, 163.1A, 193.4B, 234.3A

拂 *fú* < *bjut* < **bjut* (500h): 241.8C

浮 *fú* < *bjuw* < **b(r)ju* (12331): 176.4A, 223.8A, 245.7A, 262.1A

服 *fú* < *bjuwk* < **bjɨk* (934d): 1.3A, 63.3A, 107.1B, 150.2A, 151.2A, 167.5B, 177.1B, 177.2A, 177.3B, 177.3B, 178.1D, 203.4A, 235.4B, 243.4A, 244.6B, 255.2A, 299.5A

伏 *fú* < *bjuwk* < **bjɨk* (935a): 242.2A

匐 *fú* < *bok/bjuwk* < **b(j)ɨk* (933m): 245.4B

孚 [*fú*] < [*phju*] < **ph(r)ju* (1233a): 235.7B, 243.2A

罦 [*fú*] < [*phju*] < **ph(r)ju* (1233j): 70.2A

弗 *fú* < *pjut* < **pjut* (500a): 202.6A

茀 *fú* < *pjut* < **pjut* (500k): 241.8C

芾 *fú* < *pjut* < **pjut* (501c): 151.1A

福 *fú* < *pjuwk* < **pjɨk* (933d): 166.5A, 207.5A, 209.1A, 209.4B, 212.4B, 216.2A, 220.4D, 235.6A, 236.3A, 239.4A, 246.8A, 247.1A, 249.2A, 281.1C, 300.1B, 305.4B

富 *fú < pjuwk < *pjɨk* (933i): 188.3A

輻 *fú < pjuwk < *pjɨk* (933j): 112.2A, 192.10A

釜 *[fǔ] < bjuX < *b(r)ja?* (102f): 15.2A

輔 *[fǔ] < bjuX < *b(r)ja?* (102v): 192.9A, 300.2B

父 *fǔ < pjuX < *p(r)ja?* (102a): 237.2A, 263.1A (see also *fù < bjuX*)

甫 *fǔ < pjuX < *p(r)ja?* (102n): 68.2A, 260.1B, 260.5B, 261.5B

脯 *fǔ < pjuX < *p(r)ja?* (102r): 248.3A

黼 *fǔ < pjuX < *p(r)ja?* (102t): 222.1A

附 *fù < bjuH < *b(r)jos* (136k): 223.6A, 237.9B, 241.8B

復 *fù < bjuwk < *b(r)juk* (1034d): 159.3A, 188.2A, 202.4A, 257.11A

婦 *fù < bjuwX < *bjɨ?* (1001a): 240.1A, 290.1D

阜 *fù < bjuwX < *b(r)ju?* (1108a): 78.3A, 127.1A, 128.2A, 179.2A, 180.1A, 180.1A, 217.3A

負 *fù < bjuwX < *fipjɨ(k)?* (1000a): 196.3A, 245.6A

父 *fù < bjuX < *b(r)ja?* (102a): 71.1B, 71.1B, 110.1A, 119.1A, 162.3A, 165.2A, 187.3A, 263.2A, 300.2B (see also *fǔ < pjuX*)

覆 *fù < phjuwk < *ph(r)juk* (1034m): 35.5B, 207.3A

賦 *fù < pjuH < *p(r)jas* (104g): 260.2B

富 *fù < pjuwH < *pjɨk(s)* (933r): 188.3B, 196.2A, 264.5B, 265.5A, 300.5B

腹 *fù < pjuwk < *p(r)juk* (1034h): 202.4A

溉 *gài < kojH < *kɨts* (515l): 251.3B

甘 *gān < kam < *kam* (606a): 198.3C

干 *gān < kan < *kan* (139a): 39.3A, 112.1A, 189.1A

乾 *gān < kan < *kan* (140c): 69.1A

敢 *gǎn < kamX < *kam?* (607a): 73.1A

岡 *gāng < kang < *kang* (697a): 3.3A, 110.3A, 241.6A, 250.3B, 250.5A, 252.9B

剛 *gāng < kang < *kang* (697b): 167.3B, 205.3A, 300.4A

綱 *gāng < kang < *kang* (697e): 249.3B, 252.6A

膏 *gāo* see *gào < kawH*

高 *gāo < kaw < *kaw* (1129a): 232.1A

羔 *gāo < kaw < *ku* (1068e): 208.3A

糕 *gāo < kaw < *ku* (1068f): 175.3A

鎬 *gǎo* see *hào < hawX*

膏 *gào* < *kawH* < **kaws* (1129i): 146.3A, 153.4A, 227.1A

告 *gào* < *kawH* < **kuks* (1039a): 56.3A, 209.5A (see also *gù* < *kowk*)

歌 *gē* < *ka* < **kaj* (1q): 22.3A, 56.2A, 139.1A, 252.1A, 252.10B, 257.16A

閣 *gé* < *kak* < **kak* (766f): 189.3A

葛 *gé* < *kat* < **kat* (313i): 72.1A

格 *gé* < *kæk* < **krak* (766z): 209.3A, 256.7C

革 *gé* < *kɐk* < **krik* (931a): 18.2A, 178.1D, 189.4A, 241.7A

庚 *gēng* < *kæng* < **krang* (746a): 154.2B, 203.6A

粟 *gēng* < *kæng* < **krang* (747a): 255.6A, 300.4A

梗 *gěng* < *kængX* < **krang?*(745e): 257.3A

恆 *gèng* < *kongH* < **kings* (881d): 166.6A

共 *gōng* < *kjowng* < **k(r)jong* (1182c): 198.3D, 241.5B, 265.2A, 304.5A

恭 *gōng* < *kjowng* < **krjong* (11821): 241.5B

宮 *gōng* < *kjuwng* < **k(r)jung* (1006a): 13.2A, 48.1B, 48.2B, 48.3B, 50.1A, 240.3A, 258.2A

躬 *gōng* < *kjuwng* < **k(r)jung* (1006e): 36.2B, 258.2A, 265.6B

弓 *gōng* < *kjuwng* < **k*^{w}*jing* (901a): 78.3C, 128.3B, 226.3A, 300.5A

工 *gōng* < *kuwng* < **kong* (1172a): 276.1A

功 *gōng* < *kuwng* < **kong* (1172d): 154.4D, 154.7C, 220.1E, 244.2A, 259.2C, 263.6B, 269.1A, 299.6C, 300.6B

攻 *gōng* < *kuwng* < **kong* (1172e): 179.1A

公 *gōng* < *kuwng* < **kong* (1173a): 13.3A, 18.3A, 21.1B, 154.4D, 177.3A, 240.2A, 242.5A, 269.1A, 276.1A, 282.1A, 300.3A

觥 *gōng* < *kwæng* < **k*^{w}*rang* (706i): 3.3A, 154.8C

肱 *gōng* < *kwong* < **k*^{w}*ing* (887f): 190.3A

鞏 *gǒng* < *kjowngX* < **k(r)jong?* (1172c′): 264.7B

共 *gòng* see *gōng* < *kjowng*

枸 *gōu* see [*jǔ*] < *gjuX*

句 [*gōu*] < *kuwH* < **k(r)os* (108a): 246.6A

枸 *gǒu* see [*jǔ*] < *gjuX*

笱 *gǒu* < *kuwX* < **k(r)o?* (108e): 35.3B, 197.8B

耇 *gǒu* < *kuwX* < **k(r)o?* (108f): 172.5A, 246.7A

媾 *gòu* < *kuwH* < **k(r)os* (109e): 151.3A

覯 *gòu* < *kuwH* < **k(r)os* (109j): 256.7B

垢 [*gòu*] < *kuwX* < **k(r)o?* (112d): 257.12A

辜 *gū* < *ku* < **ka* (49p): 194.1C, 198.1A, 198.1C

呱 *gū* < *ku* < **k*^{w}*a* (41b): 245.3C

酤 [*gū*] < *huX* < **ga?* (49b'): 165.3B, 302.1A

鴣 *gǔ* see *hú* < *howk*

皷 [*gǔ*] < *kæX* < **kra?* (33d): 283.1C, 300.8A

谷 *gǔ* < *kuwk* < **kok* (1202a): 2.1A, 165.1B, 186.4A, 196.6A, 257.9B, 257.12A

穀 *gǔ* < *kuwk* < **kok* (1226i): 154.7E, 166.2A, 184.2C, 187.1A, 187.1A, 192.13A, 196.5B, 204.5A, 210.2B, 257.9B, 257.12A

轂 *gǔ* < *kuwk* < **kok* (1226j): 128.1B

罟 *gǔ* < *kuX* < **ka?* (49m): 207.1A

鹽 *gǔ* < *kuX* < **ka?* (49q): 121.1A, 162.2B, 162.3A, 167.3C, 169.1A, 169.2A

鼓 *gǔ* < *kuX* < **ka?* (50a): 136.2A, 165.3B, 178.3C, 211.2B, 220.2A, 280.1A, 301.1B

瞽 *gǔ* < *kuX* < **ka?* (50g): 280.1A

股 *gǔ* < *kuX* < **ka?* (51a): 154.5A, 222.3A

羖 *gǔ* < *kuX* < **ka?* (51b): 220.5B

告 *gù* < *kowk* < **kuk* (1039a): 53.3B, 101.3B, 247.3B, 256.2B (see also *gào* < *kawH*)

固 *gù* < *kuH* < **kas* (49f): 166.1A, 241.2D

顧 *gù* < *kuH* < **ka*ʔ*(s)* (53g): 29.1A, 71.1B, 113.1B, 141.2B, 165.2A, 207.2A, 258.4A

故 *gù* < *kuH* < **ka*ʔ*(s)* (49i): 36.1B, 81.1A, 120.1A, 167.1C, 167.1C, 258.6A

呱 *guā* see *gū* < *ku*

瓜 *guā* < *kwæ* < **k*^{w}*ra* (41a): 64.1A, 154.6C, 210.4A

寡 *guǎ* < *kwæX* < **k*^{w}*ra?* (42a): 181.1A, 196.5A, 260.5B

冠 *guān* < *kwan* < **kon* (160a): 147.1A

關 *guān* < *kwæn* < **kron* (187b): 58.2A, 58.2A, 58.2A

矜 *guān* < *kwɛn* < **k*^{w}*rin* (369a): 234.2A (see also [*jīn*] < *king*)

鰥 *guān* < *kwɛn* < **k*^{w}*rin* (481a): 104.1A

館 [*guǎn*] < *kwanH* < **kons* (157k): 75.1B, 75.2B, 75.3B, 250.6A

管 *guǎn* < *kwanX* < **kon?* 'tube' (157h): 42.2A (see also *guǎn* < *kwanX* < **k*^{w}*an?* 'exhausted')

疸 *guǎn* < *kwanX* < **k*^{w}*an?* 'exhausted' (157g): 169.3B

管 *guǎn* < *kwanX* < **k*^{w}*an?* 'exhausted' (157h): 254.1A (see also *guǎn* < *kwanX* < **kon?* 'tube')

冠 *guàn* see *guān* < *kwan*

貫 *guàn < kwanH < *kons* (159a): 106.3B, 199.7A

丱 *guàn < kwænH < *krons* (187a): 102.3B

光 *guāng < kwang < *k^{w}ang* (706a): 96.2A, 172.2A, 173.2A, 182.1A, 203.5A, 236.5B, 241.3C, 250.1A, 261.4B, 283.1A, 290.1H

洸 *guāng < kwang < *k^{w}ang* (706f): 262.2A

廣 *guǎng < kwangX < *k^{w}ang?* (707h): 9.1B, 9.2B, 9.3B

歸 *guī < kjwij < *k^{w}jij* (570a): 2.3A, 13.3B, 28.1A, 28.2A, 28.3A, 36.1A, 36.2A, 41.2A, 68.1B, 68.2B, 68.3B, 88.4A, 101.1A, 101.1B, 147.2A, 154.2C, 156.1B, 156.4B, 159.4A, 162.1A, 162.2A, 167.1A, 167.2A, 167.3A, 168.6A, 169.2C, 174.1A, 204.2A, 209.5C, 251.2B, 259.6A, 260.8A, 263.6D, 298.2B

圭 *guī < kwej < *k^{w}e* (879a): 254.6A

龜 *guī < kwij < *k^{w}rji* (985a): 237.3A

簋 *guǐ < kwijX < *k^{w}rju?* (986a): 135.2A, 165.2B

軌 *guǐ < kwijX < *k^{w}rju?* (992k): 34.2B

蹶 *guì < gjwejH < *g^{w}rjats* (301f): 114.2B, 254.2B

過 *guō < kwa < *k^{w}aj* (18e): 22.3A, 22.3A, 56.2A

活 *guō < kwat < *k^{w}at* (302m): 57.4A (see also *huó < hwat*)

馘 *guó < kwɐk < *k^{w}rik* (929u): 299.5A

國 *guó < kwok < *k^{w}ik* (929o): 74.2A, 74.2A, 109.2A, 113.2B, 113.2B, 152.3A, 177.1B, 177.3B, 194.1A, 205.4A, 219.2A, 235.3A, 236.3A, 253.3A, 255.4A, 256.12C, 257.7B, 259.8A, 262.6C, 263.1B, 263.5C, 300.1B, 305.4B

過 *guò* see *guō < kwa*

海 *hǎi < xojX < *hmi?* (947x): 183.1B, 262.3C, 303.1D

害 *hài < hajH < *fikat(s)* (314a): 39.3B, 44.2A, 202.5A, 204.3A, 245.2A, 255.8A, 265.6A, 300.5C

涵 *hán < hom < *gom* (643g): 198.2A

罕 *hǎn < xanX < *xan?* (139f): 78.3B

熯 *hàn* see [*nǎn*] *< nyenX*

翰 *hàn < hanH < *gans* (140f): 215.3A, 244.4A, 254.7A, 259.1B, 259.7A, 262.4A, 263.5A

菡 *hàn < homX < *gom?* (643h): 145.3A

漢 *hàn < xanH < *xans* (144c): 263.5A

杭 *háng < hang < *gang* (698e): 61.1A

頏 *háng < hang < *gang* (698g): 28.2B

行 *háng < hang < *gang* (748a): 78.2A, 108.2A, 121.3A, 131.2A, 131.2A, 177.4B, 203.2B, 203.6A (see also *xíng < hæ*, [*xíng*] *< hæH*)

蒿 *hāo < xaw < *xaw* (1129q): 161.2A, 202.1A

號 *háo < haw < *gaw* (1041q): 113.3B, 220.4A (see also *hào < hawH*)

好 *hǎo < xawX < *xuʔ* (1044a): 75.2A, 77.2A, 81.2A, 82.2B, 97.2A, 179.2A, 180.1A, 200.5A, 212.2A, 245.5A, 257.6D (see also *hào < xawH*)

號 *hào < hawH < *gaws* (1041q): 205.5A (see also *háo < haw*)

鎬 *hào < hawX < *gawʔ* (1129o): 221.1A, 221.2A, 221.3A

昊 *hào < hawX < *guʔ* (1042a): 200.6B

皓 *hào < hawX < *gu(k)ʔ* (1039h): 116.2A, 143.2A

好 *hào < xawH < *xu(ʔ)s* (1044a): 29.2A, 64.1B, 64.2B, 64.3B, 79.3A, 82.3C, 120.2A, 123.1B, 123.2B, 175.3A, 189.1B (see also *hǎo < xawX*)

和 *hé* see *hè < hwaH*

何 *hé < ha < *gaj* (1f): 47.1A, 132.1B, 132.2B, 132.3B, 145.1A, 156.4D, 167.4A, 167.4A, 189.6C, 191.2A, 197.1B, 197.1B, 198.6C, 198.6C, 217.1A, 228.1A, 230.1A, 247.4A (see also *hè < haX*)

河 *hé < ha < *gaj* (1g): 45.1A, 47.1A, 195.6A, 303.1E

荷 *hé < ha < *gaj* (1o): 145.1A

貉 *hé < hak < *gak* (766h): 154.4B

曷 *hé < hat < *fikat* (313d): 304.6A

合 *hé < hop < *gop* (675a): 128.2C, 164.7A, 236.4A

賀 *hè < haH < *gajs* (15j): 243.6A

褐 *hè < hat < *gat* (313g): 154.1B

何 *hè < haX < *gajʔ* (1f): 303.1E (see also *hé < ha*)

翯 *hè < hæwk < *grawk* (1129v): 242.3A

和 *hè < hwaH < *gojs* (8e): 85.1B

壑 *hè < xak < *xak* (767a): 261.6B

赫 *hè < xæk < *xrak* (779a): 241.1A, 257.14A

嗃 *hè < xowk < *xawk* (1129u): 254.4A

黑 *hēi < xok < *hmɨk* (904a): 212.4B

亨 *hēng* see *pēng < phæng*

恆 *héng* see *gèng < kongH*

珩 *héng < hæng < *grang* (748g): 178.2B

衡 *héng < hæng < *grang* (748h): 178.2B, 261.2A, 300.4A, 302.1C, 304.7C

薨 *hōng < xwong < *hmɨng* (902g): 5.2A, 96.3A, 237.6A

訌 *hóng* see [*hòng*] *< huwng*

弘 *hóng < hwong < *g^{w}ɨng* (887g): 265.6B

訌 [*hòng*] < *huwng* < **gong* (1172k): 265.2A

侯 *hóu* < *huw* < **g(r)o* (113a): 54.1A, 80.1A

瘊 *hóu* < *huw* < **g(r)o* (113j): 190.2B

鍭 [*hóu*] < *huwH* < **g(r)os* (113i): 246.6A

逅 *hòu* < *huwH* < **gros* (112c): 118.2A, 118.2A

後 *hòu* < *huwH* < **fi(r)os* (115a): 237.9B (see also *hòu* < *huwX*)

后 *hòu* < *huwX* < **g(r)o?* (112a): 282.1F

厚 *hòu* < *huwX* < **g(r)o?* (114a): 198.5A, 252.3A (see also *hòu* < *huwH*)

後 *hòu* < *huwX* < **fi(r)o?* (115a): 35.3B, 172.5A, 192.2A, 197.8B, 223.5A, 264.7B, 264.7B, 282.1F

膴 *hū* see *wǔ* < *mjuX*

乎 [*hū*] < *hu* < **fia* (55a): 95.1B, 95.1B, 95.2B, 95.2B, 135.1A, 135.1A, 135.2B, 164.8A

嘑 *hū* < *xu* < **hma* (103n): 198.1A, 198.1C

呼 *hū* < *xu* < **hwa* (55h): 255.5B

忽 *hū* < *xwot* < **hmut* (503l): 241.8C

鵠 *hú* < *howk* < **guk* (1039n): 116.2A

胡 *hú* < *hu* < **ga* (49a′): 160.1A, 160.2A

壺 *hú* < *hu* < **g/fia* (56a): 154.6C, 261.3A

狐 *hú* < *hu* < **g*^{w}*a* (41i): 41.3A, 234.4A

許 *hǔ* < *xuX* < **hnga?* (60i): 165.2A (see also *xǔ* < *xjoX*)

滸 *hǔ* < *xuX* < **hnga?* (60k): 71.1B, 237.2A, 262.3A

虎 *hǔ* < *xuX* < **xa?* (?) (57b): 38.2A, 78.1A, 131.3A, 131.3A, 234.3A, 261.5B, 262.3A, 263.4A

岵 *hù* < *huX* < **ga?* (49v): 110.1A

怙 *hù* < *huX* < **ga?* (49x): 121.1A

祜 *hù* < *huX* < **ga?* (49y): 210.4A, 215.1A, 241.5C, 243.5A, 283.1C, 299.4B, 302.1A

戶 *hù* < *huX* < **ga?* (53a): 118.3A, 154.5A, 154.5A, 155.2A, 156.2C, 189.2A

扈 *hù* < *huX* < **ga?* (53c): 196.5A, 215.1A, 215.2A

華 *huā* < *xwæ* < **hwra* (44a): 6.1A, 24.1A, 83.1A, 84.1A, 148.2A, 163.1A, 167.4B, 168.4A (see also *huá* < *hwæ*)

華 *huá* < *hwæ* < **wra* (44a): 98.1A (see also *huā* < *xwæ*)

懷 *huái* < *hwɛj* < **gruj* (600c): 3.2A, 30.4A, 68.1B, 68.2B, 68.3B, 76.1B, 76.2B, 76.3B, 101.1B, 156.2E, 164.2A, 201.2A

壞 *huài* < *hwɛjH* < **fikrujs* (600d): 254.7C

還 *huán* see *xuán* < *zjwen*

貆 *huán* < *hwan* < **wan* (1641): 112.1A

環 *huán* < *hwæn* < **wren* (256n): 103.2A

渙 *huàn* < *xwanH* < **hwans* (167b): 95.1A, 287.1B

荒 *huāng* < *xwang* < **hmang* (742e′): 4.2A, 114.1A, 114.2A, 114.3A, 250.5A, 257.7A, 265.1A, 270.1A

黃 *huáng* < *hwang* < **g*^{w}*ang* or **fik*^{w}*ang* (?) (707a): 3.3A, 78.2A, 98.3A, 134.1A, 154.3D, 214.2A, 225.1A, 233.1A, 234.1A, 297.1B, 298.1A

簧 *huáng* < *hwang* < **g*^{w}*ang* (707g): 67.1A, 126.3A, 161.1B

皇 *huáng* < *hwang* < **wang* (708a): 157.1A, 178.2B, 189.8A, 209.2A, 210.6A, 249.2B, 269.1A, 274.1A, 297.1B, 299.6B

煌 *huáng* < *hwang* < **wang* (708g): 140.1A, 236.8A

遑 *huáng* < *hwang* < **wang* (708i): 19.1A, 169.1C

喤 [*huáng*] < *hwæng* < **wrang* (708n): 189.8A, 274.1A

煇 *huī* < *xjwɨj* < **hwjɨj* (458k): 182.3A

虺 *huī* < *xwoj* < **xuj* (572a): 3.2A

回 *huí* < *hwoj* < **wɨj* (542a): 208.2A, 239.6A, 263.6D, 300.1A

虺 *huǐ* see *huī* < *xwoj*

燬 *huǐ* < *xjweX* < **hm(r)jaj?* (356b): 10.3A, 10.3A

悔 *huǐ* < *xwojX* < **hmɨ?* (947s): 22.1A, 241.4B, 245.8B, 256.12A

惠 *huì* < *hwejH* < **wets* (533a): 191.5B, 264.1B

薈 [*huì*] < *ʔwajH* < **ʔops* (321n): 151.4A

喙 [*huì*] < *xjwojH* < **xjots* (171i): 237.8C

繪 *huì* < *xwajH* < **hwats* (346g): 252.7A, 252.8A

噦 *huì* < *xwajH* < **hwats* (346j): 182.2A, 299.1B

噦 *huì* < *xwejH* < **hwets* (527c): 197.4A, 222.2B

晦 *huì* < *xwojH* < **hmɨ(k)ʔ(s)* (947t): 90.3A, 255.5A

誨 *huì* < *xwojH* < **hmɨ(k)s* (947u): 230.1B, 230.2B, 230.3B, 264.3C

佸 *huó* < *hwat* < **g*^{w}*at* (3021): 66.2A

活 *huó* < *hwat* < **g*^{w}*at* (302m): 31.5A, 290.1E (see also *guō* < *kwat*)

火 *huǒ* < *xwaX* < **hmij?* (353a): 154.1A, 154.2A, 154.3A, 212.2C

穫 [*huò*] < *huH* < **waks* (784h): 177.4A (see also *huò* < *hwak*)

穫 *huò* < *hwak* < **wak* (784h): 154.4B (see also [*huò*] < *huH*)

濩 *huò* < *hwak* < **wak* (784j): 2.2A

禍 *huò* < *hwaX* < **g*^{w}*aj?* (18f): 199.2B

獲 *huò* < *hwɐk* < **wrak* (784d): 127.2A, 198.4A, 209.3A, 241.1A, 257.14A, 299.7B

彏 *huò* < *xwak* < **hwak* (775e): 186.2A

濩 *huò* < *xwat* < **hwat* (346h): 57.4A

几 *jī* see *jǐ* < *kijX*

畿 [*jī*] < *gjɨj* < **gjɨj* (547l): 35.2A

其 *jī* < *ki* < **k(r)jɨ* (952a): 109.1B, 109.2B

箕 *jī* < *ki* < **k(r)jɨ* (952f): 200.2B

基 *jī* < *ki* < **k(r)jɨ* (952g): 172.1A, 256.9A, 292.1A

期 *jī* < *ki* < **k(r)jɨ* (952k): 217.2A (see also [*qī*] < *gi*)

姬 *jī* < *ki* < **k(r)jɨ* (960f): 39.1A

飢 *jī* < *kij* < **krjɨj* (602f): 10.1A, 138.1A, 151.4B, 167.6A

幾 *jī* < *kjɨj* < **kjɨj* (547a): 264.6C

躋 *jī* < *tsej* < **tsɨj* (593p): 129.2A, 189.4B, 304.3A

隮 *jī* < *tsej* < **tsɨj* (593r): 51.2A, 151.4B

績 *jī* < *tsek* < **tsek* (868v): 154.3C, 244.5A, 305.3A

輯 *jí* < *dzip* < **dzjup* (688d): 254.2C

集 *jí* < *dzip* < **dzjup* (691a): 236.4A

疾 *jí* < *dzit* < **dzjit* (494a): 62.3A, 194.7B, 256.1B, 264.1B

籍 *jí* < *dzjek* < **dzjAk* (798a'): 261.6B

極 *jí* < *gik* < **g(r)jik* (910e): 54.4A, 58.4C, 101.4B, 109.2A, 121.2A, 199.8A, 202.4B, 209.4B, 219.2A, 224.1B, 230.3A, 253.3A, 257.15A, 262.3B, 264.4A, 275.1A, 305.5A

及 *jí* < *gip* < **g(r)jip* (681a): 28.2C, 69.3A, 163.1B, 238.3A, 260.7A

亟 *jí* < *kik* < **k(r)jik* (910a): 242.2A

棘 *jí* < *kik* < **krjik* (911a): 109.2A, 121.2A, 124.2A, 131.1A, 152.3A, 167.5B, 168.1A, 174.3A, 189.4A, 209.1A, 219.2A, 256.12C, 262.3B

襋 *jí* < *kik* < **k(r)jik* (911c): 107.1B

急 *jí* < *kip* < **k(r)jip* (681g): 177.1B

吉 *jí* < *kjit* < **kJit* (393a): 20.1A, 122.1A, 225.3A

踖 [*jí*] < *tshjek* < **tshjAk* (798k): 209.3A

即 *jí* < *tsik* < **tsjik* (399a): 89.2A, 99.1A, 250.6D

揖 *jí* < *tsip* < **tsjip* (688g): 5.3A

踖 *jí* < *tsjek* < **tsjek* (852b): 192.6A

楫 [*jí*] < [*tsjep*] < **tsjɨp* (688h): 238.3A

濈 *jɪ́* < *tsrip* < **tsrɨlup* (688f): 190.1B

幾 *jɪ́* see *jī* < *kjɨj*

几 *jɪ́* < *kijx* < **krɨjʔ* (602a): 160.1B, 246.2A, 250.4A

戟 *jɪ́* < *kjæk* < **krjak* (785a): 133.2B

掎 *jɪ́* < *kjex* < **k(r)jajʔ* (1y): 197.7B

濟 *jɪ́* < *tsejx* < **tsijʔ* 'many' (593o): 290.1G (see also *jɪ́* < *tsejx* < **tsɨjʔ* 'stately, even', *jì* < *tsejh* < **tsɨjs* 'to ford')

沸 *jɪ́* < *tsejx* < **tsijʔ* (554-): 39.2A

濟 *jɪ́* < *tsejx* < **tsɨjʔ* 'stately, even' (593o): 105.2A, 239.1A, 250.4A (see also *jɪ́* < *tsejx* < **tsijʔ* 'many', *jì* < *tsejh* < **tsɨjs* 'to ford')

脊 *jɪ́* < *tsjek* < **tsjek* (852a): 192.6A

伎 *jì* see *qí* < *gje*

穊 *jì* < *dzejh* < **dzɨjs* (593m): 212.3B

薺 *jì* < *dzejx* < **dzɨjʔ* (593l): 35.2B

忌 *jì* < *gih* < **g(r)jɨʔ(s)* (953s): 257.10A, 264.5B

悸 *jì* < *gjwijh* < **gʷjits* (538e): 60.1B, 60.2B

紀 [*jɪ́*] < *kix* < **k(r)jɨʔ* (953i): 204.6A, 249.4A, 258.7A

季 *jì* < *kjwijh* < **kʷjits* (538a): 110.2B, 241.3B

濟 *jì* < *tsejh* < **tsɨjs* 'to ford' (593o): 54.2B (see also *jɪ́* < *tsejx* < **tsijʔ* 'many', *jɪ́* < *tsejx* < **tsɨjʔ* 'stately, even')

穊 *jì* < *tsik* < **tsjɨk* (922b): 121.2A, 209.1A, 209.4B, 212.4B, 245.1B, 275.1A, 300.1B, 300.3D

家 *jiā* < *kæ* < **kra* (32a): 6.1A, 17.3A, 148.2A, 155.3A, 164.8A, 167.1C, 188.1A, 194.7A, 237.5A, 287.1C

葭 *jiā* < *kæ* < **kra* (33e): 25.1A

加 *jiā* < *kæ* < **kraj* (15a): 82.2A

珈 *jiā* < *kæ* < **kraj* (15d): 47.1A

嘉 *jiā* < *kæ* < **kraj* (15g): 156.4D, 157.2A, 170.4A, 191.2A, 217.1A, 220.4E, 247.4A, 248.2A, 256.5B, 256.8A

甲 *jiǎ* < *kæp* < **krap* (629a): 60.2A

假 *jiǎ* < *kæx* < **kraʔ* (33c): 301.1B

斝 *jiǎ* < *kæx* < **kraʔ* (34a): 246.3A

駕 *jià* < *kæh* < **krajs* (15e): 167.4A, 179.6A

稼 *jià* < *kæh* < **kras* (32f): 154.7A

監 *jiān* < *kæm* < **kram* (609a): 191.1A, 305.4A

菅 *jiān* < *kæn* < **kran* (157n): 139.3A, 229.1A

蒫 *jiān* < *kæn* < **kran* 'orchid' (191f): 95.1A (see also *jiān* < *ken* < **kren* 'lotus')

肩 *jiān* < *ken* < **ken* (240a): 97.1A

堅 *jiān* < *ken* < **kin* (368c): 246.5A

艱 *jiān* < *ken* < **krin* (480c): 40.1A, 199.1A, 248.5A

間 *jiān* < *ken* < **kren* (191a): 97.1A, 111.1A

蒫 *jiān* < *ken* < **kren* 'lotus' (191f): 145.2A (see also *jiān* < *kæn* < **kran* 'orchid')

簡 *jiǎn* < [*kenX*] < **kran?* 'great' (191d): 274.1B

監 *jiàn* see *jiān* < *kæm*

踐 *jiàn* < *dzjenX* < **dzjan?* (155o): 158.2A, 165.3A

檻 [*jiàn*] < *hamX* < **gam?* (609g): 73.1A

諫 *jiàn* < *kænH* < **krans* (185b): 253.5B, 254.1A

澗 *jiàn* < *kænH* < **krans* (191i): 56.1A, 250.6C, 250.6C

見 *jiàn* < *kenH* < **kens* (241a): 217.3B

譖 *jiàn* < *tsemH* < **tsi/ims* (?) (660j): 257.9A

僭 *jiàn* < *ts(h)emH* < **ts(h)i/ims* (?) (660l): 208.4A, 256.9B

彊 *jiāng* < *kjang* < **kjang* (710e): 49.1B, 49.2A

疆 *jiāng* < *kjang* < **kjang* (710h): 154.8C, 166.4A, 172.2A, 209.2A, 210.6A, 211.4A, 241.6A, 249.3B, 250.1A, 259.6B, 269.1A, 297.1B, 302.1C, 302.1C, 304.1A

姜 *jiāng* < *kjang* < **k(l)jang* (711a): 48.1A, 83.1B, 83.2B, 138.2A

將 *jiāng* < *tsjang* < **tsjang* (727f): 4.2A, 12.2A, 28.2B, 88.2A, 157.1A, 161.1B, 192.1A, 205.3A, 209.2A, 209.6B, 234.1A, 241.6A, 247.2A, 257.3A, 260.4A, 288.1B, 301.1E, 302.1C, 302.1C, 304.1A (see also *qiāng* < *tshjang*)

漿 *jiāng* < *tsjang* < **tsjang* (727v): 203.5A, 203.7A

降 *jiàng* < *kæwngH* < **krungs* (1015a): 239.2A (see also *xiáng* < *hæwng*)

郊 *jiāo* < *kæw* < **kraw* (1166n): 53.1A, 57.3A, 113.3B, 113.3B, 168.2A

膠 *jiāo* < *kæw* < **kriw* (1069s): 90.2A, 228.3A

驕 [*jiāo*] < *khjew* < **kh(r)jaw* (1138o): 57.3A (see also *jiāo* < *kjew*)

鷮 *jiāo* < *kjew* < **k(r)jaw* (1138n): 218.2A

驕 *jiāo* < *kjew* < **k(r)jaw* (1138o): 102.1B, 109.1A, 127.3B, 181.3A, 223.7A (see also [*jiāo*] < *khjew*)

椒 *jiāo* < [*tsjew*] < **tsjiw* (1031q): 137.3B

角 *jiǎo* < *kæwk* < **krok* (1225a): 11.3A, 17.2A, 291.1G

皎 *jiǎo* < *kewX* < **kew?* (1166y): 143.1A

較 *jiào* see *jué* < *kæwk*

教 *jiào* < *kæwH* < **kraw(k)s* (1167k): 218.2A, 223.2B, 256.11A, 299.2A
揩 [*jiē*] < *hɛj* < **grɨj* (599f): 208.2A
皆 *jiē* < *kɛj* < **krij* (599a): 279.1B
階 *jiē* < *kɛj* < **krij* (599d): 198.6A, 257.3B, 264.3A
喈 *jiē* < *kɛj* < **krɨj* (599c): 2.1B, 41.2A, 90.1A, 168.6A, 208.2A, 252.9C, 260.8A
揭 *jiē* < *kjot* < **kjat* (313n): 57.4A, 203.7B, 255.8A (see also *qì* < *khjejH*)
嗟 *jiē* < *tsjæ* < **tsjAj* (5n): 74.1A, 74.1A, 191.2A
罝 *jiē* < *tsjæ/o* < **tsjA/a* (46h): 7.1A, 7.2A, 7.3A
截 *jié* < *dzet* < **dzet* (310a): 304.2A, 304.6A
捷 *jié* < *dzjep* < **dzjap* (636b): 167.4C, 260.7A
桀 *jié* < *gjet* < **grjat* (284a): 62.1A, 66.2A, 304.6A (see also *jié* < *kjot*)
傑 *jié* < *gjet* < **grjat* (284b): 290.1E
竭 *jié* < *gjot* < **gjat* (313r): 265.6A, 265.6A
袺 *jié* < *ket* < **kit* (393q): 8.3A
結 *jié* < *ket* < **kit/k* (393p): 147.3A, 152.1A, 192.8A, 225.3A
偈 [*jié*] < *khjet* < **khrjat* (313p): 149.1A
桀 *jié* < *kjot* < **kjat* (284a): 102.2B (see also *jié* < *gjet*)
節 *jié* < *tset* < **tsik* (399e): 37.1A
解 *jiě* see [*xiè*] < *kɛɨH*
屆 *jiè* < *kɛjH* < **krets* (510b): 191.5B, 197.4A, 222.2B, 264.1B
戒 *jiè* < *kɛjH* < **krik(s)* (990a): 167.5B, 209.5A, 212.1A, 263.1B
今 *jīn* < *kim* < **k(r)jim* (651a): 20.2A, 245.8A, 264.7A
衿 *jīn* < *kim* < **k(r)jim* (651g): 91.1A
金 *jīn* < *kim* < **k(r)jim* (652a): 299.8A
巾 *jīn* < *kin* < **krjin* (482a): 93.1A
矜 [*jīn*] < *king* < **kjing* (369a): 224.3A, 257.1B (see also *guān* < *kwɛn*)
錦 *jǐn* < *kimX* < **k(r)jɨ/um?* (652e): 200.1B
儘 *jìn* < *dzinH* < **dzjins* (381c): 257.2B
盡 *jǐn* < *dzinX* < **dzjin?* (381a): 209.6D
墐 *jìn* < *ginH* < **grjins* (480n): 197.6A
近 *jìn* < *gjinX* < **gjin?* (443g): 169.4C
兢 [*jīng*] < *ging* < **g(r)jing* (888a): 190.3A (see also *jīng* < *king*)
經 *jīng* < *keng* < **keng* (831c): 195.4A

涇 *jīng* < *keng* < **keng* (831g): 248.1A

競 *jīng* < *king* < **k(r)jing* (888a): 195.6B, 196.6B (see also [*jīng*] < *ging*)

京 *jīng* < *kjæng* < **krjang* (755a): 50.2B, 153.1B, 192.1A, 211.4A, 235.5A, 236.2A, 236.6B, 241.6A, 243.1A, 244.7A, 250.3B

驚 *jīng* < *kjæng* < **krjeng* (813g): 179.7B, 263.3B

菁 *jīng* < *tsjeng* < **tsjeng* (812f): 119.2A

旌 *jīng* < *tsjeng* < **tsjeng* (812v): 53.3A, 179.7B

景 *jǐng* < *kjængX* < **krjang?* (755d): 44.1A

競 *jìng* < *gjængH* < **grjangs* (754a): 257.3A

敬 *jìng* < *kjængH* < **krjengs* (813a): 286.1B

熲 *jiǒng* < *kwengX* < **k*^{w}*eng?* (828d): 206.2A

糾 [*jiū*] < *gjewX* < **g(r)jiw?* (1064b): 143.1A (see also [*jiū*] < *kjiwX*)

糾 [*jiū*] < *kjiwX* < **k(r)jiw?* (1064b): 291.1C (see also [*jiū*] < *gjewX*)

鳩 *jiū* < *kjuw* < **k(r)ju* (992n): 1.1A

究 [*jiū*] < *kjuwH* < **k(r)jus* (992o): 120.2A, 197.7A, 255.3B

韭 *jiǔ* < *kjuwX* < **k(r)ju?* (1065a): 154.8B

久 *jiǔ* < *kjuwX* < **k*^{w}*ji?* (993a): 37.2B, 177.6A, 202.3A

玖 *jiǔ* < *kjuwX* < **k*^{w}*ji?* (993c): 64.3A, 74.3A

酒 *jiǔ* < *tsjuwX* < **tsju?* (1096k): 26.1A, 77.2A, 77.2A, 82.2B, 154.6B, 170.1A, 170.2A, 170.3A, 192.12A, 205.6A, 210.5A, 218.3A, 221.1B, 231.2A, 231.3A, 231.4A, 256.3B, 298.2A, 299.3A, 299.3A

究 *jiù* see [*jiū*] < *kjuwH*

就 *jiù* < *dzjuwH* < **dzjus* (1093a): 195.3A

舊 *jiù* < *gjuwH* < **g*^{w}*jiʔ(s)* (1067c): 255.7A, 265.7A

舅 *jiù* < *gjuwX* < **g(r)ju?* (1067b): 165.2B, 217.3A, 259.5B

咎 *jiù* < *gjuwX* < **g(r)ju?* (1068a): 165.2B, 195.3A, 205.6A

救 *jiù* < *kjuwH* < **k(r)jus* (1066m): 35.4A

疚 *jiù* < *kjuwH* < **k*^{w}*ji(k)s* (993d): 167.3D, 169.4A, 203.2C, 265.5A

椐 [*jū*] < *khjo* < **kh(r)ja* (49t′): 241.2D

居 *jū* < *kjo* < **k(r)ja* (49c′): 12.1A, 114.1B, 120.1A, 124.4A, 167.1C, 168.4A, 185.1A, 188.1A, 194.7A, 221.3B, 261.5C

据 *jū* < *kjo* < **k(r)ja* (49o′): 155.3A

琚 *jū* < *kjo* < **k(r)ja* (49p′): 64.1A, 83.1A

車 *jū* < *kjo* < **k(r)ja* (74a): 24.1A, 41.3A, 83.1A, 167.4B, 199.5A, 234.4A, 252.10A, 261.3A, 262.1B

鞠 *jū < kjuwk < *k(r)juk* (1017h): 101.3B, 202.4A

鞫 *jū < kjuwk < *k(r)juk* (1017j): 35.5B

駒 *jū < kju < *k(r)jo* (108r): 9.3A, 144.2B, 163.2A, 223.5A

沮 *jū < ts(h)jo < *ts(h)ja* (46k): 281.1A (see also [*jǔ*] < *dzjoX*)

砠 [*jū*] < *tshjo < *tshja* (46q): 3.4A

苴 [*jū*] < *tshjo < *tshja* (46t): 154.6C

且 [*jū*] < *tshjoX < *tshja?* (46a): 284.1A (see also *jū < tsjo*, *cú < dzu*)

罝 *jū* see *jiē < tsjæ/a*

且 *jū < tsjo < *tsja* (46a): 41.1B, 41.2B, 41.3B, 84.1A, 198.1A, 261.3A (see also [*jū*] < *tshjoX*, *cú < dzu*)

局 *jú < gjowk < *fikh(r)jok* (1214a): 192.6A, 226.1A

匊 *jú < kjuwk < *k(r)juk* (1017a): 117.2A, 226.1A

鵙 *jú < kwek < *k^{w}ek* (860b): 154.3C

沮 [*jǔ*] < *dzjoX < *dzja?* (46k): 195.1A, 198.2B, 258.4A (see also *jū < ts(h)jo*)

枸 [*jǔ*] < *gjuX < *g(r)jo?* (108o): 172.5A

筥 *jǔ < kjoX < *krja?* (76j): 15.2A, 222.1A, 291.1B

舉 *jǔ < kjoX < *k(r/l)ja?* (75a): 78.1A, 260.6A, 260.6A, 280.1A

踽 *jǔ < kjuX < *k^{w}(r)ja?* (99g): 119.1A

句 *jù* see [*gōu*] < *kuwH*

虡 *jù < gjoX < *g(r)ja?* (78e): 280.1A

秬 *jù < gjoX < *g(r)ja?* (95j): 300.1C

具 *jù < gjuH < *g(r)jos* (121a): 164.6A, 190.2B

瞿 *jù < gjuH < *g^{w}(r)jas* (96c): 100.3A, 114.1B

據 *jù < kjoH < *k(r)jaks* (803f): 26.2A

卷 *juǎn < kjwenX < *krjon?* 'ro!l' (226a): 26.3B (see also *quán < gjwen < *g^{w}rjen* 'handsome')

卷 *juàn* see *juǎn < kjwenX*, *quán < gjwen*

嗟 *juē* see *jiē < tsjæ*

朘 *jué < gjak < *gjak* (803h): 246.4A

蹻 *jué < gjak < *fik(r)jawk* (1138q): 254.4A, 259.4B (see also [*jué*] < *kjewX*)

角 *jué* see *jiǎo < kæwk*

覺 *jué < kæwk < *kruk* (1038f): 70.2A

較 *jué < kæwk < *krawk* (1166b'): 55.3B

蹻 [*jué*] < *kjewX < *k(r)jaw?* (1138q): 299.2A, 299.2A (see also *jué < gjak*)

蕨 *jué* < *kjwot* < **kjot* (301d): 14.2A

爵 *jué* < *tsjak* < **tsjewk* (1121a): 38.2B, 220.1F, 257.5B

君 *jūn* < *kjun* < **kjun* (459a): 49.2B

均 *jūn* < *kjwin* < **k*^{w}*jin* (391c): 163.5A, 191.3B, 205.2B, 246.5A

鈞 *jūn* < *kjwin* < **k*^{w}*jin* (391e): 246.5A

麇 *jūn* < *kwin* < **krjun* (485d): 23.1A

豈 *kǎi* < *khojX* < **khɨj?* (548a): 173.3A, 221.2B

檻 *kǎn* see [*jiàn*] < *hamX*

衎 *kàn* < *khanH* < **khans* (139p): 171.2A

康 *kāng* < *khang* < **khang* (746h): 114.1A, 114.2A, 114.3A, 250.1A, 252.4A, 253.1A, 270.1A, 274.1A, 274.1A, 302.1C

抗 *kàng* < *khangH* < **khangs* (698b): 220.1D

伉 *kàng* < *khangH* < **khangs* (698c): 237.7A

考 *kǎo* < *khawX* < **khu?* (1041d): 115.2A, 174.2A, 209.6C, 210.5A, 260.3A, 261.1B, 262.6A, 282.1C, 282.1G, 283.1B, 286.1A

栲 *kǎo* < *khawX* < **khu?* (1041o): 115.2A, 172.4A

蔼 *kē* < *khwa* < **k*^{w}*haj* (18h): 56.2A

渴 *kě* < *khat* < **khat* (313j): 66.2A, 167.2C, 218.1A

可 *kě* < *khaX* < **khaj?* (1a): 199.2B, 257.16A

恪 *kè* < *khak* < **khak* (766g): 301.1D

客 *kè* < *khæk* < **khrak* (766d′): 186.2A, 209.3A, 301.1D

克 *kè* < *khok* < **khɨk* (903a): 101.4A, 158.1A, 192.7A, 196.2A, 255.2A, 257.15A, 263.5C

空 *kōng* < *khuwng* < **khong* (1172h): 203.2A

控 *kòng* < *khuwngH* < **khongs* (1172z): 78.2C

口 *kǒu* < *khuwX* < **kh(r)o?* (110a): 192.2A, 192.2A, 198.5A

苦 *kǔ* < *khuX* < **kha?* (49u): 32.3A, 125.2A, 207.1A

寬 *kuān* < *khwan* < **k*^{w}*han* (165b): 56.1A

筐 *kuāng* < *khjwang* < **k*^{w}*hjang* (739v): 3.1A, 154.2B

狂 *kuáng* < *gjwang* < **g*^{w}*jang* (739o): 54.3A, 257.8A

貺 [*kuàng*] < *xjwangH* < **hwjangs* (765h): 175.1A

葵 *kuí* < *gjwij* < **g*^{w}*jɨj* (605g): 222.5A, 254.5A

騤 *kuí* < *gwij* < **g*^{w}*rjɨj* (605h): 167.5A, 177.1A, 257.2A, 260.8A

逵 *kuí* < *gwij* < **g*^{w}*rju* (989a): 7.2B

匱 [*kuì*] < *gwijH* < **grjuts* (540g): 247.5B

潰 [*kuì*] < *hwojH* < **guts* (540d): 35.6B

昆 [*kūn*] < *kwon* < **kun* (417a): 71.3B, 71.3B

壺 *kǔn* < *khwonX* < **k*^{w}*hin?* (424a): 247.6A

括 [*kuò*] < *hwat* < **g*^{w}*at* (302h): 218.1A (see also [*kuò*] < *kwat*)

廓 *kuò* < *khwak* < **k*^{w}*hak* (774g): 241.1A

鞹 *kuò* < *khwak* < **k*^{w}*hak* (774h): 105.1A

闊 *kuò* < *khwat* < **khot* (302q): 31.4A, 31.5A

括 [*kuò*] < *kwat* < **k*^{w}*at* (302h): 66.2A (see also [*kuò*] < *hwat*)

萊 *lái* < *loj* < **C-ri* (944j): 172.1A, 193.5A

來 *lái* < *loj* < **C-ri(k)* (944a): 30.2A, 30.2A, 33.3A, 66.1A, 82.3A, 91.2A, 167.3D, 168.1A, 169.4A, 171.4A, 203.2C, 203.4A, 217.2A, 242.2A, 263.6A

藍 *lán* < *lam* < **g-ram* (609k): 226.2A

濫 *làn* < *lamH* < **g-rams* (609j): 305.4A

爛 *làn* < *lanH* < **C-rans* (185l): 82.1A, 124.3A

狼 *láng* < *lang* < **C-rang* (735l): 97.3A

稂 *láng* < *lang* < **C-rang* (735o): 153.1B

勞 *láo* < *law* < **C-raw* (1135a): 32.1B, 57.3A, 58.5A, 113.3B, 181.3A, 193.7A, 202.1A, 205.5A, 232.1A

牢 *láo* < *law* < **C-ru* (1056a): 250.4B

勞 [*láo*] < *lawH* < **C-raws* (1135a): 153.4A, 227.1A, 239.5A

潦 *lǎo* < *lawX* < **C-raw?* (1151u): 15.1B

老 *lǎo* < *lawX* < **C-ru?* (1055a): 31.4B, 82.2B, 178.4A, 197.2A, 299.3A

樂 *lè* < *lak* < **g-rawk* (1125a): 1.5A, 95.1C, 95.2C, 116.1A, 132.2A, 171.1A, 192.11A, 228.2A, 256.11A, 261.5A

纍 *léi* < *lwij* < **C-rjuj* (577f): 4.1A, 171.3A

畾 *léi* < *lwoj* < **C-ruj* (577l): 3.2A, 251.2B

罍 *léi* < *lwoj* < **C-ruj* (577n): 30.4A

雷 *léi* < *lwoj* < **C-ruj* (577o): 178.4B, 258.3A

蠝 *lěi* < *lwijX* < **C-rjuj?* (577g): 71.1A, 71.2A, 71.3A

類 *lèi* < *lwijH* < **C-rjut/ps* (529a): 247.5B, 255.3A, 257.13A, 264.5D

黎 *lí* < *lej* < **C-rij* (519k): 257.2A

貍 *lí* < *li* < **C-rji* (978h): 154.4C

縭 *lí* < *lje* < **C-rjaj* (23d): 156.4D

離 *lí < lje < *C-rjaj* (23f): 43.3A, 65.1A, 65.2A, 65.3A, 174.4A

罹 *lí < lje < *C-rjaj* (24a): 70.1A, 189.9B, 197.1B

禮 *lǐ < lejX < *C-rij?* (597d): 52.3A, 52.3A, 279.1B, 290.1G

醴 *lǐ < lejX < *C-rij?* (597e): 180.4A, 279.1B, 290.1G

鱧 *lǐ < lejX < *C-rij?* (597h): 170.2B

里 *lǐ < lix < *C-rji?* (978a): 76.1A, 177.2B, 193.8A, 257.10A, 258.7A, 261.4A, 265.7A, 265.7A, 303.1D

理 *lǐ < lix < *C-rji?* (978d): 210.1B, 237.4A, 250.6B, 262.3C

裏 *lǐ < lix < *C-rji?* (978e): 27.1A, 197.3A

鯉 *lǐ < lix < *C-rji?* (978j): 138.3A, 170.3B, 177.6A, 281.1B

李 *lǐ < lix < *C-rji?* (980a): 24.2A, 64.3A, 74.3A, 172.3A, 256.8C

戾 *lì < lejH < *C-rets* (532a): 191.5B, 194.2A, 222.5A, 256.1B

櫟 *lì < lek < *C-rewk* (1125i): 132.2A

粒 *lì < lijH < *C-rjips* (520a): 178.1C, 178.2C, 178.3B

力 *lì < lik < *C-rjik* (928a): 80.2A, 192.7A, 255.2A, 257.7B, 257.15A, 260.2A

栗 *lì < lit < *C-rjit* (403a): 50.1B, 89.2A, 115.3A, 126.2A, 245.5B, 291.1E

慄 *lì < lit < *C-rjit* (403d): 131.1B, 131.2B, 131.3B

詈 *lì < ljeH < *C-rjajs* (872a): 257.16A

厲 *lì < ljejH < *C-rjats* (340a): 34.1B, 63.2A, 192.8A, 225.4A, 253.4A, 264.1B

例 *lì < ljejH < *C-rjets* (?) (291g): 241.2B

利 *lì < lijH < *C-rjits* (519a): 212.3C

連 *lián < ljen < *C-rjan* (213a): 241.8A

漣 *lián < ljen < *C-rjan* (213b): 58.2A, 112.1A

良 *liáng < ljang < *C-rjang* (735a): 29.3A, 49.1B, 49.2A, 193.2A, 223.4A, 229.7A, 253.1A

糧 *liáng < ljang < *C-rjang* (737d): 250.1A, 250.5A

梁 *liáng < ljang < *C-rjang* (738a): 63.1A, 199.2A, 211.4A, 229.7A, 236.5B

粱 *liáng < ljang < *C-rjang* (738b): 121.3A, 187.2A, 211.4A

涼 *liáng < ljang < *g-rjang* (755l): 41.1A

兩 *liǎng < ljangX < *b-rjang?* (736a): 101.2A

膋 *liáo < lew < *C-rew* (1135b): 210.5B

寮 *liáo < lew < *C-rew* (1151i): 254.3A

聊 *liáo < lew < *C-riw* (1114u): 117.1B, 117.2B

僚 *liǎo < lewX < *C-rew?* (1151h): 143.1A

蓼 *liǎo < lewX < *C-riw?* (1069p): 289.1A, 291.1C

燎 *liào < ljewH < *C-rjaws* (1151e): 143.3A, 239.5A

烈 *liè < ljet < *C-rjat* (291d): 154.1B, 167.2C, 202.5A, 204.3A, 245.7C, 304.2A, 304.6A

臨 *lín < lim < *b-rjum* (669e): 240.3A, 258.2A

林 *lín < lim < *C-rjim* (655a): 7.3B, 132.1A, 144.1A, 144.1A, 220.2B, 229.6A, 236.7B, 245.3B, 245.3B, 257.9A, 299.8A

粼 *lín < lin < *C-rjin* (387c): 116.3A

鄰 *lín < lin < *C-rjin* (387i): 126.1A

令 *líng < leng < *C-reng* (823a): 103.1A, 196.4A (see also *lìng < lingH*, *líng < ljeng(H)*)

靈 *líng < leng < *C-reng* (836i): 245.2B, 305.5B

苓 *líng < leng < *C-ring* (823o): 38.3A, 125.1A

零 *líng < leng < *C-ring* (823u): 50.3A

陵 *líng < ling < *b-rjing* (898c): 166.3A, 176.3A, 183.3A, 192.5A, 193.3B, 300.4B

領 *lǐng < ljengX < *C-rjeng?* (823f): 191.7A, 215.2B

令 *lìng < lingH < *C-rjings* (823a): 100.2B (see also *líng < leng*, *lìng < ljeng(H)*)

令 *lìng < ljeng(H) < *C-rjing(s)* (823a): 126.1A, 193.3A (see also *líng < leng*, *lìng < lingH*)

流 *liú < ljuw < *C-rju* (1104a): 1.2A, 26.1A, 194.5B, 223.8A, 263.5B

旒 *liú < ljuw < *C-rju* (1104c): 304.4A

劉 *liú < ljuw < *C-rju* (1114a'): 257.1A

懰 [*liú*] *< ljuwX < *C-rju?* (1114b'): 143.2A

柳 *liǔ < ljuwX < *C-rju?* (1114l): 224.1A, 224.2A

罶 *liǔ < ljuwX < *C-rju?* (1114x): 170.1A, 170.2A, 170.3A, 233.3A

六 *liù < ljuwk < *C-rjuk* (1032a): 53.3B, 122.2A

龍 *lóng < ljowng < *C-rjong* (1193a): 84.2A, 304.5A

龐 *lóng < luwng < *b-rong* (1192i): 179.1A

婁 *lóu* see *lǘ < lju*

蘘 [*lóu*] *< lju < *C-rjo* (123e): 9.3A

漏 *lòu < luwH < *C-ros* (120a): 256.7B

廬 [*lú*] *< ljo < *C-rja* (69q): 210.4A

虜 *lǔ < luX < *C-ra?* (69e): 263.4A

魯 *lǔ < luX < *C-ra?* (70a): 300.2B, 300.8A

穋 *lù < ljuwk < *C-rjiwk* (1069x): 154.7B, 300.1B

陸 *lù < ljuwk < *C-rjuk* (1032f): 56.3A, 159.3A

路 *lù* < *luH* < **g-raks* (766l′): 81.1A, 108.1A, 241.2D, 245.4A

露 *lù* < *luH* < **g-raks* (766t′): 17.1A, 17.1A, 36.1B

祿 *lù* < *luwk* < **b-rok* (1208h): 166.2A, 192.3A, 192.3A, 192.13A, 209.6A, 247.7A

鹿 *lù* < *luwk* < **C-rok* (1209a): 23.2A, 257.9B

孌 [*luán*] < *ljwenX* < **b-rjon?* (178k): 42.2A, 102.3A, 106.3A, 151.4C

欒 *luán* < *lwan* < **b-ron* (178d): 147.1A

亂 *luàn* < *lwanH* < **C-rons* (180c): 106.3B, 250.6A

淪 *lún* < *lwin* < **C-rjun* (470d): 112.3A

輪 *lún* < *lwin* < **C-rjun* (470f): 112.3A

捋 *luō* < *lwat* < **C-rot* (299e): 8.2A

羅 *luó* < *la* < **C-raj* (6a): 70.1A, 216.1A

蘿 *luó* < *la* < **C-raj* (6b): 217.1A

雒 *luò* < *lak* < **C-rak* (766q): 297.3B

駱 *luò* < *lak* < **C-rak* (766s): 163.4A, 214.3A, 214.3A, 297.3B

落 *luò* < *lak* < **g-rak* (766q′): 58.3A

蔞 *lǚ* < *ljo* < **C-rja* (69u): 93.2A

婁 *lǚ* < *lju* < **C-rjo* (123a): 115.1A

履 [*lǚ*] < *lijX* < **C-rjij?* (562a): 203.1A, 246.1A

旅 *lǚ* < *ljoX* < **g-rja?* (77a): 178.3C, 220.1A, 227.3A, 236.7A, 241.5C, 241.5C, 250.3C, 263.2A, 284.1A, 290.1C, 300.2B, 305.1A

緑 *lǜ* < *ljowk* < **C-rjok* (1208k): 226.1A

律 *lǜ* < *lwit* < **b-rjut* (502c): 202.6A

麻 *má* < *mæ* < **mraj* (17a): 74.1A, 137.2A, 139.1A

馬 *mǎ* < *mæX* < **mra?* (40a): 9.2A, 31.3A, 77.3A, 77.3A, 78.1A, 144.2A, 156.4C, 162.2B, 180.2A, 193.4C, 222.1A, 237.2A, 252.10A, 256.4B, 259.5A, 284.1A, 284.1A, 297.1A, 297.2A, 297.3A, 297.4A

霾 *mái* < *mɛj* < **mrɨ* (978n): 30.2A

邁 *mài* < *mæjH* < **mrats* (267d): 39.3B, 114.2B, 137.3A, 224.2B, 225.4A, 229.5A, 299.1B

麥 *mài* < *mɛk* < **mrik* (932a): 48.2A, 54.4A, 74.2A, 113.2B, 154.7B, 300.1B

蠻 *mán* < *mæn* < **mron* (178p): 261.6A

慢 *màn* < *mænH* < **mrans* (266h): 78.3B

芒 *máng* < *mang* < **mang* (742k): 303.1A, 304.1A

厖 *máng* < *mæwng* < **mrong* (1201a): 304.5A

毛 *máo* < *maw* < **maw* (1137a): 210.5B

旄 *máo* < *maw* < **maw* (1137c): 53.1A, 168.2A, 179.3A

髦 *máo* < *maw* < **mu* (1137e): 223.8A

茅 *máo* < *mæw* < **mru* (1109c): 154.7D, 229.2A

矛 [*máo*] < *mjuw* < **m(r)ju* (1109a): 133.1B, 191.8B

卯 *mǎo* < *mæwX* < **mru?* (1114a): 193.1A

茆 *mǎo* < *mæwX* < **mru?* (1114f): 299.3A

鉚 *mǎo* < *mæwX* < **mru?* (1114g): 21.2B

耄 *mào* < *mawH* < **maw(k)s* (1137g): 1.5A

耄 *mào* < *mawH* < **maw(k)s* (1137h): 254.4A, 256.11A

冒 *mào* < *mawH* < **muks* (1062a): 29.2A

茂 [*mào*] < *muwH* < **m(r)juʔ(s)* (1231f): 97.2A, 166.6B, 172.4A, 189.1B, 245.5A, 265.4A, 291.1D

沒 *méi* see *mò* < *mwot*

眉 *méi* < *mij* < **mrjɨj* (567a): 57.2A

湄 *méi* < *mij* < **mrjɨj* (567g): 129.2A

鄼 *méi* < *mij* < **mrjɨj* (567-): 259.6A

梅 *méi* < *mwoj* < **mɨ* (947l): 130.1A, 152.2A, 204.4A

鋂 *méi* < *mwoj* < **mɨ* (947n): 103.3A

媒 *méi* < *mwoj* < **mɨ* (948c): 58.1A

枚 *méi* < *mwoj* < **mɨj* (546a): 10.1A, 156.1B, 239.6A, 300.1A

美 *měi* < *mijX* < **mrjɨjʔ* (568a): 42.2B, 42.3A

浼 *měi* < *mwojX* < **mɨjʔ* (222l): 43.2A

寐 *mèi* < *mjijH* < **mjits* (531i): 30.3A, 110.2B, 197.4A

痗 *mèi* < *mwojH* < **miks* (947q): 62.4A, 193.8A

妹 *mèi* < *mwojH* < **mits* (531k): 236.5A

門 *mén* < *mwon* < **min* (441a): 40.1A, 93.1A, 199.1A, 261.4C

黽 *mén* < *mwon* < **min* (585a): 248.5A

璊 *mén* < *mwon* < **mun* (183f): 73.2A

懞 *méng* see *měng* < *muwngX*

甿 *méng* < *mæng* < **mrang* (742s): 54.3A

盟 [*méng*] < *mjæng* < **mrjang* (760e): 198.3A

蒙 *méng* < *muwng* < **mong* (1181a): 300.6B

濛 *méng* < *muwng* < **mong* (1181d): 156.1A, 156.2A, 156.3A, 156.4A

幪 *měng < muwngX < *mong?* (1181b): 245.4D

夢 *mèng < mjuwng(H) < *mjing(s)* (902a): 96.3A, 189.6B, 192.4A, 192.5A

靡 *mí* see *mǐ < mjeX*

迷 *mí < mej < *mij* (598e): 191.3A, 254.5A

麋 *mí < mij < *mrjij* (598f): 198.6A

瀰 *mǐ* see *nǐ < nejX*

靡 *mǐ < mjeX < *m(r)jaj?* (17h): 65.1A, 65.2A, 65.3A

瀰 *mǐ < mjieX < *mjej?*(359o): 43.1A

密 *mì < mit < *mrjit* (405p): 250.6D

苗 *miáo < mjew < *m(r)jaw* (1159a): 65.1B, 113.3B, 179.3A, 186.1A, 227.1A, 290.1F

藐 [*miǎo*] *< mæwk < *mrawk* (1171c): 256.11A, 259.4B

廟 *miào < mjewH < *m(r)jaws* (1160a): 240.3B

幭 [*miè*] *< mek < *mek* (311f): 261.2B

滅 *miè < mjiet < *mjet* (294b): 192.8A, 194.2A

瘨 *mín < min < *mrjin(?)* (457r): 257.4A

緡 *mín < min < *mrjun* (457x): 24.3A

民 *mín < mjin < *mjin* (457a): 234.2A, 257.1B, 275.1B

閔 *mǐn < minX < *mrjin(?)* (475q): 155.1A

敏 *mǐn < minX < *mrji(n)?* (1251q): 211.3A, 245.1A

泯 *mǐn < mjinX < *mjin?* (457c): 257.2B

冥 *míng < meng < *meng* (841a): 189.5A, 206.2A

明 *míng < mjæng < *mrjang* (760a): 96.2A, 96.2A, 100.1A, 187.2A, 203.6A, 209.2A, 210.6A, 211.2A, 236.8A, 247.2A, 253.1A, 254.8C, 255.4B, 260.4A, 274.1A, 288.1B, 298.1A

鳴 *míng < mjæng < *mrjeng* (827a): 34.2A, 96.1A, 96.1A, 161.1A, 179.7B, 196.4A, 252.9A, 280.1B

名 *míng < mjieng < *mjeng* (826a): 106.2A

命 *mìng < mjængH < *mrjing(s)* (762a): 51.3A, 116.3A, 222.3B, 249.1C, 252.8B, 261.1A, 262.5A, 262.5A, 295.1B

磨 *mó < ma < *maj* (17f): 55.1A, 256.5C

莫 *mò < mak < *mak* (802a): 2.2A, 198.4A, 241.1A, 254.2D (see also *mò < [mɛk]*, *mù < muH*)

秣 *mò < mat < *mat* (277c): 216.3A

貊 *mò < mæk < *mrak* (781f): 261.6B, 300.7A

莫 *mò < [mɛk] < *mrak* (802a): 209.3A (see also *mò < mak*, *mù < muH*)

沒 *mò < mwot < *mut* (492b): 232.2A

謀 *móu < mjuw < *mjɨ* (948f): 39.1A, 58.1A, 163.3A, 193.5A, 195.5A, 200.2B, 237.3A, 244.8A, 256.12A

母 *mǔ < muwX < *m(r)o/ɨʔ* (947a): 2.3B, 51.2B, 59.2A, 71.2B, 71.2B, 76.1A, 101.3A, 110.2A, 162.4A, 169.3A, 172.3A, 183.1B, 197.3A, 205.1A, 240.1A, 251.1A, 282.1H, 300.8B

畝 *mǔ < muwX < *mo/ɨʔ* (949a): 101.3A, 154.1C, 178.1A, 210.1B, 211.1B, 211.3A, 211.3A, 212.1A, 212.4A, 237.4A, 245.6A, 290.1D, 291.1A

牡 *mǔ < muwX < *m(r)juʔ* (1063a): 34.2B, 97.2A, 165.2B, 210.5A, 282.1C, 298.2A

牧 *mù < mjuwk < *mjɨk* (1037a): 168.1A

穆 *mù < mjuwk < *m(r)jiwk* (1035a): 282.1B

莫 *mù < muH < *maks* (802a): 100.3A, 108.1A, 114.1B, 167.1B, 207.2A, 258.6A (see also *mò < mak*, *mò < [mɛk]*)

木 *mù < muwk < *mok* (1212a): 2.1A, 165.1B, 196.6A, 223.6A

沐 *mù < muwk < *mok* (1212e): 226.1A

霂 *mù < muwk < *mok* (1212f): 210.2B

那 *nà* see *nuó < na*

衲 *nà < nop < *nup* (695i): 128.2C

難 *nán < nan < *nan* (152d): 69.1A, 164.3A, 215.3A, 228.1A, 254.2A, 287.1B (see also *nàn < nanH*)

男 *nán < nom < *nɨm* (649a): 240.1B

南 *nán < nom < *nɨm* (650a): 28.3B, 32.1A, 144.1A, 144.1A, 199.4A, 208.4A, 252.1B, 299.6A

熯 [*nǎn*] *< nyenX < *njanʔ* (144b): 209.4A

難 *nàn < nanH < *nans* (152d): 256.12B (see also *nán < nan*)

囊 *náng < nang < *nang* (730l): 250.1A

呶 *náo < nræw < *nru* (?) (1244i): 220.4A

恽 *náo < nræw < *nru* (?) (1244j): 253.2A

內 *nèi < nwojH < *nups* (695e): 255.3A

能 *néng < nong < *nɨ(ng)* (885a): 220.2C, 257.10A

泥 *ní* see *nǐ < nejX*

禰 *nǐ < nejX < *nijʔ* (359h): 39.2A

濔 *nǐ < nejX < *nɨjʔ* (359g): 105.2A

泥 *nǐ < nejX < *nɨjʔ* (563d): 173.3A, 246.1A

薾 *nǐ < ngiX < *ng(r)jɨ(k)ʔ* (956e): 211.1B

溺 *nì* < *nek* < **newk* (1123d): 257.5B

嶷 *nì* < *ngik* < **ng(r)jik* (956c): 245.4B

逆 *nì* < *ngjæk* < **ngrjak* (788c): 299.7B

暱 *nì* < [*nrit*] < **nrjik* (777n): 224.1B

年 *nián* < *nen* < **nin* (364a): 152.4A, 156.3C, 190.4B, 210.3B, 211.1A, 262.5A

鳥 [*niǎo*] < *tewX* < **tiw?* (1116a): 289.1A

蘖 [*niè*] < *ngat* < **ngat* (289-): 304.6A

孽 *niè* < *ngjet* < **ngrjat* (289g): 57.4A

寧 *níng* < *neng* < **neng* (837a): 164.5A, 189.5A, 191.6A, 191.9A, 227.5A, 235.3B, 244.1A, 245.2B, 248.1A, 254.7B, 258.8A, 262.2B, 264.1A, 290.1I, 291.1F, 305.5B

牛 *niú* < *ngjuw* < **ng^{w}ji* (998a): 227.2A, 292.1A

杻 *niǔ* < *nrjuwX* < **nrju?* (1076e): 115.2A, 172.4A

濃 *nóng* < [*nuwng*] < **nung* (?) (1005i): 173.4A

帑 *nú* < *nu* < **na* (94y): 164.8A

怒 *nù* < *nuH* < **nas* (94a′): 207.2A (see also [*nù*] < *nuX*)

怒 [*nù*] < *nuX* < **na?* (94a′): 26.2A, 35.1B, 198.2B, 241.5C, 254.8A, 257.4B, 258.6A, 263.4A (see also *nù* < *nuH*)

那 *nuó* < *na* < **naj* (350a): 215.3A, 301.1A

儺 [*nuó*] < *naX* < **naj?* (152k): 59.3A

諾 *nuò* < *nak* < **nak* (777f): 300.7A

女 *nǚ* < *nrjoX* < **nrja?* (94a): 15.3A, 211.2B, 237.2A (see also *rǔ* < *nyoX*)

虐 *nüè* < *ngjak* < **ng(r)jawk* (1118a): 55.3B, 192.11A, 254.4A, 256.11A

泮 *pàn* < *phanH* < **phans* (181f): 34.3A, 58.6A

盼 *pàn* < *phɛnH* < **phrins* (471x): 57.2B

龍 *páng* see *lóng* < *luwng*

厖 *páng* see *máng* < *mæwng*

旁 [*páng*] < *pæng* < **prang* (740f˄): 79.1A

傍 [*páng*] < *pæng* < **prang* (740m˄): 205.3A

雱 [*páng*] < *phang* < **phang* (740c˄): 41.1A

袍 *páo* < *baw* < **bu* (1113i): 133.1B

匏 *páo* < *bæw* < **bru* (1113f): 250.4B

炮 *páo* < *bæw* < **bru* (1113g): 231.4B

茷 [*pèi*] < *bajH* < **bots* (307f): 299.1B

旆 [*pèi*] < *bajH* < **bots* (501d): 168.2B, 245.4C, 304.6A

佩 [*pèi*] < *bwojH* < **bis* (915a): 91.2A, 134.2A

肺 *pèi* < *phajH* < **phots* (501g): 140.2A

亨 *pēng* < *phæng* < **phrang* (716b): 209.2A, 231.1A

彭 *péng* < *bæng* < **brang* (750a): 79.1A, 168.3A (see also *bāng* < *pang*)

朋 *péng* < *bong* < **bing* (886a): 117.1A, 176.3A, 300.4B

逢 *péng* < *buwng* < **bong* (1197o): 242.5A

蓬 *péng* < *buwng* < **bong* (1197y): 25.2A, 62.2A, 222.4A

紕 *pī* see [*pí*] < *bjijH*

駓 *pī* < *ph/bij* < **ph/brjɨ* (999m): 297.2B

伾 *pī* < *phij* < **phrjɨ* (999l): 297.2B

秠 *pī* < *phij(X)* < **phrjɨ(?)* (999n): 245.6A, 245.6A

皮 *pí* < *bje* < **b(r)jaj* (25a): 18.1A, 52.1A, 261.6C

膍 *pí* < *bjij* < **bjij* (566f'): 222.5A

毗 *pí* < *bjij* < **bjij* (566u): 191.3A, 254.5A

紕 [*pí*] < *bjijH* < **bjijs* (566t): 53.1B

羆 [*pí*] < *pje* < **p(r)jaj* (26b): 189.6C, 189.7A, 261.6C

匹 *pǐ* < *phjit* < **phjit* (408a): 244.3A, 249.3A

鴄 [*pì*] < *bek* < **bek* (853n): 142.2A

淠 *pì* < *phejH* < **phits* (521d): 197.4A, 222.2B

辟 *pì* < *phjiek* < **phjek* (853a): 254.6B, 254.6B (see also *bì* < *bjieH*, *bì* < *pjiek*, *bì* < *bjiek*)

翩 *piān* < *ph(ji)en* < **phin* (246k): 200.3A, 257.2B

飄 [*piāo*] < *bjiew* < **bjew* (1157e): 149.2A

嘌 *piāo* < *phjiew* < **phjew* (1157h): 149.2A

漂 *piāo* < *phjiew* < **phjew* (1157i): 85.2B

貧 *pín* < *bin* < **brjin* (471v): 40.1A, 58.4A

頻 *pín* < *bjin* < **bjin* (390a): 257.2B

蘋 *pín* < *bjin* < **bjin* (390d): 15.1A

聘 [*pìn*] < *phjiengH* < **phjengs* (839d): 167.2D

屏 *píng* < *beng* < **beng* (824f): 215.2B, 254.7B (see also *bǐng* < *pjiengX*)

馮 *píng* < *bing* < **brjing* (899d): 237.6A

平 *píng* < *bjæng* < **brjeng* (825a): 164.5A, 165.1C, 191.9A, 227.5A, 241.2A, 262.2B, 263.6C, 301.1C, 302.1B

苹 *píng* < *bjæng* < **brjeng* (825c): 161.1A

破 *pò* < *phaH* < **phajs* (25o): 179.6A
裒 *póu* < *buw* < **bU* (1230a): 164.2B
痛 [*pū*] < *phju* < **ph(r)ja* (102g'): 3.4A
鋪 *pū* < *phu* < **pha* (102h'): 194.1C, 262.1B
蒲 *pú* < *bu* < **ba* (102n'): 68.3A, 221.3B, 261.3A
僕 [*pú*] < *buwk* < **bok* (1210b): 192.3A, 247.7A
浦 *pǔ* < *phuX* < **pha?* (102f'): 263.2A, 263.4A
圃 [*pǔ*] < *puH* < **pas* (102z): 100.3A, 154.7A

棲 *qī* see *xī* < *sej*
期 [*qī*] < *gi* < **g(r)ji* (952k): 58.1A, 58.1A, 66.1A, 128.2D, 172.1A, 186.3A, 297.2B (see also *jī* < *ki*)
僛 *qī* < *khi* < **kh(r)ji* (952f'): 220.4B
妻 *qī* < *tshej* < **tshij* (592a): 57.1A, 240.2B
淒 *qī* < *tshej* < **tshij* (592f): 90.1A, 129.2A, 204.2A
萋 *qī* < *tshej* < **tshij* (592g): 2.1B, 168.6A, 169.2B, 169.2C, 200.1A, 212.3A, 252.9C
戚 *qī* < *tshek* < **Sthiwk* (1031f): 207.3A
七 *qī* < *tshit* < **tshjit* (400a): 20.1A, 122.1A, 152.1A
漆 *qī* < *tshit* < **tshjit* (401b): 50.1B, 115.3A, 126.2A, 237.1A
其 *qí* see *jī* < *ki*
期 *qí* see [*qī*] < *gi*, *jī* < *ki*
蠐 *qí* < *dzej* < **dzɨj* (593g): 57.2A
齊 *qí* < *dzej* < **fits(h)ɨj* (593a): 260.8A, 304.3A
憩 [*qí*] < *dzejH* < **dzɨjs* (593j): 254.5A
騏 *qí* < *gi* < **g(r)ji* (952a'): 152.2A, 163.3A, 178.1A, 297.2B
祺 *qí* < *gi* < **g(r)ji* (952y): 246.8A
淇 *qí* < *gi* < **g(r)ji* (952-): 39.1A, 58.1A, 59.1A
祁 *qí* < *gij* < **grjɨj* (553i): 13.3B, 154.2C, 168.6A, 212.3A, 303.1E
錡 *qí* < *gje* < **g(r)jaj* (1v): 157.2A
伎 *qí* < *gje* < **grje* (864j): 197.5A
疧 *qí* < *gjie* < **gJe* (867g): 206.1A, 229.8A
祇 *qí* < *gjie* < **gJe* (867i): 199.6A
頎 *qí* < *gjɨj* < **gjɨj* (443m): 57.1A
旂 *qí* < *gjɨj* < **gjɨj* (443p): 182.3A, 222.2A, 299.1A

豈 *qǐ* see *kǎi* < *khojX*

屺 *qǐ* < *khiX* < **kh(r)jɨʔ* (953k): 110.2A

杞 *qǐ* < *khiX* < **kh(r)jɨʔ* (953l): 76.1A, 162.4A, 169.3A, 172.3A, 205.1A

芑 *qǐ* < *khiX* < **kh(r)jɨʔ* (953q): 178.1A, 244.8A, 245.6A, 245.6A

起 *qǐ* < *khiX* < **kh(r)jɨʔ* (953r): 209.5B

泣 *qì* < *khip* < **khrjɨp* (694h): 28.2C, 69.3A, 69.3A

揭 *qì* < *khjejH* < **khrjats* (313n): 34.1B (see also *jiē* < *kjot*)

愒 *qì* < *khjejH* < **khrjats* (313s): 224.2B, 253.4A

憩 *qì* < *khjejH* < **khrjats* (329a): 16.2A

棄 *qì* < *khjïjH* < **khjits* (535a): 10.2A, 110.2B

洽 [*qià*] < *hɛp* < **grop* (675m): 254.2C

愆 *qiān* < *khjen* < **khrjan* (197b): 165.3A, 209.4A, 256.7A

千 *qiān* < *tshen* < **snin* (365a): 50.3A, 178.1B, 178.2A, 178.3A, 211.1A

遷 *qiān* < *tshjen* < **tshjan* (206c): 58.2A, 200.4A, 220.3A, 305.6A

虔 *qián* < *gjen* < **grjan* (198a): 305.6A

倩 *qiàn* < *tshenH* < **tshins* (1250c): 57.2B

羌 *qiāng* < *khjang* < **kh(l)jang* (712a): 305.2A

鶬 *qiāng* < *tshjang* < **tshjang* (703f): 283.1A, 302.1C

瑲 *qiāng* < *tshjang* < **tshjang* (703h): 178.2B

蹌 *qiāng* < *tshjang* < **tshjang* (703j): 106.1A, 209.2A

牄 *qiāng* < *tshjang* < **tshjang* (727d): 154.3B, 157.1A

將 *qiāng* < *tshjang* < **tshjang* (727f): 83.2A, 130.2A, 182.1A, 208.1A, 237.7A, 274.1A, 300.4A (see also *jiāng* < *tsjang*)

鏘 *qiāng* < *tshjang* < **tshjang* (727z): 260.7B, 261.4B

彊 *qiáng* see *jiāng* < *kjang*

牆 *qiáng* < *dzjang* < **dzjang* (727j): 76.2A

譙 *qiáo* < *dzjew* < **dzjew* (1148j): 155.4A

喬 *qiáo* < *gjew* < **fik(r)jaw* (1138a): 79.2A

翹 *qiáo* < *gjiew* < **gJew* (1164h): 155.4A

荍 *qiáo* < [*gjiew*] < **g(r)jiw* (1139a): 137.3B

悄 *qiǎo* < *tshjewX* < **tshjewʔ* (1149s): 26.4A, 143.1A

且 *qiě* see *cú* < *dzu*, *jū* < *tsjo*

揭 *qiè* < *khjet* < **khrjat* (313m): 57.4A, 62.1A

欽 *qīn* < *khim* < **kh(r)jɨm* (652f): 132.1A, 208.4A

綅 *qīn* < *tshim* < **tshjim* (661e): 300.5A

親 *qīn* < *tshin* < **tshjin* (382o): 191.4A

駸 *qīn* < *tsrhim* < **tshrjim* (661l): 162.5A

芩 *qín* < *gim* < **g(r)jim* (651o): 161.3A

琴 *qín* < *gim* < **g(r)jim* (651q): 161.3A, 161.3A, 164.7B, 208.4A, 218.5B

芹 *qín* < *gjin* < **gjin* (443f): 222.2A, 299.1A

勤 *qín* < *gjin* < **gjin* (480x): 155.1A

寢 *qǐn* < *tshimX* < **tshjim?*(661f): 189.6A

卿 *qīng* < *khjæng* < **khrjang* (714o): 255.4B

傾 *qīng* < *khjwieng* < **k*^{w}*hjeng* (828b): 255.7B, 264.2C

青 [*qīng*] < *tseng* < **tseng* (812c′): 55.2A, 233.2A (see also *qīng* < *tsheng*)

青 *qīng* < *tsheng* < **sreng* (812c′): 98.2A (see also [*qīng*] < *tseng*)

清 *qīng* < *tshjeng* < **tshjeng* (812i′): 95.2A, 106.2A, 227.5A, 248.1A

慶 *qìng* < *khjængH* < **khrjang(s)* (753a): 209.2A, 209.6B, 211.2A, 211.4A, 214.2A, 241.3C, 300.4A

邛 *qióng* < *gjowng* < **g(r)jong* (1172s): 195.1B, 198.3D

窮 *qióng* < *gjuwng* < **g(r)jung* (1006g): 35.6A

煢 *qióng* < *gjwieng* < **g*^{w}*jeng* (829a): 119.2A

丘 *qiū* < *khjuw* < **k*^{w}*hji* (994a): 58.1A, 200.7A

秋 *qiū* < *tshjuw* < **tshjiw* (1092a): 72.2A

酋 *qiú* < *dzjuw* < **dzju* (10961): 252.2A

遒 *qiú* < *dzjuw* < **dzju* (1096o): 157.3A (see also [*qiú*] < *tsjuw*)

鰍 *qiú* < *gjiw* < **g(r)jiw* (?) (1066i): 215.4A, 292.1B, 299.7A

仇 *qiú* < *gjuw* < **g(r)ju* (992p): 7.2B, 133.1B

求 *qiú* < *gjuw* < **grju* (1066a): 1.2A, 9.1A, 35.4A, 65.1C, 65.2C, 65.3C, 164.2B, 215.4A, 243.2A, 262.1A

球 *qiú* < *gjuw* < **grju* (1066f): 304.4A

梂 *qiú* < *gjuw* < **g(r)ju* (1066h): 304.4A

逑 *qiú* < *gjuw* < **g(r)ju* (1066k): 1.1A, 253.2A

鼽 *qiú* < *gjuw* < **g(r)ju* (1066l): 157.3A

俅 *qiú* < *gjuw* < **g(r)ju* (1066n): 292.1A

裘 *qiú* < *gjuw* < **g*^{w}*ji* (1066e): 130.1A, 154.4C, 203.4A

遒 [*qiú*] < *tsjuw* < **tsju* (1096o): 304.4A (see also *qiú* < *dzjuw*)

囚 *qiú* < *zjuw* < **zju* (1094a): 299.5B

祛 *qū < khjo < *kh(r)ja* (642e): 81.1A, 120.1A, 297.4B

曲 *qū < khjowk < *kh(r)jok* (1213a): 108.3A, 128.1B

驅 *qū < khju < *kh(r)jo* (122c): 54.1A, 62.1B, 115.1A, 128.1B, 163.2A, 254.8B

趨 *qū < tshju < *tshjo* (132c): 230.2A

瞿 *qú* see *jù < gjuH*

渠 *qú < gjo < *g(r)ja* (95g): 135.1A

取 *qǔ < tshjuX < *tshjo?* (131a): 223.5A

去 *qù < khjoH < *kh(r)jas* (642a): 189.3B, 245.3C, 258.6A

趣 *qù < tshjuH < *tshjos* (131g): 238.1A

泉 *quán < dzjwen < *Sg^{w}jan* (237a): 39.4A, 153.1A, 153.2A, 153.3A, 197.8A, 203.3A, 241.6C, 250.3A, 250.5B

卷 *quán < gjwen < *g^{w}rjen* 'handsome' (226a): 145.2A (see also *juǎn < kjwenX < *krjon?* 'roll')

鬈 *quán < gjwen < *g^{w}rjen* 'handsome' (226e): 103.2A

綣 *quǎn < khjwonX < *khjon?* (226m): 253.5B

闕 *què < khjwot < *k^{w}hjat* (301h): 91.3A

闋 *què < khwet < *k^{w}hit* (605k): 191.5B

囷 *qūn < khwin < *khrjun* (485a): 112.3A

羣 *qún < gjun < *gjun* (459d): 128.3A, 190.1A

然 *rán < nyen < *njan* (217a): 125.1B, 125.2B, 125.3B, 223.2A, 254.1A

瀼 *ráng < nyang < *njang* (730f): 94.2A, 173.2A

穰 *ráng < nyang < *njang* (730h): 274.1A, 302.1C

讓 *ràng < nyangH < *njangs* (730i): 223.4A

蕘 *ráo < nyew < *ngjew* (1164e): 254.3A

熱 *rè < nyet < *ngjet* (330j): 257.5A

壬 *rén < nyim < *njim* (667a): 220.2B

人 *rén < nyin < *njin* (388a): 6.3A, 28.4A, 32.2A, 38.3A, 38.3A, 38.3A, 45.1B, 45.2B, 50.3A, 50.3A, 51.3A, 65.1D, 65.2D, 65.3D, 77.1A, 77.1A, 87.1A, 92.2B, 102.1A, 102.2A, 116.3A, 118.1A, 118.1A, 131.1C, 131.2C, 131.3C, 152.4A, 152.4A, 193.7B, 196.1A, 196.1A, 199.3A, 200.3A, 200.5B, 200.5B, 203.3B, 203.3B, 211.1A, 219.3A, 229.3A, 229.4A, 238.4A, 239.3A, 249.1B, 252.8B, 252.8B, 258.1A, 259.3B, 260.4B, 262.5A, 264.2A, 264.3B, 269.1B, 282.1E

仁 *rén < nyin < *njin* (388f): 77.1A, 103.1A

忍 *rěn < nyinX < *njin?* (456c): 197.6B

陾 *réng < nying < *njing* (982i): 237.6A

日 *rì* < *nyit* < **njit* (404a): 37.1A, 50.1B, 62.3A, 73.3A, 99.1A, 115.3A, 124.5A, 169.1B

戎 *róng* < *nyuwng* < **njung* (1013a): 37.3A, 164.4A, 168.5A

容 *róng* < *yowng* < **(l)jong* (1187a): 62.2A, 278.1A

融 *róng* < *yuwng* < **ljung* (1009d): 247.3A

柔 *róu* < *nyuw* < **nju* (1105a): 167.2B, 215.4A, 257.1A, 292.1B, 304.4A

蹂 *róu* < *nyuw* < **nju* (1105d): 245.7A

茹 [*rú*] < *nyoH* < **njas* (94r): 26.2A, 177.4A (see also [*rú*] < *nyoX*)

茹 [*rú*] < *nyoX* < **nja?* (94r): 260.5A, 260.5B (see also *rú* < *nyoH*)

濡 *rú* < *nyu* < **njo* (134f): 80.1A, 163.2A

孺 [*rú*] < *nyuH* < **njos* (134d): 164.6A

醹 [*rú*] < *nyuX* < **njo?* (134j): 246.7A

辱 *rǔ* < *nyowk* < **njok* (1223a): 46.3A

女 *rǔ* < *nyoX* < **nja?* (94a): 78.1A, 92.1B, 92.1B, 113.1A, 113.1A, 113.2A, 113.2A, 113.3A, 113.3A, 201.1A, 207.4A, 218.3B, 236.7A, 291.1B, 300.2B, 300.3F (see also *nǚ* < *nrjoX*)

入 *rù* < *nyip* < **njup* (695a): 240.4A

洳 *rù* < *nyoH* < **njas* (94q): 108.1A

㫐 *rún* < *nywin* < **njun* (464m): 190.1A

若 *ruò* < *nyak* < **njak* (777a): 58.3A, 163.4A, 212.1B, 214.3A, 260.2B, 300.7A, 300.9A

塞 *sāi* < *sok* < **sik* (908a): 263.6A

三 *sān* < [*sam*] < **sum* (648a): 20.2A

桑 *sāng* < *sang* < **sang* (704a): 50.2B, 76.2A, 108.2A, 121.3A, 126.3A, 131.2A, 154.2B, 154.3B, 154.3B, 172.2A, 187.2A

喪 *sàng* < *sangH* < **smangs* (705a): 35.4B, 241.3C, 255.6A, 265.1A

騷 *sāo* < *saw* < **su* (1112g): 263.3A

埽 *sǎo* < *sawX* < **su?* (1087f): 46.1A, 115.2A (see also *sào* < *sawH*)

埽 *sào* < *sawH* < **sus* (1087f): 165.2B (see also *sǎo* < *sawX*)

塞 *sè* see *sāi* < *sok*

嗇 *sè* < *srik* < **srjik* (926e): 210.3A, 257.6C, 300.1B

色 *sè* < *srik* < **srjik* (927a): 241.7A, 260.2A

瑟 *sè* < *srit* < **sprjit* (411a): 50.1B, 115.3A, 126.2A

沙 *shā* < *sræ* < **sCraj* (16a): 248.2A

鯊 *shā* < *sræ* < **sCraj* (16d): 170.1B

山 *shān* < *srɐn* < **srjan* (193a): 189.1A, 197.8A, 305.6A

墠 *shàn < dzyenX < *djan?* (147a'): 89.1A

汕 *shàn < srænH < *s(C)r(j)ans* (193d): 171.2A

傷 *shāng < syang < *hljang* (720j'): 3.3A, 146.2A, 169.1C, 192.1A, 208.1A, 233.1A

湯 *shāng < syang < *hljang* (720z): 58.4B, 105.3A, 183.2B, 208.1A, 262.2A (see also *tāng < thang*)

商 *shāng < syang < *h(l)jang* (734a): 236.2A, 236.6B, 236.8A, 255.6A, 300.2A, 303.1A, 304.1A, 304.1A

尚 *shàng < dzyangH < *djangs* (725a): 256.4A

上 *shàng < dzyangH < *djangs* (726a): 136.1A, 217.2B, 236.1A

少 *shǎo < syewX < *h(l)jew?* (1149e): 26.4A

紹 *shào < dzyewX < *djaw?* (1131z): 143.3A, 256.3B

蛇 *shé < zyæ < *LjAj* (4l): 189.6C, 189.7A (see also *yí < ye*)

舌 *shé < zyet < *Ljat* (288a): 203.7B, 256.6A, 260.3B

舍 *shě < syæX < *hljA(k)?* (48a): 199.5A

舍 *shè* see *shě < syæX*

涉 *shè < dzyep < *djap* (634a): 34.1A

韘 *shè < syep < *hljap* (633o): 60.2A, 60.2A

設 *shè < syet < *h(l)jet* (290a): 220.1C

射 *shè < zyæH < *LjAks* (807a): 78.2B (see also *yì < yek*)

莘 *shēn < srin < *srjin* (382h): 236.6A

詵 *shēn < srin < *srjin* (478n): 5.1A

深 *shēn < syim < *hljim* (666c): 264.7A

申 *shēn < syin < *hljin* (385a): 68.1A, 222.3B, 249.1C, 259.1A

身 *shēn < syin < *hljin* (386a): 28.4A, 131.1C, 131.2C, 131.3C, 194.3A, 199.3A, 235.7A, 260.4B

神 *shén < zyin < *Ljin* (385j): 259.1A

諗 *shěn < syimX < *hnjim?* (670g): 162.5A

甚 *shèn < dzyimX < *Gjum?* (658a): 200.1B, 258.2A

葚 *shèn < zyimX < *sGji/um?*(?) (658n): 299.8A

葚 *shèn < zyimX < *sGjum?* (?) (658i): 58.3B

生 *shēng < srjæng < *srjeng* (812a): 164.5A, 165.1C, 191.6A, 196.4A, 233.2A, 235.3B, 237.9A, 252.9A, 305.5B

牲 *shēng < srjæng < *srjeng* (812e): 258.1B

甥 *shēng < srjæng < *srjeng* (812g): 106.2A

笙 *shēng < srjæng < *srjeng* (812h): 161.1A

聲 *shēng* < *syeng* < **xjeng* (822a): 96.1A, 165.1C, 165.1C, 179.8A, 244.1A, 244.1A, 280.1B, 301.1C, 301.1C, 301.1C, 305.5B

勝 *shēng* < *sying* < **hljing* (893p): 192.4A, 237.6A, 303.1C

升 *shēng* < *sying* < **h(l)jing* (897a): 117.1A, 166.6A, 190.3A, 245.8A

繩 *shéng* < *zying* < **fijing* (892b): 5.2A, 226.3A, 256.6D

勝 *shèng* see *shēng* < *sying*

乘 *shèng* < *zyingH* < **Ljings* (895a): 300.5A, 303.1C

師 *shī* < *srij* < **srjij* (559a): 133.1A, 133.2A, 133.3A, 153.3B, 191.3A, 191.3A, 213.1B, 254.5A

施 *shī* < *sye* < **hljaj* (41′): 43.3A, 74.1A

詩 *shī* < *syi* < **stji* (961d′): 200.7A

尸 *shī* < *syij* < **hljij* (561a): 209.5C, 254.5A

蓍 *shī* < *syij* < **xjij* (552q): 153.3B

濕 *shī* < *syip* < **hji/up* (692a): 190.1B

溼 *shī* < *syip* < **hji/up* (693a): 69.3A

提 *shí* < *dzye* < **dje* (866n): 197.1A (see also *tí* < *dej*

石 *shí* < *dzyek* < **djAk* (795a): 26.3A, 184.1C

碩 *shí* see *shuò* < *dzyek*

塒 *shí* < *dzyi* < **dji* (961j′): 66.1A

時 *shí* < *dzyi* < **dji(?)* (961z): 170.6A, 193.5A, 217.2A, 220.2C, 235.1B, 237.3A, 245.8B, 247.5A, 255.7A, 265.5B

識 *shí* < *syik* < **stjik* (920k): 220.5C, 264.4A

食 *shí* < *zyik* < **Ljik* (921a): 18.2A, 74.2A, 86.2A, 109.2A, 112.2A, 121.2A, 166.5A, 200.6A, 209.1A, 209.4B, 210.3A, 245.4B, 257.6C (see also *sì* < *ziH*)

實 *shí* < *zyit* < **Ljit* (398a): 6.2A, 65.3B, 148.3A, 156.2B, 169.1B, 225.3A

屎 *shǐ* see *xī* < *xjij*

史 *shǐ* < *srix* < **srji?* (975a): 193.4A, 220.5A

使 *shǐ* < *srix* < **srji?* (975n): 194.6A, 194.6A, 252.7B

矢 *shǐ* < *syijx* < **hljij?* (560a): 180.4A, 203.1A

始 *shǐ* < *syix* < **hlji?* (976e′): 298.3B

適 [*shì*] < *drek* < **drek* (877s): 305.3A

事 *shì* < *dzriH* < **fisrji?(s)* (971a): 13.1A, 205.1A, 212.1A, 237.4A, 256.10A, 259.2A, 264.4B

士 *shì* < *dzrix* < **fisrji?* (970a): 87.2A, 185.2A, 193.4A, 211.1B, 235.2A, 240.4B, 247.8A, 247.8A, 249.4A, 252.7B, 288.1A, 290.1D, 294.1B, 300.8B, 304.7B

仕 *shì* < *dzriX* < **fisrjɨʔ* (970d): 191.4B, 191.4B, 194.6A, 204.6A, 244.8A

逝 *shì* < *dzyejH* < **djats* (287m): 44.2A, 111.2A, 114.2B, 137.3A, 218.1A, 256.6A

視 *shì* < *dzyijXIH* < **gjijʔs* (553h): 203.1A

恃 *shì* < *dzyiX* < **djɨʔ* (961y): 202.3A

世 *shì* < *syejH* < **hljaps* (339a): 235.2B, 235.2B, 255.8A

澤 *shì* < *syek* < **hljAk* (790o): 290.1A (see also *zé* < *drɐk*)

適 *shì* < *syek* < **stjek* (877s): 40.2A (see also [*shì*] < *drɛk*)

試 *shì* < *syiH* < **hljɨk(s)* (918n): 178.1D, 203.4A, 300.5B

式 *shì* < *syik* < **hljɨk* (918f): 209.4B, 240.4A, 243.3A, 255.5A, 259.2A, 260.2A

飾 *shì* < *syik* < **hljɨk* (921h): 80.2A

室 *shì* < *syit* < **stjit* (413j): 6.2A, 50.1B, 73.3A, 89.2A, 99.1A, 99.1A, 115.3A, 124.5A, 148.3A, 156.2B, 156.3B, 194.7B, 213.2B, 237.1A, 245.5B, 291.1E

爽 [*shì*] < *xik* < **x(r)jɨk* (913a): 178.1D

收 *shōu* < *syuw* < **xjiw* (1103a): 128.1A, 264.1C, 267.1A

手 *shǒu* < *syuwX* < **hjuʔ* (1101a): 31.4B, 78.3A, 81.2A, 127.1A, 128.2A

首 *shǒu* < *syuwX* < **hljuʔ* (1102a): 78.3A, 197.2A, 209.6C, 217.3A, 221.1B, 231.2A, 231.3A, 231.4A, 233.3A, 262.6A

售 *shòu* < *dzyuwH* < **djus* (1091e): 35.5A

受 *shòu* < *dzyuwX* < **djuʔ* (1085a): 143.2A, 200.6B

壽 *shòu* < *dzyuwX* < **djuʔ* (1090g): 154.6B, 166.6B, 172.4A, 262.6A, 282.1G, 283.1B

狩 *shòu* < *syuwH* < **stjus* (1099c): 77.2A, 127.1A, 179.2A

殳 [*shū*] < *dzyu* < **djo* (130a): 62.1B

淑 *shū* < *dzyuwk* < **djiwk* (1031j): 69.2A, 257.5B

紓 *shū* < *syo* < **hlja* (83j): 222.3A

舒 *shū* < *syo* < **hlja* (83k): 262.1B

書 *shū* < *syo* < **stja* (45t): 168.4A

菽 *shū* < *syuwk* < **stjiwk* (1031g): 154.6A, 207.3A

姝 [*shū*] < *tsyhu* < **thjo* (128p): 42.1A

樞 [*shū*] < *ʔuw* < **ʔ(r)o* (122q): 115.1A

屬 *shǔ* < *dzyowk* < **djok* (1224s): 223.6A

數 *shǔ* < *srjuX* < **skrjo(k)ʔ* (123r): 198.5A

鼠 *shǔ* < *syoX* < **hjaʔ* (92a): 113.1A, 113.2A, 113.3A, 154.5A

黍 *shǔ* < *syoX* < **hjaʔ* (93a): 113.1B, 121.1A, 187.3A, 211.2B, 279.1A, 291.1B, 300.1C

暑 *shǔ* < *syoX* < **stjaʔ* (45x): 204.1A, 207.1A

數 *shù* see *shǔ* < *sruX*

樹 *shù* < *dzyuH* < **djos* (127j): 198.5A, 246.6A

庶 *shù* < *syoH* < **stjaks* (804a): 166.1A, 207.2A, 209.3A

束 *shù* < *syowk* < **hjok* (1222a): 23.2A, 46.3A, 186.4A, 229.1B

述 *shù* < *zywit* < **Ljut* (497e): 29.4A

率 [*shuàì*] < *srwit* < **srjut* (498a): 178.1C, 178.2C, 178.3B

雙 *shuāng* < *sræwng* < **sCr(j)ong* (1200a): 101.2B

霜 *shuāng* < *srjang* < **srjang* (731g): 107.1A, 129.1A, 154.8C, 192.1A, 203.2B

爽 *shuǎng* < *srjangX* < **srjang?* (733a): 58.4B, 173.2A

水 *shuǐ* < *sywijX* < **h[l]juj?* (576a): 92.1A, 92.2A, 104.3A, 183.1A, 183.2A

帨 *shuì* < *sywejH* < **hljots* (324g): 23.3A

說 *shuì* < *sywejH* < **hljots* (324q): 16.3A, 150.3A, 264.2B (see also *shuō* < *sywet*, *yuè* < *ywet*)

順 *shùn* < *zywinH* < **fisKjuns* (462c): 82.3B, 256.2A

說 *shuō* < *sywet* < **hljot* (324q): 58.3D, 58.3D (see also *shuì* < *sywejH*, *yuè* < *ywet*)

碩 *shuò* < *dzyek* < **djAk* (795e): 127.2A, 209.3A, 212.1B, 259.8B, 300.9A, 300.9A

思 *sī* < *si* < **sjɨ* (973a): 30.2A, 33.3A, 39.1A, 54.4B, 58.6B, 59.1A, 66.1A, 91.2A, 109.1B, 109.2B, 186.3A, 186.3A, 288.1A, 295.1A, 295.1A (see also *sì* < *siH*)

絲 *sī* < *si* < **sjɨ* (974a): 27.3A, 58.1A, 58.1A, 152.2A, 152.2A, 163.3A, 256.9A

私 *sī* < *sij* < **sjɨj* (557b): 2.3A, 57.1A, 209.5C, 212.3A

斯 *sī* < *sje* < **sje* (869a): 197.1A, 199.7B (see also *sī* < *srje*)

斯 *sī* < *srje* < **srje* (869a): 141.1A (see also *sī* < *sje*)

死 *sǐ* < *sijX* < **sjij?* (558a): 35.1D, 52.3A, 110.3B

思 *sì* < *siH* < **sjɨs* (973a): 134.2A (see also *sī* < *si*)

肆 *sì* < *sijH* < **sljɨps* (509h): 241.8C

四 *sì* < *sijH* < **s(p)jij/ts* (518a): 53.1B

駟 *sì* < *sijH* < **s(p)jits* (518e): 222.2B

寺 *sì* < *ziH* < **sdjɨs* (?) (961m): 264.3C

食 *sì* < *ziH* < **zljɨks* (921a): 123.1B, 123.2B, 230.1B, 230.2B, 230.3B (see also *shí* < *zyik*)

兕 *sì* < *zijX* < **zjij?* (556a): 180.4A

汜 *sì* < *ziX* < **zji?* (967i): 22.1A

祀 *sì* < *ziX* < **zjɨk(?)* (967d): 209.1A, 209.4B, 212.4B, 212.4B, 239.4A, 245.1A, 245.2C, 245.6A, 245.8B, 281.1C, 282.1D, 300.3B

似 *sì* < *ziX* < **zljɨ?* (976h): 196.3A, 214.4B, 262.4B

耜 *sì < ziX < *zlji?* (976k): 154.1C, 212.1A, 290.1D, 291.1A
俟 *sì < zriX < *zrji?* (976m): 52.2A, 180.3A
涘 *sì < zriX < *zrji?* (976o): 71.2B, 129.3A, 236.4B
松 *sōng < sjowng < *skjong* (1190a): 84.2A
竦 *sǒng < sjowngX < *sjong?* (1222n): 304.5A
宋 *sòng < sowngH < *sungs* (1004a): 31.2A
送 *sòng < suwngH < *songs* (1179a): 78.2C, 88.1A
訟 *sòng < zjowngH < *sgjongs* (1190b): 17.3B, 17.3B
誦 *sòng < zjowngH < *zljongs* (1185o): 191.10A
叟 *sōu < srjuw < *srju* (1097b): 245.7A
搜 *sōu < srjuw < *srju* (1097d): 299.7A
搜 *sǒu* see *sōu < srjuw*
蘇 *sū < su < *snga* (67e): 84.1A
粟 *sù < sjowk < *sjok* (1221a): 187.1A, 196.5B
肅 *sù < sjuwk < *sjiwk* (1028a): 282.1B
宿 *sù < sjuwk < *sjuk* (1029a): 56.3A, 156.1C, 159.3A, 188.2A, 207.3A
夙 *sù < sjuwk < *sjuk* (1030a): 245.1B
素 *sù < suH < *saks* (68a): 98.1A
愫 *sù < suH < *sngaks* (769b): 26.2A
樕 *sù < suwk < *sok* (1222p): 23.2A
綏 [*suí*] *< swij < *snjuj* (354g): 4.1A, 101.1A, 171.3A, 216.4A, 284.1B
歲 *suì < sjwejH < *swjat(s)* (346a): 72.3A, 154.1B, 245.7C, 300.5C
誶 *suì < swijH < *sjuts* (490q): 141.2A, 194.4A
穗 *suì < zwijH < *fiswjits* (?) (533h): 65.2B, 212.3C
遂 *suì < zwijH < *zjuts* (526d): 60.1B, 60.2B, 194.4A
㒸 *suì < zwijH < *zjuts* (526h): 132.3A
㒸 *suì < zwijH < *zjuts* (526k): 245.4C
隧 *suì < zwijH < *zjuts* (526m): 257.13A
孫 *sūn < swon < *sun* (434a): 24.3A, 209.4A
飧 *sūn < swon < *sun* (436a): 112.3A
隼 *sǔn < swinX < *sjun?* (467a): 183.1A, 183.2A
偰 *suō < sa < *saj* (5k): 220.4C
娑 *suō < sa < *saj* (16e): 137.2A

所 *suǒ* < *srjoX* < **s(k)rjaʔ* (91a): 78.1A, 113.1B, 121.1A, 159.2A, 180.2A, 258.4A, 263.4A, 302.1A, 305.1A

它 [*tā*] < *tha* < **hlaj* (4a): 45.1A

他 [*tā*] < *tha* < **hlaj* (4c′): 195.6A, 217.1A, 232.3A

達 *tà* < *that* < **hlat* (271b): 91.3A, 245.2A (see also *dá* < *dat*)

闥 *tà* < *that* < **hlat* (271e): 99.2A, 99.2A

臺 *tái* < *doj* < **li* (939a): 172.1A

嘽 *tān* < *than* < **than* (147m): 259.7A, 263.5A

惔 *tán* < *dam* < **lam* (617k): 191.1A

談 *tán* < *dam* < **lam* (617l): 191.1A

餤 *tán* < *dam* < **lam* (617p): 198.3C

檀 *tán* < *dan* < **dan* (148e): 76.3A, 112.1A, 184.1B, 184.2B

菼 *tǎn* < *thamX* < **hlamʔ* (617j): 73.1A

嘆 [*tàn*] < *than* < **hnan* (152a): 69.1A, 69.1A, 153.1A, 153.2A, 153.3A

歎 [*tàn*] < *than* < **hnan* (152c): 164.3A, 250.2A

歎 *tàn* < *thanH* < **hnans* (152c): 39.4A, 203.3A

湯 *tāng* < *thang* < **hlang* (720z): 136.1A, 303.1A, 305.2A (see also *shāng* < *syang*)

鎕 *tāng* < *thang* < **thang* (725e′): 31.1A

堂 *táng* < *dang* < **dang* (725s): 50.2B, 88.2A, 98.3A, 114.1A, 114.2A, 114.3A, 130.2A, 146.2A, 154.8C

唐 *táng* < *dang* < **g-lang* (700a): 48.1A

螗 *táng* < *dang* < **g-lang* (700e): 255.6A

帑 *tǎng* see *nú* < *nu*

慆 *tāo* < *thaw* < **hlu* (1078b): 114.3B

滔 *tāo* < *thaw* < **hlu* (1078d): 105.4A, 262.1A

陶 *táo* see *dào* < *dawH*, *yáo* < [*yew*]

桃 *táo* < *daw* < **g-law* (1145u): 64.2A, 109.1A

綯 *táo* < *daw* < **lu* (1047e): 154.7D

特 [*tè*] < *dok* < **dik* (961h′): 45.2A, 112.2A, 131.1A, 188.3A, 192.7A

朡 [*tè*] < *dok* < **lik* (893u): 212.2B

忒 *tè* < *thok* < **hlik* (918g): 152.3A, 152.3A, 256.12C, 264.4A, 300.3D

慝 *tè* < *thok* < **hnik* (777o): 45.2A, 253.3A, 264.4A

騰 *téng* < *dong* < **ling* (893t): 128.3B, 300.5A

騰 *téng* < *dong* < **ling* (893v): 193.3B, 300.4B

剔 *tī* < *thek* < **hlek* (850h): 241.2C

提 *tí* < *dej* < **de* (866n): 107.2A (see also *shí* < *dzye*)

羝 *tí* < *dej* < **lij* (551k): 42.3A, 57.2A

體 *tǐ* < *thejX* < **hrij?* (597i): 35.1D, 52.3A, 246.1A

弟 [*tì*] < *dejX* < **dij?* (591a): 105.2A, 173.3A, 239.1A (see also *dì* < *dejX*)

嚏 [*tì*] < *tejH* < **tits* (415e): 30.3A

裼 *tì* < *thejH* < **hleks* (850m): 189.9A

剃 *tì* < *thejH* < **theks* (877e): 47.2A, 107.2A

替 *tì* < *thejH* < **thij/ts* (1241j): 265.5C

涕 [*tì*] < *thejX* < **thij?* (591m): 203.1A

惕 *tì* < *thek* < **hlek* (850i): 142.2A

天 *tiān* < *then* < **hlin* (361a): 45.1B, 45.2B, 65.1D, 65.2D, 65.3D, 118.1A, 131.1C, 131.2C, 131.3C, 178.3A, 184.2A, 191.3B, 193.7B, 194.3A, 194.3A, 196.1A, 199.3A, 200.5B, 204.7A, 224.3A, 235.1A, 235.7A, 236.6A, 238.4A, 239.3A, 249.1B, 252.8B, 257.1B, 258.1A, 259.1A, 264.1A, 264.3B, 275.1B, 282.1E

田 *tián* < *den* < **din* (362a): 50.3A, 77.1A, 102.1A, 102.2A, 178.1B, 178.2A, 210.1A, 211.1A, 229.3A, 259.3B, 262.5A, 264.2A

闐 *tián* < *den* < **din* (375r): 178.3D

填 *tiǎn* see *chén* < *drin*

殄 [*tiǎn*] < *denX* < **din?* (453k): 43.2A, 237.8A

恌 *tiāo* < *thew* < **hlew* (1145i): 161.2A

苕 *tiáo* < *dew* < **dew* (1131d′): 142.1A

蜩 *tiáo* < *dew* < **diw* (1083v): 154.4A

調 *tiáo* < *dew* < **diw* (1083x): 179.5B

條 *tiáo* < *dew* < **liw* (1077f): 117.1B, 117.2B

趙 [*tiǎo*] < *dewX* < **lew?* (1149u): 291.1C

聽 *tīng* < *theng* < **hleng* (835d′): 195.4A, 255.7B, 258.1B, 280.1B

庭 *tíng* < *deng* < **leng* (835h): 98.2A, 189.5A, 263.6C, 286.1B

霆 *tíng* < *deng* < **leng* (835m): 263.3B

恫 *tōng* < *thuwng* < **thong* (1176k): 240.2A

同 *tóng* < *duwng* < **dong* (1176a): 21.1B, 37.3A, 154.4D, 154.7C, 173.4A, 179.1A, 179.5B, 180.2B, 213.3B, 220.1E, 222.4A, 263.6B, 300.6B

童 *tóng* < *duwng* < **dong* (1188o): 84.2A

僮 *tóng* < *duwng* < **dong* (1188r): 13.3A

曈 [*tóng*] < *tsyhowng* < **thjong* (1188c′): 70.3A

屠 *tú* < *du* < **da* (45i′): 261.3A

瘏 *tú* < *du* < **da* (45j′): 3.4A, 155.3A

徒 *tú* < *du* < **da* (62e): 193.4B, 237.5A

圖 *tú* < *du* < **d/la* (64a): 164.8A, 194.1C, 260.6A

塗 *tú* < *du* < **la* (82d′): 168.4A

荼 *tú* < *du* < **la* (82x): 93.2A, 93.2A, 155.3A

稌 [*tú*] < *duX* < **la?* (82b′): 279.1A

土 *tǔ* < *thuX* < **hla?* (62a): 29.1A, 113.1B, 113.1B, 195.1A, 205.2A, 207.1A, 259.5A, 261.5B, 262.3A, 263.2A, 300.1C (see also *dù* < *duX*)

吐 *tǔ* < *thuX* < **hla?* (62d): 260.5A, 260.5B

慱 *tuán* < *dwan* < **don* (231o): 147.1A

溥 *tuán* < *dwan* < **don* (231q): 94.1A

推 *tuī* < *thwoj* < **thuj* (575a′): 258.3A

頹 *tuí* < *dwoj* < **d/luj* (544b): 201.2A

隤 *tuí* < *dwoj* < **luj* (544a): 3.2A

駾 [*tuì*] < *dwajH* < **lots* (324d): 237.8C

退 *tuì* < *thwojH* < **hnups* (512a): 194.4A, 194.4A

焞 [*tūn*] < *thwoj* < **thuj* (464r): 178.4B

啍 *tūn* < *thwon* < **thun* (464t): 73.2A

脫 [*tuō*] < *thwajH* < **hlots* (324m): 23.3A

佗 *tuó* < *da* < **laj* (4h): 47.1A (see also [*tuó*] < *thaH*)

柁 *tuó* < *da* < **laj* (4j): 18.1A

沱 *tuó* < *da* < **laj* (4k): 22.3A, 145.1A, 232.3A

佗 [*tuó*] < *thaH* < **hlajs* (4h): 197.7B (see also *tuó* < *da*)

橐 *tuó* < *thak* < **thak* (795p): 189.3A

蘀 *tuò* < *thak* < **hlak* (790r): 85.1A, 85.2A, 154.4B, 184.1C

瓦 *wǎ* < *ngwæX* < **ng^{w}raj?* (20a): 189.9B

外 *wài* < *ngwajH* < **ng^{w}ats* (322a): 111.2A, 114.2B, 229.5A, 260.3B

完 [*wán*] < *hwan* < **fikon* (257m): 261.6A

丸 [*wán*] < *hwan* < **wan* (163a): 305.6A

婉 [*wǎn*] < *ʔjwonX* < **ʔjon?* (260g): 94.1A, 102.3A, 106.3A, 151.4C

王 *wáng < hjwang < *wjang* (739a): 166.4A, 189.8A, 193.6A, 236.1A, 236.2A, 236.6B, 236.6B, 236.8A, 238.2A, 238.5A, 241.6A, 241.7B, 243.1A, 244.7A, 249.2B, 253.1A, 254.8C, 257.7A, 261.2A, 262.2A, 272.1A, 274.1A, 283.1A, 286.1C, 294.1A, 300.2A, 304.7C, 305.2A

亡 *wáng < mjang < *mjang* (742a): 27.2A, 35.4B, 126.3A, 223.4A, 256.4A, 264.5C, 264.6A, 264.6A, 265.1A

往 *wǎng < hjwangX < *wjang?* (739k): 257.3A

罔 *wǎng < mjangX < *mjang?* (742l): 264.6A, 264.6A

忘 *wàng < mjang(H) < *mjang* (742i): 29.3A, 83.2A, 130.2A, 173.2A, 183.2B, 208.1A, 228.4B, 249.2B, 286.1C

望 *wàng < mjangH < *mjangs* (742m): 61.1A, 136.1A, 225.1A, 252.6A

威 *wēi < ʔjwij < *ʔjuj* (574a): 164.2A, 178.4B, 194.1B, 198.1B, 284.1C

微 [*wēi*] *< mjɨj < *mjɨj* (584d): 26.5A, 36.1A, 36.2A, 193.1B, 193.1B

薇 [*wēi*] *< mjɨj < *mjɨj* (584f): 14.3A, 167.1A, 167.2A, 167.3A, 204.8A

唯 *wéi* see *wěi < ywijX*

爲 *wéi < hjwe < *w(r)jaj* (27a): 52.1A, 70.1A, 75.1A, 145.1A, 205.6B, 256.5C (see also *wèi < hjweH*)

違 *wéi < hjwɨj < *wjɨj* (571d): 35.1C, 35.2A, 191.5C, 195.2A, 304.3A

圍 *wéi < hjwɨj < *wjɨj* (571g): 304.3A

嵬 *wéi < ngwoj < *nguj* (569j): 3.2A, 201.3A

惟 *wéi < ywij < *wjij* (575n): 245.7B

維 *wéi < ywij < *wjij* (575o): 191.3A, 222.5A, 257.3B

煒 *wěi < hjwɨjX < *wjɨj?* (571j): 42.2B

葦 *wěi < hjwɨjX < *wjɨj?* (571n): 154.3A, 246.1A

韙 *wěi < hjwɨjX < *wjɨj?* (571q): 164.1A

鮪 *wěi < hwijX < *wrjɨ?* (995y): 281.1B

洧 *wěi < hwijX < *wrjɨ?* (995-): 87.2A

萎 [*wěi*] *< ʔjwe < *ʔ(r)joj* (357d): 201.3A

尾 *wěi < mjɨjX < *mjɨj?* (583a): 10.3A, 160.1B, 221.2B

唯 *wěi < ywijX < *ljuj?* (575i): 104.3A

爲 *wèi < hjweH < *w(r)jajs* (27a): 248.2A (see also *wéi < hjwe*)

衛 *wèi < hjwejH < *wrjats* (342a): 39.3B

謂 *wèi < hjwɨjH < *wjɨts* (523d): 20.3A, 228.4A

渭 *wèi < hjwɨjH < *wjɨts* (523-): 236.5A

位 *wèi < hwijH < *(w)rjɨps* (539a): 249.4B

畏 *wèi < ʔjwijH < *ʔjuj(s)* (573a): 76.1B, 76.2B, 76.3B, 156.2E, 254.7C, 258.3A

蔚 *wèi < ʔjwijH < *ʔjuts* (525f): 151.4A, 202.2A

遺 *wèi < ywijH < *ljujs* (540m): 40.3A (see also *yí < ywij*)

聞 *wén < mjun < *mjun* (441f): 71.3B, 258.5A

問 *wèn < mjunH < *mjuns* (441g): 82.3B, 237.8B

我 [*wǒ*] *< ngaX < *ngajʔ* (2a): 123.1A, 199.2B

渥 *wò < ʔæwk < *ʔrok* (1204g): 210.2B

沃 *wò < ʔowk < *ʔawk* (1141l): 116.1A, 228.2A

烏 *wū < ʔu < *ʔa* (61a): 41.3A

屋 *wū < ʔuwk < *ʔok* (1204a): 17.2A, 128.1B, 154.7E, 192.3A, 192.13A

武 *wǔ < mjuX < *Np(r)jaʔ* (104a): 77.3A, 243.5A, 263.4A, 299.4B, 300.2B, 305.1A

撫 *wǔ <* [*mjuX*] *< *m(j)i* (?) (103o): 195.5A, 237.3A

舞 *wǔ < mjuX < *m(r)jaʔ* (103g): 38.1A, 38.1A, 78.1A, 165.3B, 218.3B, 220.2A, 298.1B

侮 *wǔ < mjuX < *m(r)joʔ(s)* (138a): 192.2A, 237.9B, 241.8B, 246.6A

五 *wǔ < nguX < *ngaʔ* (58a): 53.2B

午 *wǔ < nguX < *ngaʔ* (60a): 180.2A

務 *wù < mjuH < *m(r)jos* (1109j): 164.4A

戊 [*wù*] *< muwH < *m(r)jus* (1231a): 180.1A

惡 *wù < ʔuH < *ʔaks* (805h): 81.1A (see also *è < ʔak*)

裼 *xī* see *tì < thejH*

棲 *xī < sej < *sij* (592l): 177.1A

西 *xī < sej < *sij* (594a): 51.2A

犀 *xī < sej < *sij* (596a): 57.2A

晳 *xī < sek < *sek* (857c): 47.2A

錫 *xī < sek < *slek* (850n): 55.3A

息 *xī < sik < *sjik* (925a): 19.2A, 86.2A, 124.2A, 131.1A, 131.1A, 150.2A, 203.3C, 205.4A, 207.5A, 224.1B, 253.3A

昔 *xī < sjek < *sjAk* (798a): 301.1D

犧 *xī < xje < *hng(r)jaj* (2z): 300.3E

屎 *xī < xjij < *xJij* (?) (561d): 254.5A

晞 *xī < xjij < *xjij* (549c): 100.2A, 129.2A, 174.1A

觿 *xī < xjwie < *hwje* (880e): 60.1A, 60.1A

夕 *xī < zjek < *z(l)jAk* (796a): 105.1A, 186.2A, 194.2B, 301.1D

攜 [*xié*] < *hwej* < **we* (880c): 254.6A

隰 *xí* < *zip* < **zjip* (692b): 163.1B

席 *xí* < *zjek* < **zljAk* (797a): 26.3A, 246.3A

蓆 *xí* < *zjek* < **zljAk* (797b): 75.3A

洗 *xǐ* < *sejX* < **sij?* (594g): 43.2A

喜 *xǐ* < *xiX* < **x(r)ji?* (955a): 90.3A, 154.1C, 175.2A, 176.2A, 177.6A, 211.3A, 212.4A, 218.1B, 257.10A, 300.8B

綌 [*xì*] < *khjæk* < **khrjak* (776d): 2.2A

舄 *xì* < *sjek* < **sjAk* (799a): 179.4A, 300.9A

翕 *xì* < *xip* < **x(r)jo/up* (675q): 164.7A

壐 *xì* < *xjijH* < **xjits* (515h): 20.3A, 35.6B, 249.4B, 251.3B

瑕 *xiá* < *hæ* < **gra* (33h): 160.2A

暇 *xiá* < *hæ* < **gra* (331): 297.4B

暇 [*xiá*] < *hæH* < **gras* (33g): 165.3B, 207.2A, 234.3A

葦 *xiá* < *hæt* < **grat* (282a): 39.3B, 218.1A

夏 *xià* < *hæX* < **g/Hra?* (36a): 136.2A, 204.1A

下 *xià* < *hæX* < **gra?* (35a): 15.3A, 19.3A, 31.3A, 32.3A, 125.2A, 136.2A, 137.1A, 154.5A, 156.1D, 162.3A, 205.2A, 222.3A, 237.2A, 241.5C, 248.3A, 260.1B, 287.1C, 298.1B

先 *xiān* see *xiàn* < *senH*

鮮 *xiān* see *xiǎn* < *sjenX*

僊 *xiān* < *sjen* < **sjan* (206b): 220.3A

賢 *xián* < *hen* < **gin* (368e): 205.2B, 246.5A

閑 *xián* < [*hɛn*] < **gran* 'to restrain, train; huge' (192a): 127.3A, 177.5A, 241.8A, 305.6A (see also *xián* < *hɛn* < **fikren* 'leisure')

閑 *xián* < *hɛn* < **fikren* 'leisure' (192a): 111.1A (see also *xián* < [*hɛn*] < **gran* 'to restrain, train; huge')

鮮 *xiǎn* < *sjenX* < **sjen?* (209a): 43.1A

僩 *xiàn* < *hænX* < **gran?* (191g): 55.1B, 55.2B

先 *xiàn* < *senH* < **sins* (478a): 197.6A

霰 *xiàn* < *senH* < **s(k)ens* (156d): 217.3B

獻 *xiàn* < *xjonH* < **hngjans* (252e): 231.2B

憲 *xiàn* < *xjonH* < **xjans* (250a): 177.5A, 215.3A, 254.2A, 259.7A

羨 *xiàn* < *zjenH* < **zjans* (?) (207a): 241.5A

相 *xiāng* < *sjang* < **sjang* (731a): 238.5A, 257.8A

箱 *xiāng* < *sjang* < **sjang* (731f): 203.6A, 211.4A

襄 *xiāng* < *sjang* < **snjang* (730a): 46.2A, 78.2A, 168.3A, 203.5A, 203.6A

鄉 *xiāng* < *xjang* < **xjang* (714c): 48.1A, 178.2B, 305.2A

香 *xiāng* < *xjang* < **xjang* (717a): 290.1H

降 *xiáng* < *hæwng* < **fikrung* (1015a): 14.1A, 168.5A, 248.4A (see also *jiàng* < *kæwngH*)

祥 *xiáng* < *zjang* < **z(l)jang* (732n): 189.7B, 189.7B, 264.5C, 304.1A

翔 *xiáng* < *zjang* < **z(l)jang* (732p): 79.1A, 83.1B, 83.2B, 105.3A, 146.2A

詳 *xiáng* < *zjang* < **z(l)jang* (732q): 46.2A, 46.2A

饗 *xiǎng* < *xjangX* < **xjang?* (714j): 154.8C, 175.1A, 209.2A, 272.1A, 302.1C

享 *xiǎng* < *xjangX* < **xjang?* (716a): 166.4A, 210.6A, 283.1A, 302.1C, 305.2A

巷 *xiàng* < *hæwngH* < **grongs* (1182s): 88.1A

向 [*xiàng*] < *syangH* < **hjangs* (715a): 193.6A, 193.6A

削 *xiāo* see *xuē* < *sjak*

蕭 *xiāo* < *sew* < **siw* (1028i): 72.2A, 153.2B, 179.7A

瀟 *xiāo* < *sew* < **siw* (1028j): 90.2A

脩 *xiāo* < *sew* < **sliw* (1077l): 155.4A

消 *xiāo* < *sjew* < **s(l)jew* (1149j): 79.2A, 223.7A

嘵 *xiāo* < *xew* < **hngew* (1164e): 155.4A

殽 *xiáo* see [*yáo*] < *hæw*

小 *xiǎo* < *sjewX* < **s(l)jew?* (1149a): 26.4A

傚 *xiào* < *hæwH* < **graws* (1166u): 161.2A, 223.2B

歗 *xià* < *sewH* < **siw(k)s* (1028g): 69.2A, 69.2A

笑 *xiào* < *sjewH* < **sjaws* (1150a): 30.1A, 58.5B, 254.3A, 299.2A

孝 *xiào* < *xæwH* < **xrus* (1168a): 244.3B, 286.1A

褉 *xié* < *het* < **git* (393y): 8.3A

偕 [*xié*] < *kɛj* < **krij(?)* (599b): 110.3B, 169.4C, 170.5A, 220.1B

邪 *xié* < *zjæ* < **z(ng)jA* (47a): 297.4B (see also *xú* < *zjo*)

血 *xiě* see *xuè* < *xwet*

寫 *xiě* < *sjæX* < **sjA(k)?* (799f): 173.1A, 214.1A, 214.1A, 218.4A

泄 *xiè* see *yì* < *yejH*

解 [*xiè*] < *kɛiH* < **kreks* (861a): 261.1C, 300.3C, 305.3A

心 *xīn* < *sim* < **sjim* (663a): 7.3B, 27.4A, 28.3B, 32.1A, 32.4A, 33.2A, 35.1A, 91.1A, 161.3A, 186.4B, 199.4A, 218.5B, 229.4B, 229.6A, 236.7B, 241.4A, 256.9B, 257.6A, 260.8B, 299.6A

新 *xīn* < *sin* < **sjin* (382k): 235.1A

薪 *xīn* < *sin* < **sjin(g)* (382n): 32.2A, 68.1A, 92.2B, 118.1A, 156.3C, 203.3B, 203.3B, 229.4A

馨 [*xīn*] < *xeng* < **xeng* (832f): 248.1A, 290.1I

歆 *xīn* < *xim* < **x(r)jim* (653j): 245.8A

欣 *xīn* < *xjin* < **xjin* (443i): 248.5A

鬻 *xín* < *zim* < **zjim* (660k): 149.3A

信 *xìn* < *sinH* < **snjins* (384a): 51.3A, 92.2B, 125.1A, 191.4A, 194.3A, 200.3A (see also [*xìn*] < *syin*)

信 [*xìn*] < *syin* < **hnjin* (384a): 31.5B (see also *xìn* < *sinH*)

星 *xīng* < *seng* < **seng* (812x): 21.1A, 21.2A, 55.2A, 258.8A

興 *xīng* < *xing* < **x(r)jing* (889a): 128.3B, 166.3A, 183.3A, 189.6B, 236.7B, 237.6A

行 *xíng* < *hæng* < **grang* (748a): 3.1A, 31.1A, 41.1A, 54.3A, 83.2A, 88.3A, 133.3B, 154.2B, 156.2D, 161.1B, 183.2B, 193.2A, 199.2A, 205.4B, 218.5A, 234.1A, 236.2A, 236.6B, 237.7A, 250.1A, 255.6A, 259.6B, 270.1A, 288.1B (see also *háng* < *hang*, [*xíng*] < *hængH*)

行 [*xíng*] < *hængH* < **grangs* (748a): 33.4A, 58.4B (see also *háng* < *hang*, *xíng* < *hæng*)

刑 *xíng* < *heng* < **geng* (808b): 255.7B, 256.3A, 269.1B

姓 *xìng* < *sjengH* < **sjengs* (812q): 11.2A, 119.2A, 191.6A

凶 *xiōng* < *xjowng* < **x(r)jong* (1183a): 70.3A

詾 *xiōng* < *xjowng* < **x(r)jong* (1183c): 191.5A, 191.10A, 299.6C

兄 *xiōng* < *xjwæng* < **hwrjang* (765a): 49.1B, 76.2A, 110.3A, 187.2A, 241.3C, 241.7B

雄 [*xióng*] < *hjuwng* < **wjing* (887l): 190.3A, 192.5A

脩 *xiū* < *sjuw* < **sljiw* (1077e): 69.2A

休 *xiū* < *xjuw* < **x(r)ju* (1070a): 9.1A, 114.3B, 114.3B, 157.3A, 176.4A, 193.8B, 194.5B, 252.2A, 253.2A, 253.2A, 262.6A, 292.1B, 304.4A

朽 *xiǔ* < *xjuwX* < **x(r)ju?* (1041m): 291.1D

臭 *xiù* see *chòu* < *tsyhuwH*

繡 *xiù* < *sjuwH* < **sjiw(k)s* (1028e): 116.2A

秀 *xiù* < *sjuwH* < **sljus* (1095a): 245.5A

褎 *xiù* < *zjuwH* < **zjus* (1079n): 120.2A, 245.5A

虛 [*xū*] < *khjo* < **kh(r)ja* (78a): 50.2A

胥 *xū* < *sjo* < **sngja* (90e): 215.1A, 215.2A, 261.3A

吁 *xū* < *xju* < **hw(r)ja* (97c): 3.4A

盱 *xū* < *xju* < **hw(r)ja* (97u): 199.5A, 225.5A

訏 *xū* < *xju* < **hw(r)ja* (97v): 245.4A (see also *xǔ* < *xjuX*)
邪 *xú* < *zjo* < **z(ng)ja* (47a): 41.1B, 41.2B, 41.3B (see also *xié* < *zjæ*)
湑 *xǔ* < *sjoX* < **sngja?* (90f): 119.1A, 165.3B, 165.3B, 173.1A, 214.1A, 218.4A, 248.3A
許 *xǔ* < *xjoX* < **hng(r)ja?* (60i): 68.3A, 243.5A, 300.8A (see also *hǔ* < *xuX*)
訏 *xǔ* < *xjuX* < **hw(r)ja?* (97v): 261.5B (see also *xū* < *xju*)
詡 *xǔ* < *xjuX* < **hw(r)ja?* (97d′): 235.5B
栩 *xǔ* < *xjuX* < **hw(r)ja?* (98c): 121.1A, 137.1A, 162.3A, 187.3A
恤 *xù* < *swit* < **swjit* (410e): 169.4B, 202.3B, 257.5A
畜 *xù* < *xjuwk* < **x(r)juk* (?) (1018a): 188.2A, 202.4A
洫 *xù* < *xjwit* < **hwjit* (410d): 244.3A
續 *xù* < *zjowk* < **zljok* (1023u): 128.1B, 291.1G
賣 *xù* < *zjowk* < **zljok* (1023v): 108.3A
緒 *xù* < *zjoX* < **zja?* (?) (45s): 263.2A, 300.1C, 300.2B, 305.1A
茜 *xù* < *zjoX* < **zlja?* (89n): 165.2A
鱮 *xù* < *zjoX* < **zlja?* (89o): 104.2A, 226.4A, 226.4A
宣 *xuān* < *sjwen* < **swjan* (164t): 250.2A, 259.1B, 262.4A
軒 [*xuān*] < *xjon* < **xjan* (139g′): 177.5A
儇 *xuān* < *xjwien* < **hwjen* (256z): 97.1A
諼 *xuān* < *xjwon* < **hwjan* (255k): 55.1B, 55.2B, 56.1A
咺 [*xuān*] < *xjwonX* < **hwjan?* (164q): 55.1B, 55.2B
翬 *xuān* < *xwen(H)* < **hwen(s)* (228k): 298.3A
玄 *xuán* < *hwen* < **g^{w}in* (366a): 234.2A
還 *xuán* < *zjwen* < **fiswjen* (256k): 97.1A, 111.1A
選 [*xuǎn*] < *sjwenH* < **sjon(?)s* (433f): 106.3B (see also *xuǎn* < *sjwenX*)
選 *xuǎn* < *sjwenX* < **sjon?* (433f): 26.3B (see also [*xuǎn*] < *sjwenH*)
削 *xuē* < *sjak* < **s(l)jewk* (1149c′): 257.5B
穴 *xué* < *hwet* < **wit* (409a): 73.3A, 131.1B, 131.2B, 131.3B, 237.1A
雪 *xuě* < *sjwet* < **sjot* (297a): 150.3A
謔 *xuè* < *xjak* < **hng(r)jawk* (1118d): 55.3B, 95.1C, 95.2C, 254.4A, 254.4A
威 *xuè* < *xjwiet* < **hmjet* (294a): 192.8A
血 *xuè* < *xwet* < **hwit* (410a): 194.7B
熏 *xūn* < *xjun* < **xjun* (461a): 248.5A
薰 *xūn* < *xjun* < **xjun* (461e): 258.5A

壎 [*xūn*] < *xjwon* < **xjon* (461j): 199.7A

詢 [*xún*] < *swin* < **swjin* (392p): 163.5A

洵 [*xún*] < *xwen* < **hwin* (392l): 31.5B

旬 *xún* < *zwin* < **fiswjin* (392a): 257.1B

訓 *xùn* < *xjunH* < **xjuns* (422d): 256.2A, 269.1B

牙 *yá* < *ngæ* < **ngra* (37a): 17.3A, 185.1A

御 *yà* < *ngæH* < **ngra(k)s* (601l): 12.1A (see also *yù* < *ngjoH*)

焉 [*yān*] < *hjen* < **fi(r)jan* (200a): 125.1B, 125.2B, 125.3B

嚴 *yán* < *ngæm* < **ngram* (607l): 191.1A, 300.6A

顏 *yán* < *ngæn* < **ngran* (199c): 47.3A, 256.7A

嚴 *yán* < *ngjæm* < **ng(r)jam* (607h): 305.4A

言 *yán* < *ngjon* < **ngjan* (251a): 39.3A, 56.1A, 58.2A, 58.2A, 76.3A, 86.1A, 125.1B, 125.1B, 125.2B, 125.2B, 125.3B, 125.3B, 139.3A, 197.8A, 200.4A, 219.1A, 241.8A

儼 *yǎn* < *ngjæmX* < **ngrjom?* (?) (607k): 145.3A

嶮 *yǎn* < *ngjenX* < **ng(r)jan?* (252h): 250.2A

衍 [*yǎn*] < *yenH* < **rans* (197a): 254.8D (see also *yǎn* < *yenX*)

衍 *yǎn* < *yenX* < **ran?* (197a): 165.3A (see also [*yǎn*] < *yenH*)

晏 *yàn* < *ʔænH* < **ʔrans* (146f): 58.6A, 80.3A

燕 *yàn* < *ʔenH* < **ʔens* (243a): 298.3A

宴 *yàn* < *ʔenH* < **ʔens* (253b): 58.6A, 217.3B

鴈 *yàn* < *ngænH* < **ngrans* (186a): 34.3A, 82.1A

彦 *yàn* < *ngjenH* < **ngrjans* (199a): 80.3A

央 *yāng* < *ʔjang* < **ʔjang* (718a): 129.1A, 182.1A, 283.1A (see also [*yāng*] < *ʔjæng*)

央 [*yāng*] < *ʔjæng* < **ʔrjang* (718a): 168.3A, 177.4B, 178.2B (see also *yāng* < *ʔjang*)

羊 *yáng* < *yang* < **(l)jang* (732a): 154.8C, 209.2A, 211.2A

洋 *yáng* < *yang* < **(l)jang* (732h): 236.8A, 300.4A

痒 *yáng* < *yang* < **(l)jang* (732i): 192.1A, 257.7A

陽 *yáng* < *yang* < **ljang* (720e): 19.1A, 67.1A, 97.3A, 134.1A, 154.2B, 154.3D, 167.3B, 169.1C, 177.4B, 241.6A, 250.5A, 250.5A, 252.9B, 283.1A, 300.2A

揚 *yáng* < *yang* < **ljang* (720j): 78.2A, 94.2A, 106.1A, 106.1A, 154.3B, 183.2B, 203.7A, 236.8A, 250.1A, 299.6B

楊 *yáng* < *yang* < **ljang* (720q): 126.3A, 140.1A, 172.2A

鍚 *yáng* < *yang* < **ljang* (720t): 261.2A

仰 *yǎng* < *ngjangX* < **ngjang?* (699c): 205.5B, 218.5A

養 *yǎng* < *yangX* < **(l)jang?*(732j): 44.1A

夭 *yāo* < *ʔjew* < **ʔ(r)jaw* (1141a): 32.1B

要 *yāo* < *ʔjiew* < **ʔjew* (1142a): 85.2B

葽 *yāo* < *ʔjiew* < **ʔjew* (1142d): 154.4A

殽 [*yáo*] < *hæw* < **graw* (1167e): 109.1A, 192.12A, 218.3A

搖 *yáo* < *yew* < **ljaw* (1144g): 65.1B, 155.4A

瑤 *yáo* < *yew* < **ljaw* (1144i): 64.2A, 250.2B

謠 *yáo* < *yew* < **ljaw* (1144j): 109.1A

遥 *yáo* < *yew* < **ljaw* (1144k): 79.2A, 146.1A, 186.1A

陶 *yáo* < [*yew*] < **lju* (1047d): 67.2A, 299.5B (see also *dào* < *dawH*)

要 *yào* see *yāo* < *ʔjiew*

藥 *yào* < *yak* < **rawk* (1125p): 95.1C, 95.2C, 254.4A

曜 *yào* < *yewH* < **lja/ewks* (1124i): 146.3A

野 *yě* < *yæX* < **ljA?* (831): 28.1B, 77.3A, 124.1A, 144.2A, 154.5A, 156.1D, 181.1A, 184.1A, 207.1A, 234.3A, 236.7A, 250.3C, 297.1A, 297.2A, 297.3A, 297.4A, 300.2B

噎 *yē* < *ʔet* < **ʔit* (395b): 65.3B

業 *yè* < *ngjæp* < **ng(r)jap* (640a): 167.4C, 260.7A, 304.7A

夜 *yè* < *yæH* < **(l)jAks* (800j): 17.1A, 100.3A, 124.4A, 194.2B, 255.5B, 278.1B

葉 *yè* < *yep* < **ljap* (633d): 34.1A, 60.2A, 304.7A

揖 *yī* see *jí* < *tsip*

椅 *yī* < *ʔje* < **ʔ(r)jaj* (1g′): 174.4A

猗 *yī* < *ʔje* < **ʔ(r)jaj* (1h′): 55.1A, 191.2A, 301.1A (see also [*yī*] < *ʔjeH*)

猗 [*yī*] < *ʔjeH* < **ʔ(r)jajs* (1h′): 179.6A (see also *yī* < *ʔje*)

一 *yī* < *ʔjit* < **ʔjit* (394a): 147.3A, 152.1A, 152.1A

衣 *yī* < *ʔjɨj* < **ʔjɨj* (550a): 2.3A, 26.5A, 57.1A, 88.4A, 100.2A, 133.1A, 133.2A, 133.3A, 147.2A, 154.1A, 154.2A, 156.1B, 159.4A

依 *yī* < *ʔjɨj* < **ʔjɨj* (550f): 167.5A, 167.6A, 195.2A, 250.4A, 250.4A, 300.1A

儀 *yí* < *ngje* < **ng(r)jaj* (2u): 45.1A, 52.1A, 52.1A, 156.4D, 174.4A, 176.1A, 189.9B, 220.4E, 247.4A, 256.5B, 256.8A

宜 *yí* < *ngje* < **ng(r)jaj* (21a): 47.1A, 75.1A, 82.2A, 214.4A, 216.1A, 238.2B, 248.2A, 300.3E, 303.1E

蛇 *yí* < *ye* < **ljaj* (4l): 18.1A (see also *shé* < *zyæ*)

貽 *yí* < *yi* < **ljɨ* (976x): 42.3B

飴 *yí* < *yi* < **ljɨ* (976y): 237.3A

夷 *yí* < *yij* < **ljɨj* (551a): 14.3A, 90.1A, 168.6A, 191.5C, 257.2A, 284.1C

姨 *yí < yij < *ljij* (551e): 57.1A

栘 *yí < yij < *ljij* (551j): 204.8A

遺 *yí < ywij < *ljuj* (540m): 201.2A, 258.3A, 258.3A (see also *wèi < ywijH*)

椅 *yǐ* see *yī < ʔje*

矣 *yǐ < hix < *fiji?* (976l): 141.1B, 177.6A, 193.5A, 213.1A, 213.2A, 213.3A

以 *yǐ < yix < *lji?* (976a): 22.1A, 22.1A, 35.3A, 37.2B, 290.1D

已 *yǐ < yix < *lji?* (977a): 27.1A, 90.3A, 110.1B, 129.3A, 141.1B, 172.3A, 191.4B, 198.2C, 235.2A, 262.6B

翳 *yì < ʔejH < *ʔe/ijs* (589f): 241.2B

噎 *yì < ʔejH < *ʔits* (395i): 30.3A, 30.3A

意 *yì < ʔiH < *ʔ(r)jiks* (957a): 192.10A

抑 *yì < ʔik < *ʔ(r)jik* (915a): 220.3B, 249.3A

億 *yì < ʔik < *ʔ(r)jik* (957e): 112.2A, 209.1A, 209.4B, 235.4B, 249.2A

邑 *yì < ʔip < *ʔ(r)jup* (683a): 128.2C

益 *yì < ʔiek < *ʔjek* (849a): 40.2A, 254.6B

鷁 *yì < ngek < *ngek* (855h): 142.2A

議 *yì < ngjeH < *ng(r)jajs* (2v): 189.9B, 205.6B

仡 *yì < ngjit < *ngjit* (517m): 241.8C

艾 *yì < ngjojH < *ngjats* (347c): 195.5B (see also *ài < ngajH*)

蜴 [*yì*] *< sek < *slek* (850f): 192.6A

易 *yì < yeH < *ljeks* (850a): 199.6A, 235.6B (see also *yì < yek*)

泄 *yì < yejH < *ljats* (339h): 111.2A, 253.4A, 254.2B

勩 *yì < yejH < *ljeps* (?) (339k): 194.2A

奕 *yì < yek < *jAk* (800d): 179.4A, 300.9A, 301.1D

弈 *yì < yek < *jAk* (800f): 217.1B

懌 *yì < yek < *ljAk* (790c): 191.8A, 217.1B, 254.2D, 301.1D

斁 *yì < yek < *ljAk* (790d): 2.2A, 278.1B, 297.3B, 299.7B, 301.1D

繹 *yì < yek < *ljAk* (790e): 179.4A, 297.3B, 300.7A

射 *yì < yek < *ljAk* (807a): 218.2B, 256.7C (see also *shè < zyæH*)

易 *yì < yek < *ljek* (850a): 254.6B, 261.1C (see also *yì < yeH*)

異 *yì < yiH < *ljiks* (954a): 42.3B, 188.3B

肄 *yì < yijH < *ljips* (509k): 10.2A, 35.6B

弋 *yì < yik < *ljik* (918a): 48.2A

翼 *yì < yik < *ljik* (954d): 121.2A, 150.2A, 151.2A, 167.5B, 177.3B, 178.1D, 189.4A, 209.1A, 210.3A, 216.2A, 229.7B, 235.3A, 236.3A, 237.5B, 245.3A, 246.8A, 252.5A, 252.5A, 260.2A, 263.5C, 305.5A

逸 *yì < yit < *ljit* (396a): 193.8C, 220.1C

音 *yīn < ʔim < *ʔ(r)jim* (653a): 28.3B, 32.4A, 33.2A, 91.1A, 128.3B, 149.3A, 186.4B, 208.4A, 240.1B, 241.4A, 252.1B, 299.8A

陰 *yīn < ʔim < *ʔ(r)jum* (651y): 154.8A

殷 *yīn < ʔjin < *ʔjin* (448a): 40.1A

慇 *yīn < ʔjin < *ʔjin* (448e): 192.12B, 257.4A

姻 *yīn < ʔjin < *ʔjin* (370f): 51.3A

駰 *yīn < ʔjin < *ʔjin* (370g): 163.5A

湮 *yīn < ʔjin < *ʔjin* (483g): 268.1A

飲 *yǐn* see *yìn < ʔimH*

引 *yǐn < yinX < *ljinʔ* (371a): 209.6D, 265.5C

飲 *yìn < ʔimH < *ʔ(r)jums* (654a): 250.4C

胤 *yìn < yinH < *(l)jins* (451a): 247.6A

嚶 *yīng < ʔɛng < *ʔreng* (814f): 165.1A

膺 *yīng < ʔing < *ʔ(r)jing* (890e): 128.3B, 300.5A

英 *yīng < ʔjæng < *ʔrjang* (718k): 79.1A, 83.2A, 98.3A, 108.2A, 108.2A

瑩 *yíng < hjwæng < *wrjeng* (843k): 55.2A, 98.2A

縈 [*yíng*] *< ʔjwieng < *ʔʷjeng* (843h): 4.3A

盈 *yíng < yeng < *(l)jeng* (815a): 12.3A, 34.2A, 95.2A, 96.1A, 179.7B, 256.10B, 291.1F

楹 *yíng < yeng < *(l)jeng* (815c): 189.5A

贏 *yíng < yeng < *(l)jeng* (816f): 258.8A

營 *yíng < yweng < *wjeng* (843f): 227.4A, 242.1A, 259.4A

傭 *yōng* see *chōng < trhjowng*

雝 *yōng < ʔjowng < *ʔ(r)jong* (1184c): 173.4A, 278.1A, 282.1A

廱 *yōng < ʔjowng < *ʔ(r)jong* (1184j): 242.4A, 242.5A, 244.6A

饔 *yōng < ʔjowng < *ʔ(r)jong* (1184m): 185.3A

雍 [*yōng*] *< ʔjowngX < *ʔ(r)jongʔ* (1184h): 206.3A

鏞 [*yōng*] *< yowng < *ljong* (1185a′): 242.4A

庸 [*yōng*] *< yowng < *ljong* (1185x): 48.3A, 70.3A, 101.2B, 101.2B, 259.3A, 300.3A

墉 [*yōng*] *< yowng < *ljong* (1185z): 17.3B, 241.7C

顒 *yóng < ngjowng < *ng(r)jong* (124p): 177.3A

泳 [*yǒng*] < *hjwængH* < **wrjangs* (764j): 9.1C, 9.2C, 9.3C

永 *yǒng* < *hjwængX* < **wrjang?* (764a): 9.1B, 9.2B, 9.3B

勇 *yǒng* < *yowngX* < **ljong?* (1185k): 198.6B, 304.5A

用 *yòng* < *yowngH* < **ljongs* (1185a): 195.1B

幽 *yōu* < *ʔiw(X)* < **ʔ(r)jiw(?)* (1115c): 228.3A

憂 *yōu* < *ʔjuw* < **ʔ(r)ju* (1071a): 26.1A, 39.4B, 54.1B, 59.4A, 65.1C, 65.2C, 65.3C, 70.2A, 114.3B, 116.2A, 167.2B, 193.8B, 223.8A, 253.2A, 257.1A, 264.6B

優 *yōu* < *ʔjuw* < **ʔ(r)ju* (1071d): 264.6B, 304.4A

悠 [*yōu*] < *yuw* < **ljiw* (1077c): 39.4B, 54.1B, 179.7A

尤 *yóu* < *hjuw* < **wjɨ* (996a): 54.4B, 204.4A

訧 *yóu* < *hjuw* < **wjɨ* (996d): 27.3A

郵 *yóu* < *hjuw* < **wjɨ* (997a): 220.4B

游 *yóu* < *yuw* < **ju* (1080f): 35.4A, 252.2A

遊 *yóu* < *yuw* < **ju* (1080g): 26.1A, 39.4B, 59.4A, 123.2A, 262.1A, 263.3A

猶 *yóu* < *yuw* < **ju* (1096r): 21.2B, 178.4A, 189.1B, 195.3A, 208.3A, 229.2A, 244.3B

猶 *yóu* < *yuw* < **ljiw* (1077q): 59.4A

揄 *yóu* < *yuw* < **lju* (125p): 245.7A

楢 [*yóu*] < *yuwX* < **ju?* (1096j): 238.1A

友 *yǒu* < *hjuwX* < **wjɨ?* (995e): 1.4A, 34.4A, 177.6A, 177.6A, 180.3A, 183.1B, 194.6A, 218.1B, 249.4A, 256.6C

有 *yǒu* < *hjuwX* < **wjɨ?* (995o): 8.1A, 71.2B, 170.3B, 170.6A, 180.3A, 204.6A, 211.3A, 214.4B, 214.4B, 250.6B, 298.3B, 300.8B, 303.1B

莠 *yǒu* < *yuwX* < **lju?* (1095d): 212.2A

又 *yòu* < *hjuwH* < **wjɨ(k)s* (995a): 171.4A, 196.2A, 220.2C, 220.5C

侑 *yòu* < *hjuwH* < **wjɨ(k)s* (995q): 209.1A

囿 *yòu* < *hjuwH* < **wjɨ(k)s* (995u): 242.2A

右 *yòu* < *hjuwX/H* < **wjɨʔ(s)* (995i): 59.2A, 129.3A, 175.2A, 180.3A, 211.3A, 214.4B, 235.1B, 237.4A, 258.7A

誘 [*yòu*] < *yuwX* < **lju?* (1095e): 23.1B

揄 *yú* see *yóu* < *yuw*

魚 *yú* < *ngjo* < **ng(r)ja* (79a): 190.4A, 190.4A, 261.3A, 281.1A, 297.4B

愚 *yú* < *ngju* < **ng(r)jo* (124g): 256.1A

隅 *yú* < *ngju* < **ng(r)jo* (124i): 42.1A, 118.2A, 230.2A, 256.1A

娛 *yú* < *ngju* < **ng^{w}(r)ja* (59g): 93.2A

虞 *yú* < *ngju* < **ng^{w}(r)ja* (59h): 25.1A, 256.5A, 258.6A, 300.2B

餘 *yú* < *yo* < **lja* (821): 135.1A, 225.5A

輿 *yú* < *yo* < **lja* (89j): 135.1A, 135.2B

旟 *yú* < *yo* < **lja* (891): 53.2A, 190.4A, 190.4A, 225.5A, 262.1B

予 *yú* < [*yo*] < **lja?* (83a): 141.2B, 155.2A, 192.9A, 201.1A, 204.1A, 258.4A (see also *yǔ* < *yoX*)

愉 *yú* < *yu* < **ljo* (125f): 115.1A

榆 *yú* < *yu* < **ljo* (125g): 115.1A

渝 *yú* < *yu* < **ljo* (125h): 80.1A, 254.8B

楰 [*yú*] < *yuX* < **jo?* (126d): 172.5A

宇 *yǔ* < *hjuX* < **w(r)ja?* (97h): 154.5A, 156.2C, 237.2A, 257.4B, 300.2B, 300.8A

羽 *yǔ* < *hjuX* < **w(r)ja?* (98a): 28.1B, 33.1A, 121.1A, 136.2A, 150.1A, 154.5A, 156.4C, 181.1A, 215.1A, 280.1A

雨 *yǔ* < *hjuX* < **w(r)ja?* (100a): 28.1B, 35.1B, 51.2B, 104.2A, 155.2A, 192.9A, 201.1A, 207.1A, 211.2B

語 *yǔ* < *ngjoX* < **ng(r)ja?* (58t): 139.2A, 173.1A, 189.2A, 220.5B, 250.3C

圉 *yǔ* < *ngjoX* < **ng(r)ja?* (81a): 257.4B, 280.1A

俣 *yǔ* < *ngjuX* < **ng^{w}(r)ja?* (59f): 38.1A

麌 *yǔ* < *ngjuX* < **ng^{w}(r)ja?* (59j): 180.2A

噳 *yǔ* < *ngjuX* < **ng^{w}(r)ja?* (59k): 261.5B

芋 [*yǔ*] < *xju* < **hw(r)ja* (97o): 189.3B

予 *yǔ* < *yoX* < **lja?* (83a): 53.2B, 222.1A, 222.1A, 222.1A, 222.3A (see also *yú* < [*yo*])

與 *yǔ* < *yoX* < **lja?* (89b): 22.2A, 22.2A, 37.2A, 125.2A, 207.4A

芋 *yù* see [*yǔ*] < *xju*

域 *yù* < *hwik* < **wrjik* (929e): 124.2A

緎 *yù* < *hwik* < **wrjik* (929n): 18.2A

蜮 *yù* < *hwok/hwik* < **w(rj)ik* (929r): 199.8A

飫 *yù* < *ʔjuH* < **ʔ(r)joks* (1242a): 164.6A

鴥 *yù* < *ʔjuH* < **ʔ(r)jos* (122p): 223.5A

奧 *yù* < *ʔjuwk* < **ʔ(r)juk* (1045a): 207.3A

燠 *yù* < *ʔjuwk* < **ʔ(r)juk* (1045d): 122.2A

薁 *yù* < *ʔjuwk* < **ʔ(r)juk* (1045e): 154.6A

彧 *yù* < *ʔjuwk* < **ʔ^{w}jik* (929y): 210.3A

御 *yù* < *ngjoH* < **ng(r)jaks* (601): 78.2B, 227.3A, 246.3A (see also *yà* < *ngæH*)

獄 *yù* < *ngjowk* < **ng(r)jok* (1215a): 17.2A, 17.2A, 196.5B

玉 *yù* < *ngjowk* < **ng(r)jok* (1216a): 23.2A, 108.3A, 108.3A, 128.1B, 184.2C, 186.4A

禦 *yù* < *ngjoX* < **ng(r)ja?* (60p): 131.3A, 260.5B

譽 [*yù*] < *yo* < **lja* (89i): 261.5C (see also *yù* < *yoH*)

豫 *yù* < *yoH* < **ljas* (83e): 254.8A

譽 *yù* < *yoH* < **ljas* (89i): 218.2B, 278.1B (see also [*yù*] < *yo*)

裕 *yù* < *yuH* < **ljoks* (1202h): 223.3A

育 *yù* < *yuwk* < **ljuk* (1020a): 35.5B, 202.4A, 245.1B

愈 [*yù*] < *yuX* < **ljo?* (125d): 192.2A

癒 [*yù*] < *yuX* < **ljo?* (125j): 192.2A, 223.3A

悁 *yuān* < *ʔjwien* < **ʔʷjen* (228c): 145.2A

淵 *yuān* < *ʔwen* < **ʔʷin* (367a): 28.4A, 50.3A, 178.3D, 184.2A, 204.7A, 239.3A

員 *yuán* see *yún* < *hjun*

垣 *yuán* < *hjwon* < **wjan* (164m): 58.2A, 197.8A, 244.4A, 254.7A

援 *yuán* < *hjwon* < **wjan* (255e): 241.5A

園 *yuán* < *hjwon* < **wjan* (256b): 76.3A, 127.3A, 184.1B, 184.2B

原 *yuán* < *ngjwon* < **ngʷjan* (258a): 137.2A, 164.3A, 177.5A, 241.6C, 250.2A, 250.2A, 250.3A, 250.5B

遠 *yuǎn* < *hjwonX* < **wjan?* (256f): 89.1A, 158.2A, 165.3A, 169.3B, 223.1A, 223.2A, 254.1A, 254.1A, 256.12B (see also *yuàn* < *hjwonH*)

媛 *yuàn* < *hjwenH* < **wrjans* (255g): 47.3A

遠 *yuàn* < *hjwonH* < **wjans* (256f): 54.2A, 229.1A (see also *yuǎn* < *hjwonX*)

怨 *yuàn* < *ʔjwonH* < **ʔjons* (260c): 58.6A, 201.3A

苑 [*yuàn*] < *ʔjwonX* < **ʔjon?* (260d): 128.3A

願 *yuàn* < *ngjwonH* < **ngjons* (258f): 94.1A

樂 *yuè* see *lè* < *lak*

鉞 *yuè* < *hjwot* < **wjat* (303d): 304.6A

越 *yuè* < *hjwot* < **wjat* (303e): 304.2A

月 *yuè* < *ngjwot* < **ngʷjat* (or **Nwjat*) (306a): 66.2A, 72.1A, 91.3A, 99.2A, 245.2A

躍 *yuè* < *yak* < **ljalewk* (1124f): 242.3A

籥 *yuè* < *yak* < **ljewk* (1119c): 38.2B

閱 *yuè* < *ywet* < **ljot* (324p): 150.3A

說 *yuè* < *ywet* < **ljot* (324q?): 14.2A, 31.4A, 225.2A (see also *shuì* < *sywejH*, *shuō* < *sywet*)

員 *yún* < *hjun* < **wjin* (227a): 93.1A

云 *yún* < *hjun* < **wjɨn* (460a): 192.12B, 199.1A

雲 *yún* < *hjun* < **wjɨn* (460b): 93.1A, 93.1A, 104.1A, 210.2A, 261.4C

耘 *yún* < *hjun* < **wjɨn* (460e): 290.1B

隕 *yǔn* < *hwinX* < **wrjɨn(ʔ)* (227g): 58.4A, 237.8A (see also *yǔn* < *ʔjunX*)

隕 *yǔn* < *ʔjunX* < **ʔʷjɨnʔ* (227g): 197.6B (see also *yǔn* < *hwinX*)

愠 *yùn* < *ʔjunH* < **ʔjuns* (426e): 237.8B

哉 *zāi* < *tsoj* < **tsɨ* (943v): 58.6B, 66.1A, 109.1B, 109.2B, 130.1A, 227.2A, 265.7A, 288.1A

宰 *zǎi* < *tsojX* < **tsɨʔ* (965b): 193.4A, 258.7A

在 *zài* < *dzojX* < **dzɨʔ* (943i): 197.3A

載 *zài* < *tsojH* < **tsɨ(k)s* (943a′): 168.1A, 169.4A, 175.2A, 192.10A, 203.3C, 230.1B, 230.2B, 230.3B, 237.5B, 239.4A

牂 *zāng* < *tsang* < **tsang* (727t): 140.1A

臧 *zāng* < *tsang* < **tsang* (727f′): 33.4A, 50.2B, 94.2A, 97.3A, 106.1A, 193.2A, 211.2A, 217.2B, 257.8A, 297.1B, 300.4A

藏 *zàng* < *dzangH* < **fitshangs* or **fisrangs* (?) (727g′): 193.6A (see also *cáng* < *dzang*)

鑿 *záo* < *tsak* < **tsawk* (1128a): 116.1A

藻 *zǎo* < *tsawX* < **tsawʔ* (1134n): 15.1B, 221.1A, 221.2A, 221.3A, 299.2A

棗 *zǎo* < *tsawX* < **tsuʔ* (1050a): 154.6B

蚤 *zǎo* < *tsawX* < **tsuʔ* (1112d): 154.8B

造 *zào* < *dzawX* < **dzuʔ* (1051a): 70.2A, 75.2A, 240.4B, 286.1A

皂 *zào* < *dzawX* < **dzuʔ* (1054a): 212.2A

澤 *zé* < *dræk* < **lrak* (790o): 133.2B, 181.2A (see also *shì* < *syek*)

則 *zé* < *tsok* < **tsɨk* (906a): 177.2A, 192.7A, 241.7A, 243.3A, 252.5A, 256.2B, 256.8B, 260.1A, 260.2A, 299.4A

柞 *zé* < *tsræk* < **tsrak* (806p): 290.1A

簀 *zé* < *tsrɛk* < **tsr(j)ek* (868q): 55.3A

賊 *zéi* < *dzok* < **dzɨk* (907a): 212.2B, 256.8B, 257.7B

譖 *zèn* see *jiàn* < *tsemH*

增 *zēng* < *tsong* < **tsɨng* (884c): 166.3A, 300.5A

憎 *zēng* < *tsong* < **tsɨng* (884d): 96.3A, 192.4A

贈 *zèng* < *dzongH* < **dzɨngs* (884j): 82.3A

宅 *zhái* < *dræk* < **drak* (780b): 181.2A, 241.1A, 259.2B, 300.7A

瘵 *zhài* < *tsrɛjH* < **tsr(j)ets* (337h): 224.2B, 264.1B

儃 *zhān* < *tsyem* < **tjam* (619a): 226.2A, 300.6A

瞻 *zhān* < *tsyem* < **tjam* (619c): 191.1A, 257.8A

旃 *zhān* < *tsyen* < **tjan* (150c): 125.1B, 125.2B, 125.3B

展 [*zhǎn*] < *trjenH* < **trjan(?)s* (201a): 47.3A

斬 *zhǎn* < *tsrɛmX* < **tsrjam?* (611a): 191.1A

湛 *zhàn* see *dān* < *tom*

張 *zhāng* < *trjang* < **trjang* (721h): 220.1D, 250.1A, 261.2A

粻 *zhāng* < *trjang* < **trjang* (721i): 259.6B

章 *zhāng* < *tsyang* < **tjang* (723a): 177.4B, 203.6A, 214.2A, 214.2A, 225.1A, 238.5A, 249.2B, 256.4A, 261.2A, 283.1A

璋 *zhāng* < *tsyang* < **tjang* (723h): 189.8A, 238.2A, 252.6A

掌 *zhǎng* < *tsyangX* < **tjang?* (725j): 205.5B

朝 *zhāo* < *trjew* < **trjaw* (1143a): 58.5A, 61.2A, 186.1A (see also *cháo* < *drjew*)

炤 *zhāo* < *tsyak* < **tjawk* (1131n): 192.11A

昭 *zhāo* < *tsyew* < **tjaw* (1131m): 161.2A, 256.11A (see also [*zhāo*] < *tsyewX*)

昭 [*zhāo*] < *tsyewX* < **tjaw?* (1131m): 299.2A (see also *zhāo* < *tsyew*)

沼 [*zhǎo*] < *tsyewH* < **tjaws* (1131p): 242.3A (see also *zhǎo* < *tsyewX*)

沼 *zhǎo* < *tsyewX* < **tjaw?* (1131p): 192.11A (see also [*zhāo*] < *tsyewH*)

趙 *zhào* see [*tiǎo*] < *dewX*

召 *zhào* < *drjewH* < **drjaws* (1131e): 100.1B

旐 *zhào* < *drjewX* < **drjaw?* (1145c): 168.2A

罩 *zhào* < *trɐwH* < **trawks* (1126i): 171.1A

照 *zhào* < *tsyewH* < **tjaws* (1131o): 143.3A

謫 *zhé* < *drɛk* < **drek* (877u): 40.2A

晰 [*zhé*] < *tsyejH* < **tjats* (287i): 182.2A

哲 [*zhé*] < *tsyejH* < **tjats* (287j): 140.2A

蟄 [*zhé*] < *tsyhip* < **thjip* (685g): 5.3A

者 *zhě* < *tsyæX* < **tjA?* (45a): 118.3A, 118.3A, 226.4A, 297.1A, 297.2A, 297.3A, 297.4A

宅 *zhè* see *zhái* < *drɐk*

柘 *zhè* < *tsyæH* < **tjAks* (7951): 241.2D

榛 [*zhēn*] < *dzrin* < **dzrjin* (380f): 219.3A

禎 [*zhēn*] < *trjeng* < **trjeng* (834j): 268.1A

楨 [*zhēn*] < *trjeng* < **trjeng* (8341): 235.3B

榛 *zhēn* < *tsrin* < **tsrjin* (380f): 38.3A, 152.4A

溱 *zhēn* < *tsrin* < **tsrjin* (380g): 87.1A, 190.4B

臻 *zhēn* < *tsrin* < **tsrjin* (380h): 194.3A, 224.3A, 258.1A

蓁 *zhēn* < *tsrin* < **tsrjin* (380i): 6.3A

振 *zhēn* < *tsyin* < **tjin* (455p): 5.1A

枕 *zhěn* < *tsyimX* < **Kjum?* (656g): 145.3A

畛 *zhěn* < *tsyinX* < **tjin?* (453d): 290.1B

振 *zhèn* see *zhēn* < *tsyin*

丁 *zhēng* < *trɛng* < **treng* (833a): 7.1B, 165.1A

爭 *zhēng* < *tsrɛng* < **tsr(j)eng* (811a): 195.4A, 262.2B, 302.1B

正 *zhēng* < *tsyeng* < **tjeng* (833j): 106.2A, 189.5A, 258.8A (see also *zhèng* < *tsyengH*)

征 *zhēng* < *tsyeng* < **tjeng* (833o): 21.1A, 21.2A, 179.8A, 196.4A

蒸 *zhēng* < *tsying* < **tjing* (896k): 190.3A, 192.4A

正 *zhèng* < *tsyengH* < **tjengs* (833j): 191.9A, 244.7B (see also *zhēng* < *tsyeng*)

政 *zhèng* < *tsyengH* < **tjengs* (833r): 191.6A, 256.3A

知 *zhī* < *trje* < **trje* (863a): 60.1A, 141.1A, 148.1A, 197.5A, 199.6A, 199.7B

支 *zhī* < *tsye* < **kje* (864a): 60.1A

枝 *zhī* < *tsye* < **kje* (864b): 148.1A, 197.5A

之 *zhī* < *tsyi* < **tji* (962a): 54.4B, 59.1A, 109.1B, 109.1B, 109.2B, 109.2B, 128.2D, 200.7A, 288.1A, 294.1B, 295.1A

脂 *zhī* < *tsyij* < **kjij* (552g): 57.2A, 245.7B

祗 *zhī* < *tsyij* < **tjij* (590p): 304.3A

織 *zhī* < *tsyik* < **tjik* (920f): 264.4A

蟄 *zhí* see [*zhé*] < *tsyhip*

直 *zhí* < *drik* < **drjik* (919a): 80.2A, 112.2A, 113.2B, 207.5A, 237.5B, 259.8A

底 *zhǐ* see [*dǐ*] < *tsyijX*

砥 *zhǐ* see [*dǐ*] < *tsyijX*

祇 *zhǐ* see *qí* < *gjie*

祉 [*zhǐ*] < *trhiX* < **thrjiʔ* (961k): 177.6A, 198.2C, 241.4B, 262.4B, 282.1H, 300.8B

旨 *zhǐ* < *tsyijX* < **kjijʔ* (552a): 170.2B, 170.5A, 220.1B

指 *zhǐ* < *tsyijX* < **kjijʔ* (552f): 51.1B

止 *zhǐ* < *tsyiX* < **tjiʔ* (961a): 35.3A, 52.2A, 52.2A, 110.1B, 162.4A, 183.1B, 185.2A, 195.5A, 197.3A, 209.5B, 211.1B, 211.3A, 212.4A, 213.1A, 213.2A, 213.3A, 235.4A, 236.4B, 237.4A, 245.1A, 252.7B, 255.5A, 256.12A, 258.7A, 261.4A, 265.4A, 288.1A, 295.1A, 303.1D

趾 *zhǐ* < *tsyiX* < **tjiʔ* (961g): 11.1A, 154.1C

汦 *zhǐ* < *tsyiX* < **tjɨʔ* (961h): 13.1A, 129.3A, 176.2A

治 *zhì* see *chí* < *dri*

稚 *zhì* < *drijH* < **drɨjs* (596e): 212.2C, 212.3B

秩 *zhì* < *drit* < **lrjɨt* (402f): 220.3B, 249.3A

挃 *zhì* < *trit* < **trjɨt* (413f): 291.1E

窒 *zhì* < *trit* < **trjɨt* (413h): 156.3B

櫛 *zhì* < *tsrit* < **tsrjɨt* (399g): 291.1E

炙 *zhì* < *tsyæH* < **tjAks* (791a): 209.3A (see also *zhì* < *tsyek*)

炙 *zhì* < *tsyek* < **tjAk* (791a): 231.3B, 246.4A (see also *zhì* < *tsyæH*)

至 *zhì* < *tsyijH* < **tjits* (413a): 156.3B, 169.4B, 202.3B

潀 [*zhōng*] < *dzuwng* < **dzung* (1010f): 248.4A

中 *zhōng* < *trjuwng* < **k-ljung* (1007a): 13.2A, 36.2B, 48.1B, 48.2B, 48.3B, 50.1A, 128.2B, 239.2A, 265.6B

鍾 *zhōng* < *tsyowng* < **tjong* (1188g): 242.4A, 242.5A

終 *zhōng* < *tsyuwng* < **tjung* (1002e): 247.3A, 255.1B

螽 *zhōng* < *tsyuwng* < **tjung* (1002f): 14.1A, 168.5A

塚 [*zhǒng*] < *dzyowngX* < **djongʔ* (1188k): 198.6B

重 *zhòng* see *chóng* < *drjowng*

仲 *zhòng* < *drjuwngH* < **g-ljungs* (1007f): 31.2A

輈 *zhōu* < *trjuw* < **trju* (1084g): 128.1A

周 *zhōu* < *tsyuw* < **tjiw* (1083a): 123.2A, 153.2B

舟 *zhōu* < *tsyuw* < **tju* (1084a): 26.1A, 35.4A, 59.4A, 176.4A

洲 *zhōu* < *tsyuw* < **tju* (1086d): 1.1A, 208.3A

軸 *zhoú* < *drjuwk* < **lrjuk* (1079p): 56.3A, 79.3A

咮 *zhòu* < *trjuwH* < **trjo(k)s* (128u): 151.3A

祝 *zhòu* < *tsyuwH* < **tjuks* (1025a): 255.3B (see also *zhù* < *tsyuwk*)

株 *zhū* < *trju* < **trjo* (128f): 144.2B

軸 *zhú* see *zhoú* < *drjuwk*

蠋 *zhú* < *dzyowk* < **djok* (1224d): 156.1C

蔟 [*zhú*] < *trhjuwk* < **hlrjiwk* (1022e): 188.2A

屬 *zhǔ* see *shǔ* < *dzyowk*

渚 *zhǔ* < *tsyoX* < **tjaʔ* (45k): 22.2A, 159.2A, 184.1A, 248.3A

主 *zhǔ* < *tsyuX* < **tjoʔ* (129a): 246.7A, 252.3A

著 [*zhù*] < *drjo* < **drja* (45n′): 98.1A

除 *zhù < drjoH < *lrjas* (82m): 114.1B, 166.1A, 189.3B, 207.2A

紵 *zhù < drjoX < *drja?* (84e): 139.2A

羜 *zhù < drjoX < *drja?* (84f): 165.2A

助 *zhù < dzrjoH < *dzrjas* (46z): 258.4A, 260.6A

鬻 *zhù < tsyuH < *tjoks* (1232a): 128.1B

祝 *zhù < tsyuwk < *tjuk* (1025a): 53.3B (see also *zhòu < tsyuwH*)

轉 *zhuǎn < trjwenX < *trjon?* (231e): 26.3B

僮 *zhuàng* see *tóng < duwng*

追 *zhuī < trwij < *trjuj* (543d): 284.1B

濁 *zhuó < dræwk < *drok* (1224p): 204.5A

濯 *zhuó < dræwk < *lrewk* (1124h): 242.3A, 257.5B, 259.4B

椓 *zhuó < træwk < *trok* (1218c): 192.13A

鼎 *zī < tsi < *tsjɨ* (943r): 292.1A

茲 *zī < tsi < *tsjɨ* (966b): 237.3A, 251.1A, 251.2A, 251.3A, 265.5B, 288.1A

資 *zī < tsij < *tsjij* (555h): 254.5A

姊 *zǐ < tsijX < *tsjij?* (554b): 39.2A

秭 *zǐ < tsijX < *tsjij?* (554d): 279.1B, 290.1G

子 *zǐ < tsiX < *tsjɨ?* (964a): 11.1A, 24.2A, 34.4A, 37.4A, 74.3A, 74.3A, 90.3A, 110.1B, 138.3A, 154.1C, 172.3A, 172.3A, 177.2B, 180.3A, 191.4B, 194.6A, 205.1A, 211.3A, 212.4A, 235.2A, 235.2A, 235.4A, 236.4B, 241.4B, 244.8A, 245.1A, 245.2C, 247.5A, 247.8A, 249.1A, 249.4A, 251.1A, 251.2A, 251.3A, 252.7B, 256.6C, 256.8C, 256.10A, 256.10A, 256.12A, 261.4A, 262.4B, 262.6B, 282.1D, 288.1A, 298.3B, 300.3B, 303.1B, 304.7B

耔 *zǐ < tsiX < *tsjɨ?* (964m): 211.1B

梓 *zǐ < tsiX < *tsjɨ?* (965a): 197.3A

字 *zì < dziH < *fitsjɨ(?)s* (964n): 245.3A

柴 *zì < dzjeH < *dzjejs* (358x): 179.5A

宗 *zōng < tsowng < *tsung* (1003a): 248.4A, 248.4A, 250.4C, 258.2A

豵 *zōng < tsuwng < *tsong* (1191k): 25.2A, 154.4D

總 *zōng < tsuwng < *tsong* (1199i): 18.3A (see also *zǒng < tsuwngX*)

總 *zǒng < tsuwngX < *tsong?* (1199i): 304.5A (see also *zōng < tsuwng*)

諏 [*zōu*] *< tsju < *tsjo* (131j): 163.2A

奏 *zòu < tsuwH < *tso(k)s* (1229a): 209.6A, 237.9B

菹 *zū < tsrjo < *tsrja* (46n′): 210.4A

租 *zū < tsu < *tsa* (46d′): 155.3A

族 *zú* < *dzuwk* < **dzok* (1206a): 11.3A, 108.3A, 187.1A

足 *zú* < *tsjowk* < **tsjok* (1219a): 17.2A, 166.2A, 210.2B

卒 *zú* < *tswit* < **Stjut* (490a): 29.4A, 202.6A, 232.2A

阻 *zǔ* < *tsrjoX* < **tsrja?* (46y): 33.1A, 305.1A

祖 *zǔ* < *tsuX* < **tsa?* (46b′): 189.2A, 210.4A, 211.2B, 220.2A, 235.5B, 258.4A, 261.3A, 263.1A, 299.4B, 300.3F, 301.1B, 302.1A

組 *zǔ* < *tsuX* < **tsa?* (46e′): 38.2A, 53.2B, 78.1A

罪 *zuì* < *dzwojX* < **dzuj?* (513a): 194.1B, 194.1B, 198.1B

醉 *zuì* < *tswijH* < **tsjuts* (490h): 65.2B, 132.3A, 257.13A

佐 [*zuǒ*] < *tsaH* < **tsajs* (5e): 243.6A

左 *zuǒ* < *tsaX* < **tsaj?* (5a): 59.3A, 123.1A, 214.4A

鑿 *zuò* see *záo* < *tsak*

柞 *zuò* see *zé* < *tsræk*

酢 *zuò* < *dzak* < **dzak* (806t): 209.3A, 231.3B, 246.3A

作 *zuò* < *tsak* < **tsak* (806l): 75.3A, 133.2B, 167.1B, 181.2A, 198.4A, 256.4B, 257.14A, 297.3B, 300.9A, 301.1D

Notes

1. Dating the conquest of the Shāng dynasty by the Zhōu is a controversial matter beyond the scope of this book. Proposed dates range from 1122 B.C., the date given by Liú Xīn 劉歆 (died A.D. 23) of the Hàn dynasty, to 1018 B.C. (proposed by Zhōu Fǎgāo 1971). Recently, Nivison (1983) has placed the date at 1045 B.C., while Pankenier (1981–1982) argues for 1046 B.C.

2. The *Shījīng* is also known in Chinese as the *Máo Shī* 毛詩 (after the Hàn dynasty *Shījīng* scholar surnamed Máo) or simply the *Shī* 詩. Important English translations include those of Legge (1893–1895 [1960]), Waley (1954), Karlgren (1974), and Pound (1954). Couvreur (1934) includes translations into both French and Latin.

3. Karlgren's reconstructions are summarized in Karlgren (1954). The terminology for stages of the Chinese language is discussed in section 1.2.5 below.

4. See for example Dǒng Tónghé (1944 [1948]); Jaxontov (1959, 1960a, 1960b, 1963, 1965); Li Fang-kuei (1935, 1970 [1980], 1971 [1980], 1974–1975, 1976 [1980], 1983); Lǐ Róng (1956); Lù Zhìwéi (1947 [1971]); Mei Tsu-lin (1970, 1982a, 1982b); Pulleyblank (1962, 1963, 1977–1978, 1984, 1986); Schuessler (1987); Shào Róngfēn (1982); Starostin (1989); Wáng Lì (1937, 1980b); Yú Nǎiyǒng (1980, 1985); Zhèng-Zhāng Shàngfāng (1987); and Zhōu Fǎgāo (1954 [1968], 1968a, 1969). Starostin's study (1989), which proposes a system similar in many respects to that presented here, became available just as this study was in its final stages; some comparisons between the two systems are included in the notes. For preliminary comments on Starostin's system, based on earlier published accounts, see Baxter (1987a).

5. Naturalness must be distinguished from symmetry and simplicity. Pulleyblank (1963, 1977–1978) proposes an Old Chinese reconstruction which uses only two vowels, all other distinctions being attributed to the surrounding consonants. This system is simple and symmetrical, even elegant from an abstract point of view; but it is most unusual for a natural language. Even though such systems appear to exist (in the Caucasus, as Pulleyblank has pointed out), I believe that we should reconstruct such typologically unusual systems

only if the evidence compels it. See section 1.4.3 for further discussion of this point.

6. Although some oracle bone and bronze graphs are listed in Karlgren's *Grammata serica recensa* (1957), they did not influence Karlgren's reconstruction in any major way. In fact, the only such graphs Karlgren includes are "exclusively such as are of direct interest as prototypes of the later Seal forms and modern normalized characters" (1957: 5). As Barnard has pointed out (1978), Karlgren thereby excludes from consideration the very forms which may be the most significant for the study of early phonology. See Chapter 9 for further discussion.

7. See Baxter (1979, 1980a, 1980b, 1982, 1983b, 1984, 1985, 1986a, 1986b); Bodman (1972, 1973, 1974a, 1974b, 1975, 1976, 1978, 1980, 1985). In earlier papers we have referred to this system as the "Bodman-Baxter" system, a name which accurately reflects the origins of its leading ideas. However, the system as presented here represents my own views and not necessarily Bodman's.

8. *Qièyùn* rhymes differ from phonological rhymes because Middle Chinese syllables with the same main vowel and coda, but different medials, are sometimes found in different *Qièyùn* rhymes. See section 2.2.1 for a discussion of how the *Qièyùn* is arranged.

9. The 1979 edition of *Cíhǎi* 辞海 defines *fāngyán* simply as "a local variant of a language [yìzhǒng yǔyán de dìfāng biàntǐ 一种语言的地方变体]"; mutual intelligibility is not mentioned. By contrast, *Webster's New World dictionary* (1980) includes the following statement in its entry for *dialect*: "*[D]ialects* are regarded as being, to some degree, mutually intelligible while *languages* are not mutually intelligible." However, many other dictionaries of English make no mention of mutual intelligibility in their definitions of *dialect*.

10. This discussion is based on the relevant entries in *Cíhǎi* (1979), especially s.v. *shìzúyǔ, bùluòyǔ, gòngtóngyǔ, gòngtóng jiāojìyǔ,* and *fāngyán*, and the *Bol'šaja sovetskaja èniklopedija* (1970–1981), especially s.v. *nacija, narodnost'*, and *nacional'nyj jazyk*.

11. The dialects involved are those in or near Shānxī which retain the "entering tone [*rùshēng* 入聲]"—that is, those in which the words which formerly ended in *-p, -t,* or *-k* still remain in a separate tone category.

12. See for example Ballard (1969); Bodman (1983), McCoy (1966, 1980, 1986); Norman (1969, 1973, 1974, 1977–1978, 1981, 1986).

13. But since the *xiéshēng* characters were not all created at the same time, they are not all of equal value in reconstructing Old Chinese; see Chapter 9 for a fuller discussion.

14. On transcriptional evidence of this kind see for example Csongor (1953, 1954, 1960, 1962); Ligeti (1956, 1961, 1968); Pulleyblank (1962, 1965, 1973a).

15. According to Norman (1988: 34), this term is due to Samuel E. Martin.

16. For example, we will see below (section 10.2.5.1) that OC **-jAk* and **-jek* merged in Early Middle Chinese as *-jek*; but they are still distinct in colloquial words of the Mǐn dialects.

17. Old Chinese did have morphological processes which sometimes raise the issue of abstractness. For example, I reconstruct OC **-ajs* > MC *-aH* and OC **-ats* > **-ajs* > MC *-ajH*. That is, in these rhymes, [j] in original **-ajs* was lost (through a change I call ***-aj monophthongization**), but [j] in **-ajs* from original **-ats* remains in Middle Chinese. I account for this by dating the change ***-aj monophthongization** before the change of **-ats* to **-ajs* (which is part of the change **final cluster simplification**). However, forms in **-ats* often have morphological alternates in **-at*, so one could propose an alternative analysis involving abstract phonological representations. In this analysis, the change of **-ats* to **-ajs* could have occurred before the loss of final **-j*, as long as the latter change affected only "underlying /j/" and not cases of [j] from "underlying /t/". In this case I choose the nonabstract solution, since it makes more specific predictions about dating.

18. Mandarin initial *r-* normally reflects MC *ny-*, not MC *y-*, as in 戎 *róng* < *nyuwng* 'weapon, military'.

19. This change is examined in a paper by Lǐ Róng 李榮 (whose own name was affected by the change); see Lǐ Róng (1982 [1985]). In a few words, earlier *yóng* has become *yōng* instead. The few cases of *yóng* which remain are probably literary readings reconstructed from old dictionaries. Note also the similar merger of MC *ywejH* (e.g. 鋭 'sharp', 睿 'understand thoroughly') with MC *nywejH* (e.g. 蚋 'gnat') as *ruì*.

20. For example, Middle Chinese syllables of the form *Kwɛn* seem to have become *Kwæn* at an early stage, before the general merger of *-ɛ-* and *-æ-*; see section 10.1.1.

21. Of course, the written texts of "old" European languages must be reconstructed, in a sense, also; they do not give us a direct view of the spoken languages they represent. But the evidence they provide is certainly more direct than in the Chinese case.

22. Chang and Chang (1972) argue that the language of the *Shījīng* is quite different from the ancestor of the language of the *Qièyùn*; they derive both from what they call "Proto-Chinese". I follow Bodman's use of the term "Proto-Chinese", which is somewhat different (see below). Chang and Chang's use of the term "Proto-Chinese" corresponds to my use of "Old Chinese". However, I consider the differences between Old Chinese (in the strict sense) and the Chinese of the *Shījīng* to be rather minor.

23. Major reference works giving Karlgren's Ancient Chinese reconstructions include Karlgren's own *Analytic Dictionary of Chinese and Sino-Japanese* (1923 [1973]), *Grammata serica* (1940), and *Grammata serica recensa* (1957), Shěn Jiānshì's *Guǎngyùn shēngxì* (1945 [1977]), and *A Pronouncing Dictionary of Chinese Characters in Archaic & Ancient Chinese, Mandarin & Cantonese* (*Hànzì gǔ-jīn yīnhuì*) by Zhōu Fǎgāo et al. (1974b).

24. Examples include Zhōu Fǎgāo (1954 [1968], 1968a), Lǐ Róng (1956), Martin (1953), Shào Róngfēn (1982), and Pulleyblank (1962, 1984).

25. Actually, in Chinese-language works there already exists a more or less standard notation for Middle Chinese pronunciation, in which the pronunciation of a syllable is specified in terms of traditional phonological categories. For example, in the very useful *Gǔ-jīn zìyīn duìzhào shǒucè* [Comparative handbook of ancient and modern character pronunciations] (Dīng Shēngshù & Lǐ Róng 1981), the Middle Chinese pronunciation of 先 *xiān* 'first' (MC *sen* in my transcription) is given as

    山開四平先心,

    where 山 *Shān* is the *shè* 攝 or broad rhyme class (containing syllables ending in *-n* or *-t* with a nonhigh main vowel) in which 先 *xiān* is found; 開 *kāi* 'open' indicates that the word is *kāikǒu* 開口 'open mouth' (i.e., that it has no rounded medial *-w-*); 四 *sì* 'four'

indicates that the word is found in *sìděng* 四等 'division IV' (i.e. the fourth of four rows in rhyme tables such as the *Yùnjìng*; see section 2.2.2 below); 平 *píng* 'even' indicates that the word is *píngshēng* or even tone; 先 *xiān* is the *Guǎngyùn* rhyme under which the word is listed; and 心 *xīn* is the traditional name for the syllable's initial consonant, *s-*. This notation is quite precise, fairly standard in Chinese phonological works, and convenient for those familiar with its categories. However, it is largely opaque to nonspecialists. My transcription represents the same information, but in more convenient and easily-graspable form.

26. The rhyme-table tradition assigns both words to the same *shè* 攝 'gathering' or rhyme class, which may indicate that they rhymed in Late Middle Chinese, though the significance of the *shè* classification is disputed.

27. However, my *-r-* does not always correspond to Karlgren's subscript dot. Following Luó Chángpéi (1931b), I treat the initials *tr-*, *dr-*, *trh-*, and *nr-* as retroflex, writing them with *-r-*, while Karlgren treated them as palatal stops *ť-*, *ď-*, *ť'-*, and *ń-*. See section 2.3.4 below.

28. For a useful study of *zhíyīn* and other early ways of indicating pronunciation, see Coblin (1983).

29. Zhōu Zǔmó (1943 [1966]: 417) gives examples which suggest that the finals *-ɛn* and *-æn*—or rather their precursors—had already merged in the language of Guō Pú 郭璞 (A.D. 276–324). Annotations at the beginning of Wáng Rénxū's version of the *Qièyùn* (see section 2.2.1.2) indicate that the two rhymes were not distinguished in the *Yīnpǔ* 音譜 of Lǐ Jìjié 李季節, who was an official under the Northern Qí 齊 dynasty (550–577).

30. The first attempt at standardizing the pronunciation of Modern Chinese, embodied in the *Guóyīn zìdiǎn* (Jiàoyù Bù Dúyīn Tǒngyī Huì 1919), similarly included distinctions drawn from several dialects; it included, for example, a separate *rùshēng* category as well as the distinction between [s-] and [ɕ-] before front vowels—the distinction between the so-called *jiānyīn* 尖音 'sharp sounds' and *tuányīn* 團音 'rounded sounds'. (These distinctions are still marked in Mathews 1943.) Y. R. Chao claimed to be the only person who ever learned to speak this version of the standard language. In 1932 this pronunciation standard was abandoned, and the pronunciation of the Beijing

dialect was adopted as the basis for the pronunciation of the national language (Chao 1976: 103).

31. They are *Zhōu Yì* 周易 (= *Yìjīng* 易經), *Gǔwén Shàngshū* 古文尚書, *Máo Shī* 毛詩 (= *Shījīng* 詩經), *Zhōu lǐ* 周禮, *Yí lǐ* 儀禮, *Lǐ jì* 禮記, *Zuǒ zhuàn* 左傳, *Gōngyáng zhuàn* 公羊傳, *Gǔliáng zhuàn* 穀梁傳, *Xiàojīng* 孝經, *Lúnyǔ* 論語, *Lǎozǐ* 老子, *Zhuāngzǐ* 莊子, and *Ěryǎ* 爾雅.

32. Most notably, the final *-i* (the 之 Zhī rhyme) is confused with *-ij* (the 脂 Zhī rhyme); *-jin* and *-jit* (rhymes 殷 Yīn and 迄 Qì) are confused with *-in* and *-it* (the division-III *chóngniǔ* finals of rhymes 真 Zhēn and 質 Zhì respectively); and initial *dz-* is confused with initial *z-*. These characteristics are also found in the *fǎnqiè* of the original *Yùpiān* by Gù Yěwáng, also of the Wú area; see below.

33. The *Shuōwén* had used a slightly different system of 540 radicals. The modern set of 214 radicals was first used in the late Míng dictionary *Zìhuì* 字彙, completed in 1615 by Méi Yīngzuò 梅膺祚; it was later adopted in the *Kāngxī zìdiǎn* 康熙字典 (1716), and became standard. See Wáng Lì (1981: 104–5).

34. According to Zhōu Zǔmó, the labiodentals corresponding to *p-* and *ph-* are kept distinct in the *Banshō meigi*, suggesting that perhaps they were labiodental affricates [pf] and [pf'] rather than fricatives; later on, in the Táng, there is evidence that these had merged as a simple fricative [f]. Like some modern southern dialects, the *Banshō meigi* shows no evidence of a labiodental initial from original *m-*. See Zhōu Zǔmó (1966a: 280–83, 305–6).

35. One theory holds that *wàizhuǎn* designates charts which have independent rhymes in division II, while *nèizhuǎn* charts do not; another theory is that *nèizhuǎn* and *wàizhuǎn* refer to vowel quality (higher and lower respectively). For discussion see Luó Chángpéi (1933) and Lǐ Xīnkuí (1983: 19–23).

36. Certain charts are labeled *kāi-hé*, the meaning of which is unclear.

37. There were actually more than twenty-three initials at the time of the rhyme tables, however, for some columns correspond to more than one initial; for example, the dental initial *t-* and the retroflex initial *tr-* are placed in the same column, with *t-* in divisions I and IV, and *tr-* in divisions II and III. Thus the division in which a word is placed helps to specify both its initial and its final.

38. My translations of traditional phonological terms generally follow Pulleyblank (1984).

39. Pulleyblank (1984: 68) suggests that 次 *cì* 'second' here simply refers to the fact that the voiceless aspirates are traditionally listed after the voiceless unaspirates, and is probably influenced by the Sanskrit term *dvitīya* 'second' which is used in a parallel way for voiceless aspirates in the *devanāgarī* alphabet.

40. As with *cìqīng* 'second clear', *cìzhuó* 'second muddy' may refer to the fact that the voiced resonants are traditionally listed after the corresponding voiced obstruents. The two categories of voiced initials sometimes had different effects on tonal development. For example, in Mandarin, *shǎngshēng* syllables with "full muddy" or voiced obstruent initials went to modern tone four (e.g. 坐 *zuò* < *dzwaX* 'to sit'), while *shǎngshēng* syllables with "second muddy" or voiced resonant initials remained in tone three with the voiceless-initial syllables (e.g. 馬 *mǎ* < *mæX* 'horse').

41. See Zhān Bóhuì (1981 [1985]: 152, 185). Though Zhān Bóhuì speaks of this as a feature preserved from Old Chinese, it is still found in Early Middle Chinese; in lacking labiodentals these Mǐn and Hakka forms are no different from the language reflected in the *Qièyùn*. This point is not widely understood; probably because of the influence of the traditional thirty-six *zìmǔ*, which distinguish bilabial and labiodental initials, the lack of the labiodental series is sometimes spoken of as a pre-*Qièyùn* feature.

42. Of course, the character 禪 is also read *chán* < *dzyen*, meaning 'meditation, *dhyāna*' (or, in its Japanese reading, *zen*). If this reading had existed in Old Chinese, we would reconstruct it as **djan*, which looks like a close match to Sanskrit *dhyāna*; but this reading was probably borrowed from Indic after OC **dj-* had already palatalized to *dzy-*, and probably represents a Prakrit form with a palatal initial, such as Pali *jhāna*.

43. See Pulleyblank (1984: 83, 169). The precise formulation of this change is unclear, but not directly relevant to this study.

44. Note further that this word developed in modern dialects as if it had the final *-æng* rather than *-jæng*; for example, 生 *shēng* < *srjæng* is pronounced *sàang* or *sàng* in Cantonese, not *sèng* or *sìng* as we would normally expect if it came from *-jæng*. (In Mandarin it is impossible

to distinguish between MC *-jæng* and *-æng* in this environment.) I continue to write *srjæng* in such cases, agreeing with the *Qièyùn*, as more representative of Early Middle Chinese.

45. This was first proposed by Gě Yìqīng (1932) and has been widely accepted; see Pulleyblank (1962: 66) and further references there. Pulleyblank originally accepted this idea, but has recently taken a slightly different line, suggesting that the phonemic identity of *h-* and *h(j)-* was the result of a late merger in southern dialects (1984: 164).

46. Yú Nǎiyǒng (1985: xvi) uses a similar terminology, using *dùnyīn* 鈍音 'blunt sounds' for grave initials and *ruìyīn* 銳音 'sharp sounds' for acute initials.

47. An exception is that some division-I words in MC *tsh-* (and possibly some in *s-*) should probably be reconstructed with **sr-*; see Baxter (1983b) and section 6.2.3.1 below.

48. As is customary, I cite the *píngshēng* rhymes only, the rhymes in the other tones being largely parallel.

49. The rhymes in *-ng* are not, however, all together, at least not in Wáng Rénxū's version of the *Qièyùn*; they occur mixed in with the rhymes ending in *-m* and *-w*. The rhymes in *-n* are all together, however (Lǐ Róng 1956: 73–75). By the time of the *Guǎngyùn*, rhymes in *-ng* and *-m* are arranged in separate contiguous groups.

50. In the *Guǎngyùn*, *-an* and *-wan* were placed in different rhymes: 寒 Hán (Han) and 桓 Huán (Hwan) respectively; and labial-initial words were included in the latter. Working from the *Guǎngyùn* rather than the *Qièyùn*, Karlgren reconstructed "strong vocalic" *-u-* in distinctively *hékǒu* rhymes, and "weak consonantal" *-w-* in *hékǒu* words of rhymes where both *kāikǒu* and *hékǒu* words occur. He believed that *-u-* was strong enough to affect the rhyme, but *-w-* was not; thus he reconstructed 瞞 *mán* < *man* 'to deceive' as *muân*, with *-u-*, because the *Guǎngyùn* placed it in a distinctively *hékǒu* rhyme (桓 Huán < Hwan), but he reconstructed 蠻 *mán* < *mæn* 'Southern barbarian' as *mwan*, with *-w-*, because the *Guǎngyùn* placed it in the rhyme 刪 Shān (Sræn), which contains both *kāikǒu* and *hékǒu* words. The distinction between Karlgren's *-u-* and his *-w-* is not used contrastively in Middle Chinese, and the presence or absence of either is not distinctive after labial initials; this was another case where Karlgren refused to succumb to "so-called 'phonemic' speculations".

51. Karlgren ignored the *chóngniǔ* distinctions, as I pointed out in section 2.1 above; in his Ancient Chinese reconstruction, both the words above are *b'i̯än-*.

52. An exception is that the 齊 Qí (Dzej) rhyme contains two irregular words with palatal initials which might be assigned to a division-III rhyme *-jej*, for which there is no other convenient place in the rhyme books: 栘 *dzyej* 'Amelanchier sinica' (a tree of the rose family; now read *yí*) and 臡 *nyej* 'pickled meat with bones in it' (now read *ní*). These words probably represent dialect forms or archaic *fǎnqiè* spellings; judging by their phonetic elements, we would expect these words to have the final *-je* instead of *-jej*.

53. The words of the rhyme 臻 Zhēn (Tsrin) occur only in division II, but this is because this rhyme includes only words with retroflex sibilant initials. Its final is in complementary distribution with the division-III final *-in* of the 真 Zhēn (Tsyin) rhyme. As we will see below, syllables with "division-III" finals are actually placed in division II of the rhyme tables when the initial consonant is retroflex, but in divisions III or IV when the initial is something else. For these reasons, I treat the 臻 Zhēn (Tsrin) rhyme as simply the retroflex counterpart of the 真 Zhēn (Tsyin) rhyme, and write both as *-in*. The inclusion of 臻 Zhēn (Tsrin) in the *Qièyùn* as a separate rhyme from 真 Zhēn (Tsyin) may indicate that the sound change ***TSrj- > TSr-***, which removed high front elements after initials of the type *TSr-*, had already begun in some dialects at that time.

54. Examples include 冷 *lěng* < *længX* 'cold' and 打 MC *tængX* 'to hit', the latter pronounced *dǎ* in Mandarin, but with final *-ng* in Wú dialects.

55. Karlgren, in another case of abstaining "from all so-called 'phonemic' speculations" (1954: 366), originally wrote yodised (palatalized) *k-* as *kj-*, in order to distinguish it from plain *k-*; thus in his early work he wrote 薑 *jiāng* < *kjang* 'ginger' as *kji̯ang*, representing the yodised initial *kj-* plus the final *-i̯ang*. (Karlgren used the symbol *-i̯-* for the glide which I write as *-j-*.) He later omitted *-j-* before *-i̯-* as a "typographical simplification" (1954: 222), since the palatalization marked by *-j-* was predictable before his *-i̯-*. However, palatalization was not predictable before his vocalic *-i-*, because *-i-* could occur in both division-III and division-IV finals in his system; so he retained *-j-* before *-i-* when the initial was palatalized. For example, he wrote 基

jī < *ki* 'base, foundation' as *kji* (palatalized *k*-, division III), but 雞 *jī* < *kej* 'chicken' as *kiei* (plain *k*-, division IV). Similarly, he retained *-j-* in words like 機 *jī* < *kjij* 'mechanism' (Karlgren's *kjɐi*) and 歸 *guī* < *kjwij* 'return' (Karlgren's *kjwɐi*) because the finals *-ɐi* and *-wɐi* did not begin with *-j-*.

56. For more detailed discussion, see my review (Baxter 1987b) of Pulleyblank (1984).

57. The rhyming of these finals could be accounted for within Pulleyblank's system if we substituted /-iən/, /-uən/, and /-iɛn/ for Pulleyblank's /-ɨan/, /-uan/, and /-ian/ respectively (my *-jon*, *-jwon*, and *-jen*). But the unexpected rhyming of /-uwŋ/ with /-owŋ/ (my *-juwng*, *-uwng*) would still remain. Note also that Pulleyblank's system requires such typologically unusual contrasts as /-waăŋ/ ~ /-uaăŋ/ (my *-wang* ~ *-jwang*).

58. The term 紐 *niŭ* 'button' refers to the small circle placed at the head of each homophone group in rhyme books of the *Qièyùn* tradition, as an indication that a new homophone group is beginning; thus there is one *niŭ* for every syllable listed (Norman 1988: 27).

59. The final spellers of division-III *chóngniŭ* words are most often other division-III *chóngniŭ* words; the final spellers of division-IV *chóngniŭ* words are usually other division-IV *chóngniŭ* words or words with acute initials. There is one exceptional case in the *Qièyùn* where the *chóngniŭ* syllables *khjew* (III) and *khjiew* (IV) are given the same *fănqiè* spelling (Lǐ Róng 1956: 43–45).

60. Wáng Lì summarizes his position on the archaic nature of the *Qièyùn* in Wáng Lì (1984: 71).

61. For example, in Fúzhōu:

    麇 *jūn* < *kwin* (III) 'fallow-deer', Fúzhōu [kuŋ]

    均 *jūn* < *kjwin* (IV) 'even, equal' Fúzhōu [kiŋ]

    The examples are from Shào Róngfēn (1982: 79), quoting a Fúzhoū dialect dictionary by Maclay and Baldwin (1929).

62. Karlgren made this assumption in his Ancient Chinese reconstruction. Pulleyblank abandons this assumption as a concession to his theory of the nature of division-III finals (see section 2.4.1.4 above), though he attributes the *chóngniŭ* distinction to the medial (1984: 171–76).

63. The distinction between *-iw* and *-juw*, which reflects the distinction between Old Chinese **-jiw* and **-ju*, appears to have been lost after acute initials in most Middle Chinese dialects, original **-jiw* becoming *-juw* after acute initials (see section 10.2.13). The acute-initial words in the 幽 Yōu (ʔJiw) rhyme probably represent a dialect where the distinction was retained.
64. The semantic and grammatical parallelism required in Chinese regulated verse (*lǜshī* 律詩) is well known. In some languages, more or less fixed pairs of semantically related words are used in adjacent lines or cola. In Hebrew, for example, *harîm* 'mountains' and *gᵉbāʿôt* 'hills' form such a pair, as do "Zion" and "Jerusalem". For a similar phenomenon in Quechua, see Mannheim (n.d.).
65. It would be possible to develop a "fuzzy" theory of rhyming in which rhyme relations would not necessarily be transitive. For example, suppose we define a phonological distance function *D* which assigns a number to appropriate pairs of linguistic strings. Then we could say that *A* and *B* rhyme if *D(A, B)* is less than a certain number. This function could be defined for strings *A*, *B*, and *C* in such a way that *D(A, B)* and *D(B, C)* are both less than the required number, but *D(A, C)* is not.
66. Even if we define rhyme relations without the property of reflexivity, a rhyme relation that is symmetric and transitive still partitions a set of linguistic strings into disjoint rhyme categories, with the property that every member of a particular rhyme category rhymes with every member of the category other than itself.
67. I leave open the question of exactly how "phoneme" should be defined. I also bypass the question of tone in this statement; in tone languages, rhyme sometimes requires tonal identity, and sometimes not, depending on the genre.
68. As Manaster Ramer points out, some abstract analyses of German vowels would derive the front rounded vowels from underlying back rounded vowels, but no one has proposed that the front rounded and front unrounded vowels are underlyingly the same.
69. Manaster Ramer (n.d.) proposes several possible cases of the use of subphonemic distinctions in metrical systems, though none of the examples involves rhyme. For example, in the traditional Finnish poetry of the *Kalevala*, diphthongs are pronounced long finally or

before consonants, but short before vowels, and this length distinction, though predictable from the phonological context, is apparently observed in the meter.

70. The classical rule is that rhyme requires final consonants to be either graphically identical or pronounced the same in liaison; thus *doux* [du] and *vous* [vu] are an acceptable rhyme. One might attempt to argue that it is the potentiality of liaison rather than the orthography which governs such rhymes. Traditional French rhyme might thus be regarded as abstract rather than archaizing—based on a level of phonological derivation where final consonants have not yet been deleted. But note that classical French poets seem to have felt that they could get away with violating the rule about final consonants simply by changing the spelling: Racine writes *vois* as *voi* in order to rhyme "après soi / je vous voi" in *Phèdre,* and Victor Hugo spells *Londres* 'London' as *Londre* to make a rhyme "Londre / confondre" (examples from Molino & Tamine 1982: 69). And in other cases, such as the metrical treatment of final "mute *e*", it is clear that the French tradition recognizes distinctions which are not supported by any alternations (such as the distinction between the homonyms *foi* 'faith' and *foie* 'liver'); presumably, such distinctions would not be part of anyone's synchronic phonology, no matter how abstract. It is more parsimonious to assume that tradition and orthography, rather than abstract phonology, are the operative constraints in such poetic conventions. For this and other examples of the alleged use of abstract phonology in verse, see Manaster Ramer (n.d.).

71. On popular Mandarin rhyming see Luó Chángpéi (1950). If poets use phonologically inexact rhymes only occasionally, or significantly less often than phonologically exact ones, then statistical methods may make it possible to tell the difference in a large enough corpus. The risk of error is greatest if the inexact rhymes are used just as freely as exact ones.

72. It is sometimes argued (e.g., by Qū Wànlǐ 1963 [1983]) that the rhyming of the *Shījīng*—or at least of the *Guó fēng* section—is so uniform that it must have been reworked to fit a standard phonological system. As we will see in Chapter 10, there are in fact a number of clear dialect features in *Shījīng* rhyming; for example, a tendency in eastern dialects for final **-n* to rhyme with final **-j,* and a tendency in western dialects for final **-m* to rhyme with final **-ng*. In any case,

the argument for an imposed uniformity strikes me as circular. The rhyme categories in terms of which *Shījīng* rhyming is said to appear uniform were developed inductively from the *Shījīng* itself, as a whole; distinctions made in one part of the *Shījīng* but not in others will tend to be overlooked in such a system (unless the distinctions survived in Middle Chinese, as in the two cases just cited). It is not surprising that these categories fit the *Shījīng* rather well, since they are empirically based on the *Shījīng* in the first place.

73. For example, 歸 *guī* rhymes with **-ij* in Odes 2.3, 13.3, 28.1–3, 36.1–2, 41.2, 88.4, 147.2, 154.2, 156.1, 156.4, 162.1, 162.2, 167.1–3, 168.6, 169.2, 174.1, 204.2, 209.5 (a possible irregular rhyme with **-ij*), 259.6, 260.8, 263.6, and 298.2. 懷 *huái* rhymes with **-uj* in Odes 3.2, 30.4, 156.2, 164.2, and 201.2.

74. This quotation is based on the 1980 reprint of the paper (Wáng Lì 1937 [1980]: 146, my translation); in earlier versions the figures are slightly different (e.g. Wáng Lì 1937 [1958]: 143).

75. Although Wáng Lì was right about the overall separation of the 脂 Zhī and 微 Wēi groups, his assignments of particular words to one group or the other are sometimes wrong. I will show in section 10.1.8 that if we draw the boundary between 脂 Zhī and 微 Wēi in a slightly different way, we can achieve a more orderly phonological picture and also reduce the number of apparently irregular rhyme sequences.

76. The Bernoulli referred to is Jacques Bernoulli (1654–1705), a Swiss mathematician and pioneer in the study of probability.

77. The reader is referred to any standard textbook of elementary probability theory, such as Hoel, Port, & Stone (1971), for details.

78. This program was written for my own use, and is not a masterpiece of programming style, but I would be glad to share it with anyone who would like to use this technique. The program also incorporates the modified procedure discussed in section 3.2.6 below. I am grateful to John Warner of the Statistical Research Laboratory, University of Michigan, for his assistance in developing this procedure.

79. Abraham DeMoivre (1667–1754) was an English mathematician, author of *The doctrine of chances* (1716), and a close friend of Isaac Newton. Pierre Simon, Marquis de Laplace (1749–1827), was a French mathematician famous for his work on celestial mechanics as well as probability.

80. See Mosteller, Rourke, & Thomas 1961: 280–83, 291–92 for details on this theorem and its applications.

81. According to Mosteller, Rourke, & Thomas (1961: 291), this approximation can be used if "we are confident that *np* is at least $3\sqrt{(npq)}$ from both 0 and *n*". Thus if $n = 100$, $p = 0.7$, and $q = 0.3$, then *np* is 70, and $3\sqrt{(npq)}$ is 13.75; 70 is at least 13.75 from both 0 and 100, so the DeMoivre-Laplace theorem can be used. On the other hand, if $n = 10$, then *np* is 7, and $3\sqrt{(npq)}$ is 6.3; the distance from 7 to 10 is less than 6.3, so the DeMoivre-Laplace theorem is inappropriate, and the direct approach using the binomial distribution should be used.

82. With the aid of a computer, the more accurate direct method can be used even for $n = 100$; according to this method, the probability that **P**[*A*] lies in the range 0.61 to 0.79 is actually about 0.96.

83. The actual sample I have in mind is the two-word *píngshēng* rhyme sequences which can be unambiguously reconstructed with **-en* or non-**-en* finals within the traditional 元 Yuán rhyme group; see section 10.1.1 below (Table 10.8).

84. The reason is that if *p* is low, the two terms in the expression for **P** react similarly to minor adjustments in the value of *p*. If *p* is decreased, then $(p^L + q^L)^n$ increases, but so does $(q^L)^n$; so if their difference was small, it remains small. Similarly, if *p* is increased slightly, then $(p^L + q^L)^n$ decreases, but so does $(q^L)^n$.

85. In spite of these reservations, the reconstruction 和 **goj(s)* is probably correct, for this word also rhymes as **-oj* in *Lǎozǐ* (see section 10.1.3).

86. In fact, Wáng Lì later returned to the original analysis of this stanza (1980b: 172), treating it as a case of 脂 Zhī rhyming with 微 Wēi. Actually, as I argue later, Wáng Lì has not drawn the boundary between the 脂 Zhī and 微 Wēi groups in quite the right place: 喈 *jiē* consistently rhymes with the 微 Wēi group in the *Shījīng*, and should be assigned there.

87. An example is Ode 177 (*Xiǎo yǎ* 小雅: *Liù yuè* 六月). Poems of this type often have an eight-line stanza, and are political in content, referring to particular historical events and persons.

88. There may be several reasons for the existence of tonally irregular rhymes. Aside from the rhymes themselves, we have only Middle

Chinese evidence for tones, and this evidence is not always to be believed: some items may have changed tone categories for various reasons between the Old Chinese and Middle Chinese periods. So some rhymes which appear tonally irregular from a Middle Chinese point of view may have been regular in Old Chinese times. See the discussion on tones in section 8.2.1 below.

89. Actually, 信 *xìn* < *sinH* rhymes fairly consistently with *píngshēng* words in the *Shījīng*, and should probably be reconstructed as *píngshēng* for Old Chinese in spite of its Middle Chinese reading; see sequences 51.3A (including also the word 命 *mìng* < *mjængH* 'command', which may also be *píngshēng* in Old Chinese), 125.1A, 191.4A, 194.3A, and 200.3A.

90. In Wáng Lì's notation, *ts-* stands for an aspirated [ts'], equivalent to my *tsh-*. He writes *tz-* for the unaspirated [ts], my *ts-*. Wáng Lì's *-j-* after an initial consonant indicates palatalization.

91. The rhymes involving 風 *fēng* < *pjuwng* are 27.4A, 35.1A, 132.1A, 199.4A, 257.6A, and 260.8B.

92. In a few cases, 侵 Qīn words rhyme with words of the Zhēng 蒸 rhyme group, which I reconstruct as **-ing* (Li Fang-kuei reconstructs **-əng*).

93. I omit an unmixed four-word sequence in 14.1A because this passage is repeated almost verbatim in the five-word sequence 168.5A, mentioned below, and should not be counted as an independent sequence. I also omit the unmixed sequences 208.4A and 299.8A, each of which contains five words, of which one is in a non-*píngshēng* tone; by less stringent criteria, these could be treated as unmixed four-word sequences.

94. Notice that I have made such exceptions, here and in the two-word sequence 250.4C, only when they would work in favor of the null hypothesis.

95. As we saw in Chapter 3 (and will discuss further in section 10.1.18), Wáng Lì proposed a significant modification in the traditional system of rhyme categories by separating the traditional 脂 Zhī group into a 脂 Zhī group and a 微 Wēi group, and this has been accepted by most later researchers. Karlgren argued for several distinctions not recognized in the traditional analysis (e.g. the distinctions in his system between **-o* and **-âg*, **-u* and **-ug*, **-â* and **-âr*), but these

proposals have not been widely accepted, nor have S. E. Jaxontov's proposals to recognize a distinction between rounded and unrounded vowels in several traditional groups. I will argue below that in these proposals Jaxontov was correct, and Karlgren was at least on the right track, except for the distinction between **-â* and **-âr*.

96. Other summaries of the traditional categories may be found in Dǒng Tónghé (1968: 237–62), Li Fang-kuei (1971 [1980], 1974–1975), Luó Chángpéi & Zhōu Zǔmó (1958: 16–44), and Wáng Lì (1936–1937 [1957]: 414–40).

97. In the *Shījīng*, words which had vocalic codas in Middle Chinese (traditionally called *yīnshēng* 陰聲 words) sometimes rhyme with *rùshēng* words. (The interpretation of such rhymes is discussed in Chapter 8.) For this reason, Wáng Niànsūn and Jiāng Yǒugào combined *rùshēng* words and *yīnshēng* words in the same rhyme categories.

98. However, in identifying *xiéshēng* series, the Qīng phonologists generally followed the script and the character analyses found in the *Shuōwén jiězì*. As I will argue in Chapter 9, this introduces a Hàn-time bias into their rhyme analysis; it is rather the *xiéshēng* characters of Zhōu dynasty writing that are relevant.

99. This is my adaptation of Karlgren's translation. Karlgren takes *cǎi cǎi* 采采 as a repetition of the verb 采 *cǎi* 'to pick, to gather', expressing iterated action; this is the traditional interpretation according to the Máo commentary. However, Dīng Shēngshù (1940) argued convincingly that transitive verbs are never reduplicated in this way in the *Shījīng*, and that *cǎi cǎi* here (and also in Ode 3, in the line "cǎi cǎi juǎn ěr 采采卷耳") should be taken as a modifier of the following noun, as proposed by the Qīng scholars Dài Zhèn and Mǎ Ruìchén 馬瑞辰. The expression *cǎi cǎi* 采采 also occurs in Odes 129 and 150; although Dài and Mǎ take it to mean "ample [zhòng duō mào 衆多貌]" or "luxuriant [shèng 盛]", "colorful" is probably more precise (see Karlgren 1942–1946 [1964], gloss 318).

100. 有 *yǒu* is one of a group of words which originally belonged to the traditional 之 Zhī rhyme category (Li's **-əg*), but which came to have the final *-juw* (or *-juwX, -juwH*) in Middle Chinese, merging with syllables from the traditional 幽 Yōu category (Li's **-əgw*). According to Luó Chángpéi & Zhōu Zǔmó (1958: 13), this shift had

occurred by Western Hàn times. This change in rhyming behavior was due to a sound change which I call **rounding assimilation**; see section 10.2.1.

101. See Wáng Lì (1936 [1980]: 44). For the Wèi-Jìn period, Ting Pang-hsin (1975: 168–72) assigns the Middle Chinese finals *-im* and *-om* to the same rhyme group, but they seem to have been separate already in some dialects represented in his data. Lù Jī 陸機 (261–303), a native of Wú Jùn 吳郡 (the area around modern Sūzhōu), appears to mix them freely (see data in Ting 1975: 169), but Guō Pú 郭璞 (276–324), a native of Hédōng 河東 (in present-day Shānxī), seems to separate them.

102. In the absence of a reconstruction of Zhū Xī's pronunciation, I give his *fǎnqiè* spellings in Middle Chinese pronunciation, even though this is an anachronism.

103. Zhū Xī apparently assumed that in stanza 2, 家 *jiā* < *kæ* rhymed with 角 *jiǎo* < *kæwk*, 屋 *wū* < *ʔuwk*, 獄 *yù* < *ngjowk*, and 足 *zú* < *tsjowk*; in stanza 3 he assumed that it rhymed with 墉 *yōng* < *yowng*, 訟 *sòng* < *zjowngH*, and 從 *cóng* < *dzjowng*.

104. See the excerpts from his writings in Wáng Lì (1936–1937 [1957]: 279–82).

105. "Gǔ rén yùn huǎn, bù fán gǎi zì 古人韻緩, 不煩改字."

106. Wú Yù's *zì* was Cáilǎo 才老; he was a native of Jiàn'ān 建安 (modern Jiàn'ōu 建甌), Fújiàn province. See *Cíhǎi: Yǔyán wénzì fēncè* (1978: 68) and Zhōu Zǔmó (1945 [1966]).

107. Chén Dì's *zì* was Jìlì 季立; he was from Fújiàn.

108. "Gài shí yǒu gǔ jīn, dì yǒu nán běi; zì yǒu gēng gǎi, yīn yǒu zhuǎn yí; yì shì suǒ bì zhì. Gù yǐ jīn zhī yīn dú gǔ zhī zuò, bù miǎn guāi cì ér bú rù 蓋時有古今, 地有南北; 字有更改, 音有轉移; 亦勢所必至. 故以今之音讀古之作, 不免乖刺而不入." Quoted by Wáng Lì (1936–1937 [1957]: 282).

109. Chén Dì's proposed ancient pronunciations sometimes still show up in the work of some traditionally-oriented modern scholars; this pronunciation of 采 *cǎi* is given, for example, by Zhāng Yǔnzhōng (1987: 9).

110. Gù Yánwǔ's original given name was Jiàng 絳; his *zì* was Níngrén 寧人; he was a native of Tínglín 亭林 village in Kūnshān 崑山, Jiāng-

sū province. In 1645, when the Manchus took Nanjing, he is said to have changed his name to Yánwǔ 炎武 out of admiration for the Southern Sòng patriot Wáng Yánwǔ 王炎五 (Zhāng Qǐzhī 1982: 1). (This seems to show that for him, 五 *wǔ* < *nguX* and 武 *wǔ* < *mjuX* were homonyms.) He was also referred to by the sobriquet *Tínglín xiānsheng* 亭林先生 'the gentleman of Tínglín', after the name of his native village, and he also used the alias Jiǎng Shānyōng 蔣山傭. See Hummel (1943–1944: 421–26) and Wáng Lì (1936–1937 [1957]: 285–96).

111. This lack of parallelism in Gù Yánwǔ's analysis probably results from his failure to find separate *yīnshēng* rhymes corresponding to the *rùshēng* rhymes in final *-p*; so he grouped the *rùshēng* rhymes with the *yángshēng* rhymes in *-m* instead. The absence of separate *yīnshēng* rhymes corresponding to *rùshēng* rhymes in *-p* was the result of the sound change ***-ps* > *-ts***; see sections 8.2.2.1 and 10.3 below.

112. Jiāng Yǒng's *zì* was Shènxiū 慎修; he was a native of Wùyuán 婺源 (now in Jiāngxī province, but formerly in Ānhuī). See Wáng Lì (1936–1937 [1957]: 136–41, 296–307).

113. "Kǎo gǔ zhī gōng duō; shěn yīn zhī gōng qiǎn 考古之功多; 審音之功淺." Quoted by Wáng Lì (1936–1937 [1957]: 296).

114. Analyses such as Jiāng Yǒng's, which recognize separate *rùshēng* categories, are sometimes described as following the *shěnyīn pài* 審音派 'sound-discriminating school', whereas analyses like Gù Yánwǔ's, which combine *yīnshēng* and *rùshēng*, are called the *kǎogǔ pài* 考古派 'antiquity-investigating school', evidently named from Jiāng Yǒng's critique of Gù Yánwǔ, quoted above. See for example Wáng Lì (1980b: 7).

115. Duàn Yùcái, of Jīntán 金壇 in Jiāngsū, was known by the two *zì* Ruòyīng 若膺 and Màotáng 懋堂. See Hummel (1943–1944: 782–84) and Wáng Lì (1936–1937 [1957]: 307–20).

116. In Dài Zhèn's preface to Duàn Yùcái's *Liù shū yīn yùn biǎo*, dated "Qiánlóng dīng yǒu 乾隆丁酉" (i.e. 1777), Dài says that Duàn Yùcái had told him of his three most important discoveries (see below) nine years earlier, i.e. about 1768.

117. However, Duàn Yùcái still grouped 屋 Wū (Li's **-uk*), the *rùshēng* group corresponding to 侯 Hóu, with 幽 Yōu and 覺 Jué in his Group

3; see the list in Table 4.4. It would have been more consistent to include the 屋 Wū group (Li's **-uk*) in Duàn Yùcái's Group 4.

118. However, Duàn Yùcái included 質 Zhì (Li's **-it*) with the *yángshēng* words of 真 Zhēn in his Group 12; it would have been more consistent to include it in his Group 15.

119. For example, arguments from *xiéshēng* series are used by the Sòng scholar Xú Chǎn 徐鏟, an acquaintance of Wú Yù, in his preface to Wú Yù's *Yùn bǔ*.

120. "Yī shēng kě xié wàn zì, wàn zì ér bì tóng bù; tóng shēng bì tóng bù. 一聲可諧萬字, 萬字而必同部; 同聲必同部." (Quoted in Yú Nǎiyǒng 1985: 7)

121. Dài Zhèn's *zì* was Dōngyuán 東原; he was a native of Xiūníng 休寧 in Ānhuī province. See Hummel (1943–1944: 695–700, 970–82) and Wáng Lì (1936–1937 [1957]: 320–36).

122. On Kǒng Guǎngsēn, see section 4.3.7 below. Dài Zhèn's daughter married Kǒng Guǎngsēn's younger brother Guǎnggēn 廣根; see Hóng Gù (1978: 7).

123. Qián Dàxīn was a native of Jiādìng 嘉定 in Jiāngsū (now a part of the municipality of Shànghǎi); he used the *zì* Xiǎozhǐ 曉徵 and Xīnméi 辛楣, and the *hào* Zhútīng 竹汀. He made important contributions to the study of Old Chinese initial consonants, proposing, among other things, that the labiodentals and retroflex stop initials of (Late) Middle Chinese had not existed in Old Chinese times. See Hummel (1943–1944: 152–55) and Wáng Lì 1936–1937 [1957]: 336–48).

124. Hú Shì (1943) vigorously defended Dài Zhèn against this charge.

125. Kǒng Guǎngsēn was a native of Qūfù 曲阜 in Shāndōng; he was a seventieth-generation descendant of Confucius. He used the *zì* Zhòngzhòng 衆仲 and Huīyuē 撝約; his *hào* was Xùnxuān 顨軒. See Hummel (1943–1944: 434), Wáng Lì (1936–1937 [1957]: 348–67).

126. Wáng Niànsūn was a native of Gāoyóu 高郵 in Jiāngsū; his *zì* was Huáizǔ 懷祖, his *hào* was Shíqú 石臞. See Hummel (1943–1944: 829–31), Wáng Lì (1936–1937 [1957]: 367–70, 377–81).

127. Wáng Niànsūn's letter is quoted in Jiāng Yǒugào's *Shījīng yùndú*, and also in Wáng Lì (1936–1937 [1957]: 384–86).

128. Luó Zhènyù (1866–1940) was a native of Shàngyú 上虞 in Zhèjiāng; he used the *zì* Shūyùn 叔蘊 and Shūyán 叔言, and his *hào* was Xuětáng 雪堂. He was a collector and cataloguer of oracle bones and bronze inscriptions, and a major figure in the twentieth-century development of Chinese paleography. Politically, he supported the Qīng government and opposed the 1911 revolution, and later supported the Japanese puppet state of Manchukuo.

129. See Lù Zōngdá (1932, 1935). Luó Chángpéi & Zhōu Zǔmó (1958: 10n) still describe the manuscripts as being in the possession of Beijing University.

130. The *Guǎngyǎ* 廣雅 is an expanded version of the *Ěryǎ* written by Zhāng Yī 張揖 of the Wèi dynasty (220–65).

131. So Li (1971 [1980]: 64–65). With respect to the initial of 室 *shì* < *syit*, note that in Li (1976 [1980]: 89), Li proposes an alternative development **sth-* > *tsh-* (and in particular, **sthj-* > *tshj-*), which seems to contradict his earlier reconstruction of **sthj-* > *sy-* in 室 *shì* < *syit*. I reconstruct 至 *zhì* < *tsyijH* < **tjits* and 室 *shì* < *syit* < **stjit*.

132. Wáng Niànsūn's correspondence indicates that he accepted this distinction in about 1821 or 1822; see Lù Zōngdá (1932: 167–68).

133. Jiāng Yǒugào was a native of Shè xiàn 歙縣 in Ānhuī; his *zì* was Jìnsān 晉三. See Wáng Lì (1936–1937 [1957]: 370–77, 379–91).

134. Quoted by Wáng Lì (1936–1937 [1957]: 379–80); my translation.

135. The modern reading *chǎn* is irregular; from MC *srɛnX* we would expect *shǎn*. The reading *chǎn* is found at least as early as the *Zhōngyuán yīnyùn*. Modern *chǎn* could reflect a Middle Chinese reading *tsrhɛnX*, possibly representing a variant development of the initial cluster **sngr-*.

136. The *Shuōwén jiězì* uses 亡 *wáng* as a sound gloss for 喪 *sāng* ~ *sàng*, and says it is both a semantic and phonetic element in the graph 喪 (Dīng Fúbǎo 1928–1932 [1976]: 665). Thus it is likely that these three words are all forms of the same root.

137. The initial **x-* could be either [x] or [h] phonetically, but I write **x-* to avoid a notational clash between **xr-* (the initial **x-* followed by medial **-r-*) and **hr-* (a digraph for IPA [r̥], the voiceless counterpart to initial **r-*). Initial **hw-*, representing the voiceless counterpart to initial **w-*, may also be regarded as the labialized counterpart to **x-*.

138. There is one exception: in division-IV syllables like 先 *xiān* < *sen* < ***sin*** 'first', where Karlgren reconstructed **-iə-*, I reconstruct the main vowel ****-i-***, which was later fronted by the change ****i*-fronting** (see Chapter 7 and Appendix A).

139. In previous work (e.g. Baxter 1980b) I reconstructed **-wk* as **-w?* in an attempt to account for the unusual distribution of this coda. I have not entirely abandoned this idea, but I use the more conservative notation **-wk* here because I now use the post-coda **-?* as the source of Middle Chinese *shǎngshēng*.

140. Pulleyblank argues that southern dialects of Middle Chinese lacked the distinction between dental and retroflex stops, however (1984: 168–69).

141. For a bolder approach to Old Chinese initials which attempts to incorporate some of the evidence just mentioned, see Benedict (1976b, 1987). Starostin (1989: 49–133) proposes a reconstruction of initial consonants which does incorporate some of the evidence from Mǐn initials.

142. As noted in Chapter 2, other accounts of this process are possible also.

143. According to Pulleyblank's Late Middle Chinese reconstruction, Early Middle Chinese voiced obstruents developed into voiceless obstruents followed by [ɦ], indicating murmured articulation; see Pulleyblank (1984: 67–68).

144. See Kōno Rokurō (1954 [1979]). Pulleyblank also mentions this change (1984: 123).

145. As Karlgren points out (1957, item 885a), Old Chinese rhymes involving 能 *néng* in the sense of "able" suggest that the final nasal coda *-ng* is a later, irregular development, possibly having to do with the status of 能 *néng* as a common auxiliary verb. Perhaps an unstressed variant of ****ni*** had a nasalized vowel because of the initial **n-*, and then the nasalization was reinterpreted as reflecting underlying **ning* instead of ****ni***. In Chapter 8, I invoke a similar process to explain the irregular loss of final **-k* in 來 *lái* < *loj* < **C-rɨ* < **C-rɨk*. A similar process in English is the replacement of the original third-person neuter singular pronoun *hit* with *it*, originally its unstressed variant (Pyles & Algeo 1982: 120–21).

146. In his original formulation of this proposal (1962: 114–19), Pulleyblank reconstructed dental fricatives *θ- and *ð- (equivalent to the [ð] of the International Phonetic Alphabet) rather than **l-* and **hl-*. I here follow his later formulation, e.g. in Pulleyblank (1973b).

147. Starostin (personal communication) prefers to reconstruct plain initial **r-* as a source of MC *l-*, and to attribute contacts between MC *l-* and *y-* to occasional contacts between OC **r-* and **l-*.

148. In this case Coblin (1986: 128) suggests instead Pre-Tibetan **gryam,* metathesizing to *rgyam.*

149. These are the cases where Karlgren reconstructed **z-* as the source of MC *y-* (1954: 273–74).

150. The character 粗 also has the MC reading *dzuX,* with the same meaning; this might reflect **fisraʔ.*

151. Note that in the *Qièyùn, -jon* < **-jan* and *-jen* < **-rjan* seem to be in the process of merging, so the **-r-* in the Old Chinese form may be artificial.

152. We cannot simply equate OC **g* with Proto-Mǐn **-g* and OC **ɦ* with Proto-Mǐn *zero, however; for one thing, there are several words with Proto-Mǐn *zero which I would reconstruct with OC **ɦk-* on the basis of morphological alternations with words in OC **k-*. Some examples are 閑 **ɦkren* 'leisure', possibly related to 間 **kren* 'interval, between'; 黃 **ɦkʷang* 'yellow', possibly related to 光 **kʷang* 'light, bright', and 學 **ɦkruk* 'learn', possibly related to 覺 **kruk* 'to awake; apprehend, get insight; to rouse somebody to understanding', all of which have Proto-Mǐn *zero. For discussion of such initial clusters see section 6.2.1 below.

153. The modern reading *zhì* is evidently influenced by the phonetic.

154. Palatalization is also blocked by the medial combination **-rj-*, of course; but if 藝 *yì* were OC **ngrjets*, we would expect MC *ngjejH* (III) with a division-III *chóngniŭ* final, not *ngjiejH* (IV), which the *Yùnjìng* puts in division IV; hence the necessity to mark the form as irregular by reconstructing **ngJets*. However, **ngrjets* might be the correct reconstruction after all, for there are textual problems in both the *Yùnjìng* and the rhyme-table tradition on this point, and the placement of 藝 in division IV could be an error (Lǐ Xīnkuí 1982: 168, 180; Dǒng Tónghé 1948a [1974]: 19n).

155. The capital *-A-* in both 赤 *chì* < **KHjAK* and 車 *chē* < **KHjA* is also an arbitrary notation for those cases of OC **-ja* and **-jak* which become MC *-jæ* and *-jæk* instead of the usual *-jo* and *-jak*; see sections 10.2.4.1 and 10.2.5.1. The fact that both these words have both irregularities is probably not a coincidence; perhaps the apparently irregular development of a front vowel in **-jA* and **-jAk* created the environment for the regular process of velar palatalization. This would still not dispose of all the cases of unexpected velar palatalization, however.

156. Cited by Gong Hwang-cherng (1980: 464). There is another well-established Sino-Tibetan root for "blood", illustrated in Chinese 血 **hwit*, Tibeto-Burman **s-hwiy* ~ **s-hwyəy*; if 赤 is really cognate to Tibetan *khrag*, then perhaps the original meaning was "red", transferred by euphemism to "blood" in Tibetan. If we reconstructed **hrj-* > *tsyh-* instead of **hrj-* > *trhj-*, we could reconstruct 赤 **hrjAk*, 赫 **xrak*; see section 6.1.3.2 above.

157. For example, Li's system does not account for the minimal pair 弁 *biàn* < *bjenH* (III) 'cap' and 便 *biàn* < *bjienH* (IV) 'comfortable'; he reconstructed both as **bjianh* (1971 [1980]: 55). My reconstructions are **brjons* and **bjens* respectively. The problem is that there are three contrasting Middle Chinese finals *-jen*, *-jien*, and *-jon* in division III (in the broad sense), while Li's system includes only two sources for them: **-jan* and **-jian*. Li's system also fails to distinguish the minimal pair 密 *mì* < *mit* (III) 'dense' and 蜜 *mì* < *mjit* (IV) 'honey'; both are reconstructed as **mjit* (1971 [1980]: 64). In my system they are **mrjit* (possibly from earlier **Nprjit*) and **mjit* (possibly from earlier **Npjit*) respectively. (The reconstructions with **Np-* are suggested by the phonetic element 必 **pjit*.)

158. The case of 花 *huā* and 華 *huá* illustrates how characters of late origin can mislead us about Old Chinese phonology. The modern graph 花, with phonetic 化 *huà* < *xwæH* < **hng^{w}rajs*, would normally indicate the rhyme *-aj* (the traditional 歌 Gē rhyme group), not **-a* (the traditional 魚 Yú rhyme group). But the character 花 is said to have first appeared in the Wèi-Jìn period (Dīng Fúbǎo 1928–1932 [1976]: 2697ff.); it reflects both the merger of **hw-* and **hng^{w}-* (MC *x(w)-*) and the Hàn-time merger of **-ra* with **-raj* as MC *-æ* (***-aj monophthongization**).

159. Note that Benedict also uses pre-glottalized stops to account for some cases where I would reconstruct **hn-* and **n-*; for example, he reconstructs 嘆 **t'ân* 'sigh' and 難 **ʔtân* 'difficult', which I reconstruct as **hnan* and **nan* respectively (Benedict 1976: 185).

160. Pulleyblank (1962: 133) actually reconstructed this as **snh-*, where **nh* corresponds to **hn* in the present reconstruction.

161. Some versions of the *Shuōwén* also treat 戌 *xū* as phonetic in 威 *xuè* (Dīng Fúbǎo 1928–1932 [1976]: 4506).

162. Li reconstructs 錫 **stik*, 賜 **stjigh*, 易 **rik* (1971 [1980]: 68). Most of the cases where Li reconstructs **st-* > *s-* (e.g. Li 1976 [1980]: 88–89) are reconstructed in the present system with **sl-* instead; Li's system does not recognize *xiéshēng* series of the **l-* type as distinct from those with dental stops **t-*, **th-*, etc.

163. Specifically, 貆 'badger' (with readings MC *hwan* < **wan*, *xwan* < **hwan*, and *hjwon* < **wjan*) rhymes as **-an* in Ode 112.1A; 垣 *yuán* < *hjwon* < **wjan* 'wall' rhymes as **-an* in 58.2A, 197.8A, 244.4A, and 254.7A; and 晅 *xuān* < *xjwon* < **hwjan* 'brilliant' rhymes as **-an* in 55.1B–2B.

164. The forms *srɛiX* and *srɛiH* reflect the change ***TSrj- > TSr-*** (the loss of **-j-* after retroflex initials; see section 7.2.2), while *srjeX* and *srjeH* do not. Both types are recorded in the *Guǎngyùn*, but they probably represent different dialects or different time periods.

165. Xú Xuàn 徐鉉 (916–91) and Xú Kǎi 徐鍇 (920–74), older and younger brother respectively, were both *Shuōwén* scholars, commonly known as *dà Xú* 大徐 'big Xú' and *xiǎo Xú* 小徐 'little Xú' respectively, or together, as *dà xiǎo èr Xú* 大小二徐 'the two Xús, big and little'. Xú Xuàn edited the *Shuōwén jiězì*, and Xú Kǎi's version of the text is found in his *Shuōwén jiězì xì zhuàn* 說文解字繫傳.

166. The *Shǐ Zhòu piān* was a work on characters traditionally ascribed to Shǐ Zhòu 史籀, the Scribe Zhòu, of the reign of King Xuān 宣 of Zhōu, who reigned 827–782 B.C. The script of Qín is said to have been based on the character forms set out in this work (Lǐ Xuéqín 1985: 36).

167. Pulleyblank (1962: 95–96) reports arriving at the same hypothesis independently, though he subsequently abandoned it (1963: 207–8), for reasons I find unconvincing.

168. I exclude from this list those finals that have the coda *-wng* in my notation; these are sometimes considered *hékǒu,* but their rounding is most likely a feature of the main vowel or coda rather than the medial.

169. Another explanation sometimes given is that the original character had not 元 *yuán* but 人 *rén* 'person' under a roof, being struck 攴—a depiction of a crime in progress (see Dīng Fúbǎo 1928–1932 [1976]: 1358, Zhōu Fǎgāo et al. 1974a, item 0427). But this does not agree with the forms on bronze inscriptions, where the element under the roof is clearly 元 *yuán* < *ngjwon* < **Nkjon,* not 人 *rén.*

170. The reconstruction of 町疃 in Li's system would be **thianx-thuanx*, which accounts less well for the *xiéshēng* evidence.

171. This pattern was observed by the late Qīng–early Republican scholar Huáng Kǎn 黃侃 (1886–1935), who regarded the division-I and division-IV finals as the "original ancient rhymes [gǔ běn yùn 古本韻]", and the nineteen initials with which they occurred as the "original ancient initials [gǔ běn niǔ 古本紐]"; other finals and initials were described as "changed [biàn 變]" forms of these (see Wáng Lì 1936–1937 [1957]: 400–403, 409–12). Huáng Kǎn did not specify the conditioning factors which caused these changes, and in identifying *Qièyùn* categories with "original" ancient rhymes, he seems to have ignored some of the Old Chinese rhyming distinctions discovered by the earlier Qīng phonologists; but his work shows considerable insight into the phonological pattern of Middle Chinese.

172. On an abstract level, Pulleyblank's system is quite similar to that proposed here: his "type-B syllables" correspond to my medial **j*; his element **j* corresponds to the vowel feature [– back] of my system; and the function of **r* is the same in both systems. The two systems make different predictions about Old Chinese rhyming, however.

173. Li used the combination **rj* also, but in his 1971 paper (1971 [1980]), it was basically limited to syllables with Middle Chinese retroflex initials. He later reconstructed **Krj-* as a source of Middle Chinese palatal initials (1976 [1980]).

174. Dǒng Tónghé (1944 [1948]: 95–102) had already observed that, among the 元 Yuán-group finals listed above, both *xiéshēng* characters and *Shījīng* rhymes showed an especially close relationship among MC *-ɛn, -jien,* and *-en* on the one hand, and among *-æn, -jen* (III), and *-jon* on the other; for this reason, he reconstructed **ä* in *-ɛn,*

-jien, and *-en,* but **a* or **ă* in *-æn, -jen,* and *-jon.* Generally speaking, my **e* corresponds to Dŏng's **ă,* and my **a* to his **â, *a,* and **ă.*

175. The modern reading *tiăn* is probably based on the modern pronunciation of the *fănqiè* spelling 徒典切 *tú diăn qiè* (*du* + *tenX*); we would regularly expect *diàn.*

176. Karlgren reconstructed a few such cases, but without adequate evidence. For example, Karlgren reconstructed 犬 *quăn* < *khwenX* 'dog' as **k'iwən* (Karlgren 1957, item 479a), citing a supposed rhyme with the 文 Wén-group word 珍 *zhēn* < *trin* (< **trjin*) 'precious thing' in *Lǐ jì* 禮記: *Fáng jì* 坊記 (1954: 292). But it is by no means obvious that a rhyme is intended here, and in any case, Qū Wànlǐ (1983b: 353–54) estimated that this part of the *Lǐ jì* was composed in early Hàn—too late to be taken as evidence on Old Chinese phonology. Duàn Yùcái assigned 犬 *quăn* to the 元 Yuán category (his Group 14; see section 4.3.5); see Dīng Fúbăo (1928–1932 [1976]: 4381). This would imply a reconstruction **k^{w}hen?* in my system, though **k^{w}hin?* is also possible.

177. There is one apparent exception, the word 吞 MC *thon* 'to swallow', but the *Jíyùn* also records a reading *then* for this word (see Morohashi 1955–1960, item 3329); the antiquity of this reading is supported also by the fact that the *Shuōwén* regards 天 *tiān* < *then* 'heaven, sky' as phonetic (Dīng Fúbăo 1928–1932 [1976]: 556). As we shall see below, *then* is the reflex we would expect from original **thin* (or perhaps **hlin*) by the changes ***i*-fronting** and **hi > mid**. In the Middle Chinese reading *thon,* ***i*-fronting** irregularly failed to apply, perhaps through the influence of onomatopoeia.

178. After proposing these reconstructions (Baxter 1979), I subsequently discovered that Jaxontov had also noticed this case of complementary distribution (1965: 29) and reconstructed a change similar to ***i*-fronting**; he says that about the second century B.C., the finals *-ən, -ət, -ər* became *-en, -et, -er* after "anterior [perednejazyčnyx]" initials. In this he is followed also by Starostin (1989: 386). For example, Jaxontov gives the reconstruction of 妻 *qī* < *tshej* 'wife' (Karlgren's **ts'iər*) as **tshər* (p. 36), without Karlgren's "strong vocalic *-i-*", paralleling my reconstruction **tshij.* Starostin reconstructs **shāj* (1989: 693).

179. The forms *Pen* < **Piən* and *Kwen* < **Kwiən* are questionable because Li gave no actual examples of syllables of these forms; he did, however, reconstruct 譎 *jué* < *kwet* 'treacherous, crafty, deceive' as **kwiət* (1971 [1980]: 47), corresponding to Karlgren's **kiwət* (Karlgren 1957, item 507l). I believe this is a mistake; the reconstruction should be **k*^{w}*it* (= Li's **kwit*). No words in this *xiéshēng* series rhyme in the *Shījīng*, but we must reconstruct **-it* because this series has division-IV *chóngniǔ* finals (e.g. 橘 *jú* < *kjwit* < **k*^{w}*jit* 'orange'). Karlgren (1954: 294) listed the word 遹 *yù* < *ywit* < **wjit* 'go awry, perverse' as a *Shījīng* rhyme word rhyming as **-əd*, but I can find no such rhyme. At some point, Karlgren may have taken it to rhyme in Ode 257.15 with 利 *lì* < *lijH* 'sharp; profit, profitable, favorable', which he reconstructed as **l̥jəd*, but he did not treat this as a rhyme in his published rhyme lists (1940: 108, 1974: 220), and in any case, the **ə* vowel in **l̥jəd* is also an error.

180. Pulleyblank (1963: 209), in arguing against the rounded-vowel hypothesis, proposes that the rounded/unrounded distinction observed in *Shījīng* rhyming (whose existence he does not question) can be taken as "a further example of the aberrant *Shih-ching* dialect", in which **wa* tended to become rounded to **(w)o*. This assumption will account for the data, but note that it requires us to reconstruct a distinction between **k*^{w}*an* and **kwan* (corresponding to my **k*^{w}*an* and **kon*), of which only **kwan* is subject to this rounding tendency. Moreover, the peculiar distribution of this **w* (such as the non-occurrence of syllables like **twang*) is still left unexplained.

181. See Juhl (1974), Wáng Lì (1936), and Lǐ Róng (1961–1962 [1982]). In Lǐ Róng's data, this generalization seems to apply to grave-initial words only; retroflex-initial words which the *Qièyùn* assigns to division-II finals tend to rhyme instead with division-III finals. For example, 山 *shān* < *srɛn* 'mountain' rhymes more often with words in *-jen* or *-en* than with grave-initial words in *-ɛn* (Lǐ Róng 1961–62 [1982]: 168). I will argue below that many words with *TSr*-type initials and division-II finals originally had division-III finals and should be reconstructed with **-rj-* rather than just **-r-*. The placement of such words in division-II rhymes reflects the change ***TSrj-* > *TSr-*** (described in more detail below), which caused **-j-* to be lost after *TSr*-type initials. The rhymes in Lǐ Róng's data apparently reflect dialects which did not undergo, or had not yet undergone, this change.

182. Li (1971 [1980]: 23) states that medial **-r-* had a centralizing effect, but this seems to be based on Karlgren's problematic Ancient Chinese reconstructions of the division-II finals, and does not explain the rhyming shifts above.

183. The distinction between LMC division-II *kjaan* (艱, 間, and 姦) and LMC division-IV *kjian* (肩) is also still found in the *Zhōngyuán yīnyùn* and in some Mandarin dialects; the loss of this distinction is a late development in standard Mandarin.

184. In Li Fang-kuei's reconstruction, the relationship between initial *l-* and division-II vocalism is more complex, for though he wrote **-r-* in division II, he kept a Karlgren-like reconstruction with **-l-* in division I. Thus Li reconstructed **nglakw* for my 樂 *lè* < *lak* < **g-rawk* 'joy', but **ngrakw* for my 樂 *yuè* < *ngæwk* < **ngrawk* (< **Ngrawk*?).

185. As Jaxontov shows, although there are a few cases where velar-initial division-I words are in *xiéshēng* series with MC initial *l-*, such examples usually involve readings of relatively late origin. For example, the division-I word 各 *gè* < *kak* < **kak* 'each' is phonetic in 落 *luò* < *lak* < **g-rak* 'to descend' (this latter possibly related to 下 *xià* < *hæX* < **gra?* or **grak?*), but as Jaxontov pointed out (1960a: 5, 1963: 91), the original use of the character 各 was to write the division-II word later written as 格 *gé* < *kæk* < **krak* 'go to'. In any case, it is not surprising that, by analogy to cases like 行 *xíng* ~ *háng* < *hæng* ~ *hang* < **grang* ~ **gang*, division-I words should occasionally appear in *xiéshēng* series with division-II words, and therefore with *l*-initial words.

186. There are a number of textual problems with this passage which are fortunately not directly related to the issue at hand, which is the "dúruò" portion of the entry; for details see Dīng Fúbǎo (1928–1932 [1976]: 5842). This character and similar characters are also found in bronze inscriptions, apparently with meanings unrelated to the glosses provided by the *Shuōwén*; see Zhōu Fǎgāo et al. (1974a, item 1660).

187. I reconstruct a 'disappearing' **g-* in 卵 *luǎn* because, according to the *Shuōwén*, an old form of this character is phonetic in 丱 *guān* < *kwæn* < **kron* 'to weave thin silk' (Dīng Fúbǎo 1928–1932 [1976]: 5934), which in turn is phonetic in 關 *guān* < *kwæn* < **kron* 'to close' (Dīng Fúbǎo 1928–1932 [1976]: 5332a). (Note that these words, too, have division-II finals which must for that reason be reconstructed with **-r-* by the **r*-hypothesis.) Although I reconstruct a rounded vowel in 卵

luǎn 'egg', this is not necessarily evidence for a rounded vowel in 綰 *wǎn*, since by the time of the *Shuōwén* 卵 **g-ron?* had probably diphthongized to **(g-)rwan?*. It is also uncertain whether the disappearing **g-* had disappeared by the time of the *Shuōwén*.

188. The *Jīngdiǎn shìwén* gives both *tsrhje* and *tsrhɛi* as pronunciations for 差 *cī* in Ode 1, though *tsrhje* is listed first, which probably indicates that it is the reading preferred by Lù Démíng. Zhū Xī gives only *tsrhje*.

189. Recall that, in my Middle Chinese notation, the division-III finals are those written with the medial *-j-* or the vowel *-i-* or both, or with *-y-* in the initial (since *-j-* is omitted by convention after *-y-*, which marks palatal initials).

190. According to the charts of Shào Róngfēn (1982: 122–23), there are 102 finals in the *Qièyùn*, of which fifty-four belong to division III. The exact count varies depending on how certain marginal cases are treated.

191. So Karlgren (1957, item 827a) and Li (1971 [1980]: 69). Dǒng Tónghé accounted for such distinctions by reconstructing 名 *míng* < *mjieng* (IV) with a tense vowel (his **mi̯eng*) and 鳴 *míng* < *mjæng* (III) with a lax vowel (his **mi̯ĕng*; see Dǒng Tónghé 1944 [1948]: 91, 180).

192. The *Qièyùn*'s treatment of these finals may be partly artificial in any case, for the distinction between *-æng* and *-ɛng* had probably been lost in many dialects; in rhyming, the predominant pattern seems to be for MC *-æng*, *-ɛng*, *-jieng*, *-jæng*, and *-eng* to rhyme together from Eastern Hàn down through the Suí dynasty (Lǐ Róng 1961–1962 [1982]: 190–97).

193. Actually, the traditional 元 Yuán group combines three Old Chinese rhymes: **-an*, **-en*, and **-on*; but since **-on* developed rather early to **-wan*, its development is parallel to that of **-an*.

194. Such rhymes show, however, that the vowel of MC *-jon* < **-jan* was still back in Early Middle Chinese.

195. An exception is that syllables which had medial **-rj-* followed by a rounded vowel at the time of the change ****r*-color** also underwent **labiodentalization**. Since ****r*-color** did not affect rounded vowels, back rounded vowels remained in this environment after ****r*-loss**, and

the conditions for **labiodentalization** were met even though **-r-* had been present earlier. For example, we have 膚 'skin' ****prja* > *prjo*** (by ****-ja* > *-jo***; see Appendix A) > *pjo* (****r*-loss**) > EMC *pju* > *fū* (cf. 盧 ***lú*** < *lu* < **b-ra* 'food vessel', in the same *xiéshēng* series).

196. A similar metaphor is involved in Latin *rēgula* 'straight stick, ruler', hence 'pattern, principle', from which come, by way of Old French, the various senses of English *rule*.

197. Middle Chinese *gwinX* could also reflect **g^{w}rjin?*, but the phonetic of 菌 *jūn* seems to indicate **-un*: 困 *qūn* < *khwin* (III) < **khrjun* 'round granary' rhymes as **-un* in Ode 112.3A, and 麇 *jūn* < *kwin* (III) < **krjun* 'fallow deer' rhymes as **-un* in Ode 23.1A.

198. See Morohashi (1955–1960, item 27583). In the meaning "head kerchief", 綸 **krun* might be a dialect form of 巾 *jīn* < *kin* (III) < **krjin* 'head kerchief'.

199. However, Arisaka and Kōno rejected Karlgren's "strong vocalic" medial *-i-*; in fact, they were the first to do so.

200. It was Karlgren's misinterpretation of this phenomenon that led him to reconstruct a distinction between "strong vocalic *-i-*" and "weak consonantal *-i̯-*"; see section 7.1.2.1 and 7.1.2.2 above.

201. Alternatively, the feature [– tense] could be inserted only if the vowel affected is [– low].

202. See now also Starostin (1989: 325–29).

203. To pursue the argument a little further, if the high vowel *-u-* occurred only after *-j-*, then perhaps *-ju-* was phonologically /u/. In some dialects, the redundant *-j-* may have been dropped phonetically as well. Thus, even supposing that the transcriptions of "Buddha" and "Kumārajīva" with division-III syllables are evidence for a variety of Chinese that lacked *-j-* in these syllables, this is not necessarily evidence against **-j-* at the Old Chinese stage; original **-j-* may have simply been dropped where it had become redundant.

204. Pulleyblank's reconstruction of Early Middle Chinese (1984), in which all division-III finals begin with a high (syllabic) vowel, avoids the use of medial *-j-*, resulting in more natural-looking transcriptions; e.g. 佛 *fó* 'Buddha' is simply *but*, and the *ku* of Kumārajīva is simply *kuw*. But this benefit is won at considerable cost in other areas, for Pulleyblank's reconstruction involves a complex theory of syllabicity

(in which more than one segment in a single syllable may be [+ syllabic]) and it fails to provide a straightforward explanation of Middle Chinese rhyming practice. See my review (Baxter 1987b) of Pulleyblank (1984).

205. For example, I reconstruct **-ij*, not **-i*, in MC *-ɛj* < **-rij*, which contrasts with MC *-ɛi* < **-re*. If I reconstructed **-ri* in place of **-rij*, the present formulation of the sound change **hi > mid** would predict that **-ri* and **-re* would have merged in Middle Chinese. (In fact, *-ɛj* and *-ɛi* probably had merged in some Middle Chinese dialects.) I reconstruct **-u*, not **-uw*, in 軌 *guǐ* < *kwijX* < **k^{w}rju?* 'wheel-axle ends'; the unrounding of the original **u* is due to a change **rounding dissimilation**, whose formulation would be marginally more complex if I reconstructed **-uw* instead of **-u*.

206. Note that Karlgren did not recognize the distinction between **-ij* and **-ɨj* (Li's **-id* and **-(i)əd*); this distinction is discussed in section 10.1.8.

207. The Mǐn examples are from Norman (1969); the Vietnamese examples are from Haudricourt (1954a [1972]: 179). Tibeto-Burman reconstructions are from Benedict (1972) and Coblin (1986). Other data are from Zhèng-Zhāng Shàngfāng (1983, n.d.: 13–15).

208. Zhèng-Zhāng Shàngfāng (1983) also cites the Korean word *mays-tol* 'grindstone' (so transcribed in Martin & Chang 1967, s.v.). The second syllable simply means "stone", but the first syllable looks as if it could be borrowed from Chinese 磨 *mò* < *maH* < **majs* 'grindstone', a nominal derivative of the verb 磨 *mó* < *ma* < **maj* 'to grind'. The connection of the Korean forms with OC **maj* is beyond doubt, but the *-s* in the Korean form is evidently an orthographic device to indicate a tense pronunciation of the following consonant (Alexander Vovin, personal communication); so this cannot be counted as evidence for OC **-s* in **majs* 'grindstone'.

209. Starostin (1989: 338–43) offers a number of strong arguments that a coda **-r* distinct from both **-j* and **-n* can be reconstructed for Old Chinese on the basis of rhymes and other evidence. Starostin's **-r* shows rhyme and *xiéshēng* contacts with **-j*, but its regular Middle Chinese reflex is *-n* (unlike Karlgren's **-r*, whose Middle Chinese reflex is *-j* or zero); thus it is reconstructed in some of the words where I reconstruct **-n*.

210. Benedict originally reconstructed Tibeto-Burman **-iy* in this and some other words where Old Chinese has **-ij*, later substituting **-əy*; as I have pointed out (Baxter 1985), the earlier reconstruction is closer to the Old Chinese forms (though this does not, of course, mean that it is correct for Tibeto-Burman).

211. For 蝸, the reading *guā* of older (and Táiwān) dictionaries is the regular reflex of MC *kwæ*, but mainland Chinese dictionaries now give the pronunciation *wō*.

212. Benedict (1972: 66n) compares Tibeto-Burman **tay* with 太 *tài* < *thajH* < **hlats* 'very great', and this is repeated by Coblin (1986: 42), but in my system 多 **taj* is a better phonological match.

213. The original vowel in 風 *fēng* 'wind' could be either **i* or **u*, and if it was **u* then the presence of medial **-r-* would probably be undetectable, since ***r-color** did not affect rounded vowels; hence the reconstruction **p(r)iŋ/um*.

214. I reconstruct **-en* in 繕 MC *dzyenH* because the Middle Chinese palatal initial appears to come from an original velar—as this sound gloss indicates. As additional evidence for a velar initial in this *xiéshēng* series, consider the second syllable of 掝搴 *thrjenX-kjenX* < **trhjen?-krjen?* 'ugly', where palatalization is blocked by the combination **-rj-*. This expression occurs in several lexicographical sources; see Morohashi (1955–1960, items 12734 and 12458). The syllables occur in both orders in the *Guǎngyùn*, but the references in Morohashi show only the order 掝搴 *thrjenX-kjenX*.

215. The capital **J* of 勁 **kJengs* marks items where a velar initial unexpectedly failed to palatalize (see section 6.1.5).

216. There appears to be a dissimilation **-p* > **-k* in 昱 *yù* < *yuwk* 'sunlight; bright', where the *Shuōwén* says the phonetic is 立 *lì* < *lip* < **C-rjip* (Dīng Fúbǎo 1928–1932 [1976]: 2928); but the phonology of this word is an unsolved puzzle. Note that this word is also written in classical texts as 翌 or 翊, and read *yì* < *yik* (Karlgren 1957, item 912a); here, too, the phonetic is said to be 立 *lì* (Dīng Fúbǎo 1928–1932 [1976]: 1500). These forms may reflect an Old Chinese dialect where final **-m* and **-p* changed to **-ng* and **-k* generally, whatever the initial. It is probably necessary to assume such a dialect to account for occasional *Shījīng* rhymes between the 冬 Dōng and 侵 Qīn rhyme groups; see discussion in sections 3.3.1 and 10.3.3.

217. Xiàng Xī (1986: 887n) notes that this reading is found in the *Jì xī lǐ* 既夕禮 section of the *Yí lǐ* 儀禮, the *Gōngyáng zhuàn* 公羊傳, the *Shuōwén,* and other texts.

218. Note how the front-vowel hypothesis clarifies this problem, as it also clarifies contacts between **-en* and **-eng*. Karlgren was unable to see the phonological relationship between 幭 **met* (his **miat*) and 幎 **mek* < **Npek* (his **miek*), saying simply that the former character was "also applied to a synonymous word **miek*" (1957, item 311f).

219. For additional examples, see also Coblin (1986) s.v. "louse", "sickness/evil", "stagger/fall/stumble", "to stop up", "thicket", and "tie/knot".

220. The character 上 actually has two Middle Chinese readings: *dzyangX* (*shǎngshēng*) and *dzyangH* (*qùshēng*). According to the Chinese reading tradition, the *shǎngshēng* reading *dzyangX* means "to go up", while the *qùshēng* reading *dzyangH* means "up" (Zhōu Zǔmó 1946 [1966]: 103). In Mandarin, both *dzyangX* and *dzyangH* would regularly become fourth-tone *shàng*. But since it is usually the Mandarin third tone which corresponds to the Middle Chinese *shǎngshēng*, the character 上, when used as the name of the tone, is conventionally read *shǎng*, in third tone, so that the name still exemplifies the tone it refers to.

221. That Chén Dì did not deny the existence of Old Chinese tonal categories altogether is shown by the fact that he sometimes gives "ancient" pronunciations of words which differ only in tone from their modern pronunciations; thus he gives the ancient pronunciation of 故 *gù* < *kuH* 'reason' as 古 *gǔ* < *kuX* 'old, ancient', since it usually rhymes as *shǎngshēng* in Old Chinese (Chén Dì 1606 [1957], *juàn* 1, p. 23).

222. "Gǔ rén sì shēng yí guàn 古人四聲一貫"; quoted by Dǒng Tónghé (1968: 306).

223. Kǒng Guǎngsēn's view may have been influenced by his own dialect; a member of the Kǒng family of Qūfù 曲阜 in Shāndōng, and a descendant of Confucius, he probably spoke a northern dialect which lacked *rùshēng*. Also, a system without the final stops of *rùshēng* may have seemed to fit better with his theory of systematic alternations between *yīn* and *yáng* syllables (Dǒng Tónghé 1968: 309). A modern linguist would worry about where the final stops of southern dialects

could have come from in such a system, but the Qīng scholars did not hesitate to assume unconditional phonological splits.

224. If we test the 月 Yuè and 祭 Jì groups as traditionally defined, then the best estimate of **P** is about 2.0×10^{-10}, and **P** does not exceed 1.2×10^{-8} anywhere in the 0.95 confidence interval for **P**[Yuè].

225. "Gǔ rén shí yǒu sì shēng, tè gǔ rén suǒ dú zhī shēng yǔ hòu rén bù tóng 古人實有四聲, 特古人所讀之聲與後人不同". Quoted by Dǒng Tónghé (1968: 307).

226. Middle Chinese *qùshēng* words are involved in some of these sequences, but in most cases they, too, seem to be words which rhymed as *shǎngshēng* in Old Chinese; an example is 故 *gù* < [*kuH*] < **kaʔ(s)* 'reason', mentioned in note 221 above.

227. This item is cited by Downer (1959: 275).

228. Still another pronunciation is *jiǎqí*, with an alternate reading of 期 *qī*.

229. The correlation of voice and register has been disrupted in modern Vietnamese by subsequent sound changes, so that voiced and voiceless initials occur in both high- and low-register tones.

230. Some of the examples cited by Gregerson and Thomas are loans from Chinese, not native Mon-Khmer words. Two items (at least) are regular Sino-Vietnamese borrowings: Vietnamese *giải* 'untie' = 解 *jiě* < *kɛiX* 'to unloose, untie', and Vietnamese *lễ* 'rite, ceremony' = 禮 *lǐ* < *lejX* 'rite'. Two of the forms cited as exceptional (which fail to show Mon-Khmer *-h* as expected) are also probably older Chinese loans, not Mon-Khmer etyma: Vietnamese *dễ*, Chrau *dê* 'easy' = 易 *yì* < *yeH* < **ljeks* (cf. Sino-Vietnamese *dị*) and Vietnamese *khó*, Chrau *kho* 'difficult' = 苦 *kǔ* < *khuX* < **khaʔ* 'bitter' (cf. Sino-Vietnamese *khổ*); see Gregerson & Thomas (1976: 81).

231. It is possible that Chinese 布 *bù* < *puH* < **pas* 'cloth' reflects the same etymon. Sanskrit *karpāsa* evidently has no good Indo-European etymology, and may be borrowed from some other language, perhaps Austroasiatic (Mayrhofer 1956–1972, vol. 1, pp. 174–75).

232. The expression 對揚 *duì yáng* 'to respond by extolling', common in bronze inscriptions (and also found in Ode 262.6), is written as 答揚 *dá yáng* in the *Shàngshū* 尚書 (chapter 42, paragraph 24, cited by Schuessler 1987: 107–8).

233. The character 憶 does not occur in early Zhōu texts, according to Schuessler (1987); in the early script the same character probably served for both the verb and the derived noun.

234. The multiple readings of 大 [*dà*] ~ *dài* < *daH* ~ *dajH* < **lats* 'great, big', might reflect dialect differences in the application of **final cluster simplification**. The reading *daH* could reflect a dialect where at least the **-ts* > **-js* part of **final cluster simplification** preceded, and therefore fed, ***-aj* monophthongization**. Note, however, that MC *daH* would be expected to give Mandarin *duò*, not *dà*, so the relation of Mandarin *dà* to MC *daH* is uncertain. For what it is worth, it is southern dialects (e.g. Cantonese) which preserve the reflex of MC *dajH* as the normal pronunciation of this character.

235. 結 **kit* probably reflects earlier **kik*; cf. Tibetan *'khyig-pa* 'to bind' (Coblin 1986: 149–50).

236. See Schuessler (1987: 221) The rhyme sequence 39.3B includes the *rùshēng* word 鞗 *xiá* < *hæt* 'linch-pin', along with the *qùshēng* words 邁 *mài* < *mæjH* 'to walk, move on, move along' and 衛 *wèi* < *hjwejH* 'Wèi (name of a state)'. But 鞗 *xiá* seems to rhyme as **-ats* also in 218.1, so perhaps it too was *qùshēng* in Old Chinese.

237. An example of textual corruption is probably the word 旆 [*pèi*] < *bajH* < **bats* in Ode 304.6A, the only *qùshēng* word in a sequence with eight *rùshēng* words. Here Xiàng Xī (1986: 329) gives convincing evidence that the correct reading is probably 發 *fā* < *pjot* < **pjat* 'to set out', which is also the reading preferred by Karlgren. The example of 害 *hài* just cited illustrates how irregular rhymes might have arisen through leveling.

238. Mixed rhymes of this type appear to occur occasionally in the *Zhōu sòng* section (Odes 266–96), but many of these poems do not rhyme at all, so it is difficult to know whether they were intended as rhymes.

239. In spite of its name, the *Shāng sòng* section of the *Shījīng* does not date from Shāng times, but was composed rather late in the state of Sòng 宋, whose rulers were descended from the Shāng royal family. See section 9.3.1.

240. "Qín Lǒng zé qù shēng wéi rù 秦隴則去聲爲入."

241. In my system, 毖 *bì* < *bjiejH* (IV) would be **bjets*, so we might expect the northwestern pronunciation to be MC *bjiet* (IV) < **bjet*, not *bek*.

Note that this example probably illustrates that pure division-IV *-e-* (/e/) has merged with the *-jie-* (probably /je/) of division-IV *chóngniǔ* finals.

242. Schuessler, on the other hand, suggests that 或 *huò* is "a *-k* derivation (distributive)" of 有 *yǒu* (1987: 261); this would suggest reconstructions 有 *yǒu* < **wjiʔ*, with no **-k*, and 或 *huò* < **wiʔk*. If Schuessler is right, we might have the same suffix in 數 *shuò* < *srækwk* < **sr(j)o(ʔ)k* 'frequently, a number of times', from 數 *shǔ* < *srjuX* < **srjoʔ* 'to count', *shù* < *srjuH* < **srjo(ʔ)s* 'number'.

243. Reconstructions without final voiced stops include those of Pulleyblank (1977–1978) and Wáng Lì (1980b); see section 8.3.4 below.

244. Simon (1927–1928) reconstructed final voiced fricatives in place of Karlgren's **-b*, **-d*, **-g*, because he wished to reconstruct **-b*, **-d*, **-g* in place of Karlgren's voiceless **-p*, **-t*, **-k*. The reason was that Karlgren's **-p*, **-t*, and **-k* show correspondences with the final *-b*, *-d*, and *-g* of Written Tibetan, which Simon took at face value as voiced.

245. Karlgren later made much more use of traditional phonology, however; in "Word families in Chinese" (1933) he refers to Duàn Yùcái's *Liù shū yīnyùn biǎo* and Wáng Niànsūn's *Gǔ yùn pǔ* (see sections 4.3.6 and 4.3.9). Some of the differences between Karlgren's Archaic reconstruction and the reconstructions by Chinese scholars such as Dǒng Tónghé and Li Fang-kuei result from the fact that Karlgren relied more on Wáng Niànsūn while modern Chinese scholars have tended to rely more on Jiāng Yǒugào.

246. Actually, as Jaxontov pointed out, the earliest use of the character 各 was to write the word **krak* 'come, go' later written 格, as in the next example.

247. In particular, the words I reconstruct with **-aks* seem to show two general patterns of rhyming behavior in the *Shījīng*: in the older parts of the *Shījīng*, they occasionally rhyme with *rùshēng* **-ak*; in the newer parts, they rhyme with words in **-as*. This change probably reflects different stages of the change **final cluster simplification**.

248. Of course, we do not reconstruct Old Chinese in this way merely to make it look like Tibetan; these characteristics are supported by evidence from the history of Chinese itself, especially the classical reading tradition.

249. Some such mechanism might also be involved in the history of the word 去 *qù* < *khjoH* < **khjas* or **khjaps* (?) 'to go away, leave'. *Xiéshēng* evidence seems to indicate that this word had a coda **-p*, but if it were ***khjaps*** we would expect it to become ***khjats*** by ***-ps* > *-ts***, eventually becoming MC ***khjojH***. Perhaps the final **-p* was lost in unstressed position, and the unstressed form was generalized. But this word's history is complicated by other problems: 去 *qù* is not simply "to go" in Old Chinese, as it is in modern Chinese, but rather "to leave", presumably related to 去 *qǔ* < *khjoX* 'to remove'; the relationship of these forms is not clear. It is also possible that two *xiéshēng* series, one with **-p* and one without, have been confused here.

250. For an insightful discussion in English on the development of Chinese writing, see Norman (1988, chapter 3). A very useful overview in Chinese is Lǐ Xuéqín (1985), on which much of this section is based.

251. For two views on the matter see Cheung (1983) and Boltz (1986).

252. For a detailed account of oracle bone texts, see Keightley (1985).

253. Collections of rhymed passages include Wáng Guówéi (1917 [1968]), Guō Mòruò (1954), and Chén Shìhuī (1979, 1981). (I have not had access to Chén Shìhuī 1979.) A list of rhymes based on these is given by Yú Nǎiyǒng (1980), who proposes a reconstruction of Old Chinese taking the script and rhymes of the bronze inscriptions into account.

254. Based on the lists in Yú Nǎiyǒng (1980: 161–76), favorite rhyme groups in bronze inscriptions include 之 Zhī, 陽 Yáng, and 幽 Yōu; the 幽 Yōu rhymes, without exception, involve only words I would reconstruct with **-u*, none I would reconstruct with **-iw*.

255. These three works, only fragments of which survive, were character textbooks for use in learning how to write, presumably defining the new Qín script standard. Fragments of the *Cāng Jié piān* have recently been discovered at Shuānggǔduī 雙古堆, Fùyáng 阜陽 county, Ānhuī province, the same site where fragments of the *Shījīng* were found; see Ānhuī Shěng Wénwù Gōngzuò Duì 安徽省文物工作队 et al. (1978).

256. According to legend, Shǐ Zhòu 史籀, who was *tàishǐ* 太史 'Grand Scribe' under King Xuān 宣 of Zhōu (reigned 827–782 B.C.), wrote the *Shǐ Zhòu piān*, a character textbook probably similar to those just described. The script of this book, called *Zhòu wén* 籀文 'script of [Shǐ] Zhòu' or *dà zhuàn* 大篆 'large seal script', was said to have

been used in the state of Qín during the Chūnqiū and Zhànguó periods (770–476 B.C. and 475–221 B.C. respectively). The expression *zhuànshū* 篆書 'seal script' refers, however, to the *xiǎo zhuàn* or 'small seal' of the Qín dynasty. The *Shǐ Zhòu piān* survives only in fragments quoted in the *Shuōwén.*

257. Duàn Yùcái includes many observations of this kind in his notes to the *Shuōwén jiězì.*

258. The irregular aspirate in modern Mandarin probably results from anachronistic interpretation of the *fǎnqiè* spelling 秦醉切 *qín* + *zuì* < MC *dzin* + *tswijH,* where the initial speller 秦 *qín* < *dzin* is aspirated in Mandarin because it is *píngshēng.*

259. The *hékǒu* final *-wijH* in 萃 [*cuì*] < *dzwijH* < **dzjups* is in turn evidence for a rounded vowel in 集 *jí* < **dzjup*; see section 10.3.4.

260. There is actually little good evidence as to whether the original coda was dental or labial in words with this phonetic; the words in Karlgren's series 515 (1957) are all *qùshēng*, with no *rùshēng* words in either *-t* or *-p*. While some characters with the phonetic 旡 are used to write words in *-t,* this may reflect later writing practice.

261. The related form 問 *wèn* < *mjunH* < **mjuns* 'ask' is probably a late character also. A character consisting of "mouth" and "gate" has been found in fragmentary oracle-bone inscriptions, but the inscriptions are too short to allow interpretation, and there is no reason to believe that this character represents "ask" (Lǐ Xiàodìng 1965: 363; Ikeda Suetoshi 1964, vol. 2, p. 37). Such a character also appears on a bronze bell, where it is a proper name. The bell is the 史問鐘 Shǐ "Wèn" Zhōng, cited by Xú Zhōngshū (1980: 42); I have not been able to locate the full inscription.

262. This summary is based largely on Qū Wànlǐ (1983a, passim, and 1983b: 327–35); for further discussion, see Xiàng Xī (1986) and Gāo Hēng (1980, passim).

263. See, for example, Odes 4, 5, 6, 7, 11, 12, 16, 18, 19, 20, 21, 22, 24, 25, 36, 44, and 45

264. See Odes 167, 168, 177, 191, 192, and 193.

265. The *Hàn shū,* by Bān Gù 班固 of Eastern Hàn, is the official history of the Former or Western Hàn dynasty; the *Yìwén zhì* is its bibliographical section.

266. This explanation of the word 詩 *shī* may originally have been based on structure of its graph; in any case, 志 *zhì* may be taken as a sound gloss. See Chow Tse-tsung (1968).

267. This does not necessarily imply that poetry was ever simply recited without chanting or singing; perhaps it simply distinguishes the verbal and nonverbal aspects of the performance.

268. For further information on the "burning of the books", see Bodde (1938).

269. There were originally forty-six stones, with the classical texts inscribed in *lìshū* [clerical script]. They contained seven classical texts including the Lǔ version of the *Shījīng*. Although they had been destroyed by Táng times, fragments have been discovered since Sòng times.

270. I tentatively reconstruct OC *-*im* rather than *-*um* in 今 *jīn* because it rhymes irregularly with *-*ing* in 245.8A. But by late Hàn, the main vowel may have been rounded by **labial neutralization**, which eliminated the contrast between rounded and unrounded vowels before labial codas. See section 10.3.3.

271. Karlgren's gloss illustrates the complexity of *Shījīng* textual problems. The Xīpíng stone classics are said to represent the Lǔ *Shī*, but Karlgren (following Wáng Xiānqiān) says that the Lǔ *Shī* has 假寐 *jiǎ mèi* here, just like the Máo version. The Hán version, on the other hand, is said to have had 寤寐 *wù mèi* 'waking and sleeping'. Karlgren concludes: "Since [the reading 假寐 *jiǎ mèi*] is attested in two of the ancient schools, it ought to be safe".

272. Note that this reading supports the reconstruction of medial *-*r*- in the division-II word 假 *jiǎ* < *kæX* < **kraʔ*; the medial in 監 *jiān* < *kæm* < **kram* is confirmed by *xiéshēng* evidence, since 監 **kram* is phonetic in 藍 *lán* < *lam* < **g-ram* 'indigo'.

273. Examples are conveniently collected by Coblin (1983: 199–208).

274. Both 蓮 *lián* < *len* 'lotus fruit' and 連 *lián* < *ljen* 'connect' are late characters; see section 10.1.1.

275. The reconstruction of a cluster in this form is also supported by the Vietnamese form *sen* 'lotus', possibly an old loan from Chinese (the regular Sino-Vietnamese form is *liên*). As Mei and Norman (1971: 102) point out, Vietnamese *s*- often represents an earlier cluster **Cr*-.

276. But 卷 *juǎn* < *kjwenX* 'to roll' is to be reconstructed as ***krjon?*** (26.3B); the *xiéshēng* connection of 卷 ~ 鬈 ****g^{w}rjen*** 'handsome' with 卷 ****krjon?*** 'to roll' is probably late, reflecting the changes **rounding diphthongization** and ****r*-color**; see section 10.1.1.

277. The *Jīngdiǎn shìwén* assigns the same reading also in 145.2, attributing it to the Máo tradition, which of course takes 簡 *jiān* to mean 蘭 ****g-ran*** there as well.

278. According to the *Jīngdiǎn Shìwén,* the Hán *Shī* 韓詩 has 洹 *huán* < *hwan* for 渙 *huàn* here; this is also to be reconstructed with ****-an***. Karlgren lists other variant graphs as well (1942–1946 [1964], gloss 243).

279. It is also possible that the Máo tradition has not been faithfully preserved here, and that, as a Qīng scholar would say, a "shallow person [*qiǎn rén* 淺人]" transferred Máo's gloss for Ode 95.1 to Ode 145.2.

280. See Odes 54.2A, 58.6A, 220.3A, 223.1A, 253.5B, and 274.1B. Ode 58.6 appears to include one ****-on*** word, but is otherwise ****-an***; it seems to be a genuine exception to the principle that ****-on*** and ****-an*** rhyme separately. In Ode 274.1B, 反 *fǎn* rhymes with 簡, normally *jiǎn* < *kɛnX* < ****kren?*** 'bamboo strip', but here 簡簡 means "great", not "bamboo strip"; I suspect that the apparent irregular rhyming of ****-an*** and ****-en*** is a result of textual corruption (see section 10.1.1).

281. "Zhí jīn rì chuán kè zhī shū ér yǐ wéi shì gǔ rén zhī zhēn běn, pì yóu wén rén yán sǔn kě shí guī ér zhǔ qí zé yě 執今日傳刻之書而以爲是古人之真本, 譬猶聞人言筍可食歸而煮其簣也" (quoted by Yú Xǐngwú 1962: 144).

282. Calculating exactly how likely this is, for various kinds of samples, is a rather complex mathematical problem, which I have not solved. Clearly, the answer depends in part on the size of the sample, and in part on how frequent individual words are in the sample. To take an extreme example, suppose a sample consisted of a hundred couplets, and suppose no rhyme word in the sample occurred more than once. Then the two hundred words of the sample could be divided into two nonoverlapping groups in any number of ways (actually, in any of $2^{100} - 1$ ways, a very large number); moreover, if we applied our statistical tests to groups so defined, the rhyming distinction will always appear significant. In samples where some words have higher frequencies, this is less likely to happen.

283. *Shǎngshēng* words which are reconstructed with stop codas on etymological grounds (such as 彩 *cǎi* < *tshojX* < **sri(k)?* 'color', so reconstructed because of an assumed relation to 色 *sè* < *srik* < **srjɨk* 'color') usually rhyme with *shǎngshēng* words rather than *rùshēng* words in the *Shījīng*, which could mean that **-k?* had already become **-?* in such words. Since my purpose in this chapter is to analyze rhyming of the *Shījīng* period, I include such words in *yīnshēng* categories rather than *rùshēng* (in this case, in **-ɨ* rather than **-ɨk*).

284. These equivalences are approximate, since the reconstructions do not correspond one-to-one. For example, I list Karlgren's **-ân* as the equivalent of my **-an* (since Karlgren's **Kân* corresponds to my **Kan*), and his **-wân* as the equivalent of my **-on* (since Karlgren's **Twân* corresponds to my **Ton*). These correspondences usually hold, but Karlgren's **-wân* can also correspond to my **-an* (e.g. Karlgren's **Pwân*, my **Pan*). For details of other reconstructions, one must consult the works of the respective authors.

285. In Pulleyblank's reconstructions, raised *r*, *j*, and *w* are not segments but cover symbols for the influence of features in nearby consonants; Pulleyblank calls them "umlauts" (1977–1978: 184). Thus a raised *w* could indicate influence from a preceding labial or labiovelar; a raised *j* could indicate influence from a preceding palatal or palatalized initial. The details of Pulleyblank's initial consonants and the umlauts they produce have not been published.

286. In general, Li Fang-kuei reconstructed **-jian* as the source of both *chóngniǔ* finals *-jen* (III) and *-jien* (IV). It is not clear to me whether Pulleyblank would reconstruct distinctions parallel to my **-jan* ≠ **-jen* distinction after acute initials, or my **-rjan* ≠ **-rjen* after grave initials.

287. *Hékǒu* words beginning with *TS-* and *TSr-* initials are phonologically ambiguous because they could reflect syllables like **SK^{w}(r)jen* (with metathesizing **S-*; see section 6.2.3.2), where the rounding comes from the initial cluster rather than the main vowel. Similarly, MC *ywen* could reflect **wjen*, with regular palatalization of **wj-* before a front vowel; see section 6.1.6.

288. Although I consider *-æn* to be the regular reflex of **-ran* and *-ɛn* the regular reflex of **-ren*, these finals are unreliable indicators of **-an*

and **-en* because of their early merger in some dialects (see section 9.3.1).

289. In tables such as this, the figures for rhyme occurrences include all occurrences of unambiguous syllables, even when they occur in rhyme sequences where all the other words are phonologically ambiguous. Such rhyme sequences are not included when counting unambiguous rhyme sequences, however. For example, 悁 *yuān* < *ʔjwien* (IV) 'grieved', which is an unambiguous **-en* word, rhymes in Ode 145.2A with two phonologically ambiguous words. This is counted in Table 10.7 as an occurrence of unambiguous **-en*. However, Ode 145.2A is not counted in Table 10.8 among the rhyme sequences involving unambiguous words, since it includes only one such word. (It turns out that the two ambiguous words in the sequence should also be reconstructed with **-en,* however.) Middle Chinese readings are based on the *Guǎngyùn* or *Qièyùn* and the *Jīngdiǎn shìwén*. Only tonally regular sequences are counted; for example, in counting *píngshēng* sequences, I do not count the unambiguous **-an* words 翰 *hàn* < *hanH* and 憲 *xiàn* < *xjonH*, even though they seem to rhyme consistently as *píngshēng*. I exclude them to avoid circularity, since the judgment that they were originally *píngshēng* words rests on rhyme evidence. Excluding them does not introduce any bias, except in favor of the null hypothesis, for they rhyme consistently as **-an*; including them would make the case for separating **-en, *-an,* and **-on* even stronger.

290. The individual *píngshēng* sequences are: two-word **-en* sequence, 97.1A; two-word non-**-en* sequences, 39.3A, 58.2A, 86.1A, 184.1B–2B, 197.8A, 200.4A, 219.1A, 241.8A, 250.5B, 253.5A, 254.7A, and 305.6A; three-word non-**-en* sequences, 56.1A, 69.1A, 76.3A, 147.1A, 164.3A, 177.5A, and 250.2A; four-word non-**-en* sequence, 112.1A. The *shǎngshēng* sequences are: two-word non-**-en* sequences, 42.2A, 89.1A, 102.3A, 106.3A, 151.4C, 165.3A, 169.3B, 223.1A, and 253.5B; five-word non-**-en* sequence, 254.1A. The *qùshēng* sequences are: two-word **-en* sequence, 298.3A; two-word non-**-en* sequences, 34.3A, 75.1B–3B, 82.1A, 106.3B, 215.3A, 259.7A, and 263.5A; three-word **-en* sequence, 217.3B; three-word non-**-en* sequences, 124.3A and 250.6A; five-word mixed sequence, 58.6A.

291. The 0.95 confidence interval for **P**[*-*on*] in *píngshēng* extends from 1/80 = 0.0125 to 8/80 = 0.100; the 0.95 confidence interval for **P**[*-*on*] in *shǎngshēng* extends from 2/18 = 0.111 to 10/18 = 0.556; the 0.95 confidence interval for **P**[*-*on*] in *qùshēng* extends from 1/50 = 0.020 to 8/50 = 0.160.

292. The *píngshēng* sequences are: two-word *-*on* sequence, 147.1A; two-word non-*-*on* sequences, 39.3A, 76.3A, 86.1A, 111.1A, 139.3A, 145.2A, 164.3A, 189.1A, 197.8A, 200.4A, 220.3A, 253.5A, and 256.7A; three-word non-*-*on* sequences, 58.2A, 69.1A, 97.1A, and 177.5A; four-word non-*-*on* sequences, 125.1B–3B and 241.8A; five-word non-*-*on* sequence, 112.1A; and six-word non-*-*on* sequence, 305.6A. The *shǎngshēng* sequences are: two-word non-*-*on* sequences, 165.3A and 254.1A. The *qùshēng* sequences are: two-word *-*on* sequence, 250.6A; two-word non-*-*on* sequences, 34.3A, 171.2A, 215.3A, 241.5A, 254.8D, 259.7A, 263.5A, and 298.3A; three-word non-*-*on* sequences, 80.3A, 82.1A, 124.3A, 217.3B; four-word non-*-*on* sequence, 58.6A.

293. I include "*ʔ*" in parentheses here because this word sometimes rhymes as *píngshēng*, sometimes as *shǎngshēng*.

294. In fact, the Fùyáng *Shī* has 筦 **kon?* in Ode 42.2 where the Máo version has 管 (Hú Píngshēng & Hán Zìqiáng 1988: 56, fragment S048).

295. The character 甕 appears not to have a separate entry in Zhōu Fǎgāo et al. (1974a), but the character occurs on the vessels Chén Chén Yǒu 辰臣卣 (number 2730) and Chén Chén Hé 辰臣盉 (number 1951), quoted in Zhōu Fǎgāo et al. (1974a, item 0223).

296. The *Yìjīng* rhymes are in the *xiàng* sections under hexagrams 11, 52, and 58.

297. Karlgren here erroneously writes *liǎn* (= MC *ljen*) instead of *lien* (= MC *len*) for the Middle Chinese reading of 蓮 *lián*.

298. Present texts of the *Shuōwén* say that 卬 is the *gǔwén* 古文 'ancient character' for 礦 [*kuàng*] < *kwængX* < **k^{w}rang?* 'ore', but this is refuted by Duàn Yùcái (Dīng Fúbǎo 1928–1932 [1976]: 4177). The *Shuōwén*'s statement is based on a passage in the *Zhōu lǐ* where 卬 is used as a loan for 礦—a substitution which probably occurred after **rounding diphthongization**.

299. In general, Li reconstructs a single final **-jiat* as the origin of the *chóngniǔ* finals *-jet* (III) and *-jiet* (IV). It is not clear to me whether Pulleyblank would reconstruct distinctions parallel to my **-jat* ≠ **-jet* distinction after acute initials, or my **-rjat* ≠ **-rjet* after grave initials.

300. The *Jīngdiǎn shìwén* says that here it is to be read *bèi* < *bajH*, implying OC **bots*, but even if this is so, 拔 *bèi* < *bajH* < **bots*, which Karlgren glosses as "thinned out", is probably cognate to 拔 **brot* 'pull out'.

301. The individual rhyme sequences are: two-word **-et* sequence, 192.8A; two-word non-**-et* sequences, 8.2A, 16.1A, 31.4A, 31.5A, 72.1A, 102.2B, 149.1B, 150.3A, 154.1B, 202.5A, 218.1A, 245.2A, 255.8A, 260.3B, and 290.1E; three-word non-**-et* sequences, 14.2A, 91.3A, 99.2A, and 225.2A; five-word mixed sequence, 304.2A; six-word mixed sequence, 304.6A.

302. The individual *rùshēng* sequences are: two-word **-ot* sequences, 8.2A, 14.2A, 225.2A; two-word non-**-ot* sequences, 62.1A, 66.2A, 102.2B, 149.1A, 154.1B, 167.2C, 192.8A, 203.7B, and 218.1A; three-word non-**-ot* sequences, 57.4A, 304.2A; six-word non-**-ot* sequence, 304.6A. The individual *qùshēng* sequences are: two-word **-ots* sequences, 23.3A and 237.8C; two-word non-**-ots* sequences, 34.1B, 44.2A, 63.2A, 111.2A, 182.2A, 224.2B, 225.4A, 255.8A, and 264.1B; three-word non-**-ots* sequence, 300.5C; four-word non-**-ots* sequence, 253.4A.

303. Actually, the method of section 3.2.6 applies when there are no mixed sequences, and one unmixed sequence from the less common group. It would be even better to calculate the probability of getting three unmixed sequences from the less common group (in *rùshēng*) or two unmixed sequences from the less common group (in *qùshēng*), as we find in this sample. But these calculations would be rather quite complex. It will be sufficient for our purposes to calculate in both cases the probability of the more inclusive event that there will be no unmixed sequences, and at least one unmixed **-ot(s)* sequence.

304. For example, 接 *jiē* rhymes in *Chǔ cí* 楚辭: *Guó shāng* 國殤 with 甲 *jiǎ* < *kæp* < **krap*, and in the *Yìjīng* (13, *Xiàng zhuàn* 象傳) with 法 *fǎ* < *pjop* < **pjap*. 際 *jì* **tsjats* < **tsjaps* rhymes as **-ats* in the *Yìjīng* (*Tài* 14306) with 外 *wài* < *ngwajH* < **ng^{w}ats* and 大 *dà* < *daH* ~ *dajH*

< **lats* (see Zhū Jùnshēng 1833, quoted in Dīng Fúbǎo 1928–1932 [1976]: 5419).

305. It is also possible that whoever composed Ode 299 was imitating an earlier poetic style and vocabulary that he no longer fully understood or controlled.

306. In Li's system, the vowel **ə* becomes rounded in syllables where both initial and coda are acute.

307. The *Bèi fēng* 邶風S, *Yōng fēng* 鄘風, and *Wèi fēng* 衛風 were all referred to as *Wèi fēng* 衛風 in early times, and the division into these three parts may be artificial (Qū Wànlǐ 1983a: 41–42); but as this poem refers to the 河 Hé (= Huánghé, the Yellow River), it probably originates in the northern part of the Wèi 衛 area in any case.

308. This does not necessarily imply that the phonetic 弭 always indicates **-ej*; 瀰 *mǐ* in Ode 43.1 may originally have been written as 泮 (see Qū Wànlǐ 1983a: 42).

309. This is according to the Xiǎo Xú version of the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 5579).

310. Karlgren decided that the interpretation of 摧 *cuī* as a loan character for 莝 *cuò* was wrong (Karlgren 1942–1946 [1964], gloss 696) because his reconstruction made it appear that 莝 *cuò* < **tshojs* (his **ts'wâ*) and 綏 *suí* < **snjuj* (his **sn̥jwər*) were phonologically too remote from each other.

311. There are also two rhyme sequences (chapters 10 and 28) where **-jaj* rhymes with **-je*, suggesting that the fronting of **-aj*—which led to the absence of labiodentalizing finals in this group (see above)—had already begun.

312. Although the development of the Middle Chinese form of 隳 *huī* < *xjwie* (IV) 'destroy' is not entirely clear, its final must be **-oj*. The MC *x-* initial here seems to be a dialect development of **hl-*, for this *xiéshēng* series is an **l-* initial type, with final **-oj*; cf. the alternate graph 墮 'dismantle, destroy the walls', read both *duò* < *dwax* < **loj?* and *huī* < *xjwie* (IV) < **hljoj*. The fact that the initial was originally acute is probably responsible in some way for the division-IV *chóngniǔ* final *-jwie*.

313. Li assumed that **-ən* developed a *hékǒu* glide *-w-* after acute initials; thus the source of MC *-ɛn* in his system is **-rən* after grave initials but **-riən* after acute initials.

314. The *píngshēng* sequences are: two-word **-in* sequences: 5.1A, 40.1A, 155.1A, 248.5A, and 257.4A; four-word **-un* sequence, 112.3A. *Qùshēng*, two-word **-in* sequence: 197.6A.

315. For example, it rhymes as **-in* in chapters 4 and 6 of *Lǎozǐ*.

316. Some versions of the text have 眄 *xì* < *hejH* or *ngejH* instead of 盼 *pàn* (e.g. Harvard-Yenching Institute 1934 [1962]: 12), but I follow the usual view that this is a scribal error (Xiàng Xī 1986: 327–28).

317. Wáng Xiānqiān (1915 [1973]: 103) says this is the text of the Lǔ version.

318. The rhyme sequences are in chapters 4 and 56, which are consistently **-in* words according to my reconstruction. However, since *Lǎozǐ* sometimes appears to rhyme **-in* and **-in* together, it may not give reliable evidence on this distinction.

319. Karlgren did not reconstruct a source for the Middle Chinese division-II final *-ɛt* in this group. For example, he reconstructed 黠 *xiá* < *hɛt* < **grit* 'shrewd' as **g'ăt* (Karlgren 1957, item 373v), as if it were in the traditional 月 Yuè group, even though its phonetic element 吉 *jí* < *kjit* (IV) < **kJit* 'auspicious', Karlgren's **kịĕt*, is in the 質 Zhì group. By analogy to other groups, we would expect a reconstruction **g'ĕt* instead of **g'ăt*.

320. The 0.99 confidence interval for **P**[**-it*] (*rùshēng*) extends from 0/6 = 0.00 to 3/6 = 0.50; the 0.95 confidence interval for **P**[**-its*] (*qùshēng*) extends from 8/26 = 0.308 to 18/26 = 0.692.

321. The *rùshēng* sequence is 29.4A (unmixed **-ut* sequence). The *qùshēng* sequences are: two-word **-its* sequences, 35.6B, 251.3A, and 257.6B; two-word **-uts* sequences, 194.4A and 257.13A; four-word **-uts* sequence, 255.3A.

322. The traditional term for this is *Wù Zhì hé yùn* 物質合韻 'rhymes mixing 物 Wù and 質 Zhì'.

323. Note the irregular aspirate initial in the modern pronunciation, probably reflecting anachronistic interpretation of the *fǎnqiè* spelling 秦醉切 *dzin* (aspirated in Mandarin) + *tswijH* = *dzwijH*.

324. Alternatively, we could reconstruct 棣 **lups*, remaining in some dialects and dissimilating to **lips* in others.

325. Note that 涖 *lì* < *lijH* < **C-rjips* 'arrive' here might represent the same root as 逮 *dài* < *dojH* < **(g-)lips* 'reach to', cited above, with dialect confusion of **r* and **l*.

326. The initial of 位 *wèi* < *hwijH* is still a problem. On the possibility that **r-* became **wr-* or **ɦwr-* in some dialects, see Bodman (1980: 87–89).

327. Wáng Lì was influenced by several earlier scholars who had seen the possibility of further subdividing Jiāng Yǒugào's 脂 Zhī group, including Zhāng Bǐnglín and Huáng Kǎn; see Wáng Lì 1937 [1980]: 141–48.

328. Wáng Lì's proposal was not accepted by Karlgren, however, who had already formulated large parts of his Archaic Chinese reconstruction at the time Wáng Lì's paper appeared.

329. There are also a few words assigned by Wáng Lì to the 微 Wēi group which I reconstruct with the 脂 Zhī-group rhyme **-ij*, such as 維 *wéi* < *ywij* < **wjij* 'to bind'.

330. Middle Chinese *-oj* does occur with initial types other than **K-*, but such syllables all come from other groups (e.g. 臺 *tái* < *doj* < **li* 'tower', from the traditional 之 Zhī group).

331. Actually, the Middle Chinese contrasts in the 脂 Zhī and 微 Wēi groups could be accounted for with only a two-way vowel contrast: one could reconstruct, say, **-ij* in both 稽 *qǐ* < *khejX* and 妻 *qī* < *tshej*, and **-ij* in both 豈 *kǎi* < *khojX* and 崔 *cuī* < *tshwoj*, with a rule rounding **-ij* to MC *-woj* after acute initials. (This is basically what Li's system does with the finals **-id* and **-əd*.) But three main vowels are necessary to account for *Shījīng* rhyming, for words like 豈 *kǎi* and 崔 *cuī* do not regularly rhyme with each other in the *Shījīng* (even when they are in the same tone).

332. Wáng Lì did not make clear how this criterion applied to labial-initial words; for example, he listed 眉 *méi* < *mij* (III) 'eyebrow' as a 脂 Zhī word, and 悲 *bēi* < *pij* (III) 'sad' as a 微 Wēi word (1937 [1980]: 143).

333. The exact figures differ in different printings of the paper. The 1980 version (1937 [1980]: 146) lists 110 rhymes, of which eighty-four are

unmixed and twenty-six are mixed. Wáng Lì's statement summarizing this evidence is quoted near the beginning of section 3.2 above.

334. Of course, MC *-en* can come from the 元 Yuán group also (my **-en*), so it has three different origins; see Chapter 7, section 7.1.3.

335. Wáng Lì recognized that 西 *xī* < *sej* < **sɨj* 'west' was an exception, but he accounted for it by assigning it not to 微 Wēi but to 文 Wén (1937 [1980]: 137).

336. The same word, written as 隋, rhymes with **-ɨj* in 51.2A (a line-internal rhyme not recognized by Wáng Lì) and in 151.4B with the **-ɨj* word 飢 *jī* < *kɨj* 'hungry'. Wáng Lì treated this last sequence as a regular 脂 Zhī rhyme because he (erroneously) assigned 飢 *jī* to the 脂 Zhī rhyme also. Dǒng Tónghé correctly assigned 飢 *jī* to the 微 Wēi group.

337. The other rhyme word in 138.1A is 飢 *jī*, mentioned in the previous note as rhyming with 隋 *jī* < **tsɨj* 'ascend'.

338. The rhyme sequences are listed below. Of Wáng Lì's twenty-six irregular sequences, twenty-one are regular in my reconstruction (and some of the remaining irregularities may be due to late characters in the text; see below). Of the fifteen irregular cases which he eliminated by reanalysis, eleven are regular in my reconstruction. At the same time, eight sequences on his list of the remaining sixty-eight regular sequences become irregular in my reconstruction.

339. A parallel dissimilation after **K^{w}-* could explain the irregular rhyming of 歸 *guī* < *kjwɨj* < **k^{w}jɨj* (< **k^{w}juj*?) 'return'; see discussion below.

340. We find a significant rhyming distinction between **-ɨj* and **-uj* no matter which of the two definitions of 微 Wēi we use. Using my 微 Wēi group instead of Wáng Lì's adds to the number of unambiguous cases of **-ɨj*, and it increases the number of unmixed rhyme sequences in **-ɨj*. This would tend to make the rounded-vowel hypothesis look better than under Wáng Lì's proposal. But this tendency is offset to some extent by the fact that in my analysis, the relative probability of a **-ɨj* rhyme word is greater than in Wáng Lì's, so that unmixed **-ɨj* sequences are more likely to occur by chance.

341. The individual *píngshēng* sequences are: two-word **-uj* sequences, 3.2A, 178.4B, 258.3A; two-word **-ɨj* sequences, 57.1A, 100.2A, 167.6A, and 195.2A.

342. The other rhymes of 弟 *dì* are less clear. The sequences 71.1A–3A, 92.1A–2A, and 183.1A, where 弟 *dì* seems to rhyme as **-uj*, are discussed below. In 209.5C, 弟 *dì* may rhyme as **-ɨj*, but it is not clear that it is intended as a rhyme. When used for the second syllable of the rhyming binome 豈弟 *kǎi[tì]* < *khojX-dejX* < **khɨj-dɨjX* 'joyous and pleased', the character 弟 seems to rhyme consistently as **-ɨj* (105.2A, 173.3A, 239.1A).

343. See Odes 2.3A, 13.3B, 28.1A–3A, 36.1A–2A, 41.2A, 88.4A, 147.2A, 154.2C, 156.1B, 156.4B, 159.4A, 162.1A, 162.2A, 167.1A–3A, 168.6A, 169.2C, 174.1A, 204.2A, 209.5C (with a possible case of **-ɨj*; see above), 259.6A, 260.8A, 263.6D, and 298.2B.

344. See 3.2A, 30.4A, 156.2E, 164.2A, and 201.2A.

345. If this hypothesis is correct, then 榛楛濟濟 *zhēn hù jǐjǐ* in Ode 239.1A should be interpreted to mean "the hazels and *hu* trees are stately", not "the hazels and *hù* trees are numerous", because 濟濟 *jǐjǐ* < *tsejX-tsejX* rhymes here as **-ɨj?*.

346. The *Guǎngyùn* also gives a *rùshēng* reading *bok* for 扑 *pū*. MC *bok* would normally represent **bɨk*, so perhaps this reading reflects the same dialect change of **o* to **ɨ* that we find in the *Shījīng*.

347. Schuessler (1987: 647) reconstructs 毋 *wú* as **mjə*, presumably because of its connection with 母, which he reconstructs as **mə?*. But this makes the Middle Chinese reading of 毋 *wú* < *mju* irregular, for Schuessler's **mjə* regularly becomes MC *m(j)uw*, not *mju*; cf. 謀 *móu* < *muw* < *mjuw* < **mjɨ*, Schuessler's **mjə*.

348. In 213.2, some versions of the Máo text have the character 鞞 instead of 鞸 (Xiàng Xī 1986: 832), but this must be a scribal error.

349. The connection between 畝 *mǔ* 'acre' and "plow" may be that a *mǔ* was a unit of plowing of some kind. In spite of the usual gloss "acre", early texts suggest that the notion of plowing may have been primary in early Chinese texts; 畝 *mǔ* is frequently used as a verb (usually interpreted as "to lay out acres"), and the interpretation of the phrase 畝丘 *mǔ qiū* (Ode 200.7) as "acred hill" (Karlgren) seems strained. For a somewhat similar semantic development, compare the English *acre*, meaning in Old English "an area of land which can be plowed with a pair of oxen in a single day", from an earlier meaning "field" (Pokorny 1989: 6).

350. So Zhōu Zǔmó (1983: 92); see also Luó & Zhōu (1958: 18), Juhl (1974: 422).

351. In acute-initial syllables, my **-rjɨ* corresponds to Li's **-rjəg* and Pulleyblank's **-ˤəɣ*; but I also assume that there were syllables **Krjɨ* (indistinguishable in Middle Chinese from **Kjɨ*), where Li and Pulleyblank would presumably have **-jəg* and **-əɣ* respectively.

352. Karlgren (1957, item 1037a) reconstructs this word as **mi̯ôk*, which places it in the 覺 Jué group (my **-uk*). This is an error; it clearly rhymes as **-ɨk* in Ode 168.1A, and Zhū Jùnshēng (1833) records another **-ɨk* rhyme from the *Zhōu shū* 周書 (quoted in Dīng Fúbǎo 1928–1932 [1976]: 1373).

353. This is mentioned by Zhōu Zǔmó (1984: 89), but he places it in chapter 27. This seems to be an error; it is in chapter 30 according to Mǎwángduī Hàn Mù Bóshū Zhěnglǐ Xiǎozǔ (1976: 92).

354. According to Duàn Yùcái, characters like 耶 have 耳 substituted for 牙 as a graphic corruption; see Dīng Fúbǎo (1928–1932 [1976]: 2868).

355. It is possible that the use of 牙 **ngra* as a phonetic for **ra* originated in a confusion between **C-rang-ra* and **C-rang-ngra* in the pronunciation of the place name 琅邪. But note that we find a similar **ngr-* ~ **r-* alternation in 藥 *yào* < *yak* < **rawk* 'to give medicine, cure', whose phonetic is 樂 *yuè* < *ngæwk* < **ngrawk* 'music', also read *lè* < *lak* < **g-rawk* 'happy, glad; rejoice'.

356. The *Jīngdiǎn shìwén* also records for 車 a reading *khjo* < **kh(r)ja* in *Lǎozǐ*; this reading is also mentioned by Duàn Yùcái in his commentary on the *Shuōwén* (Dīng Fúbǎo 1928–1932 [1976]: 6399). A reading *khjo* is easier to relate to *tsyhæ* < **KHjA* than is *kjo*. It is possible that we have a minor sound change **khrj-* > *tsyh-* here and also in 赤 *chì* < *tsyhek* < **KHjAk* (**khrjak*?); see below. It is conceivable that the reading *kjo* in the reading tradition is originally a lexicographical ghost based on the *Shìmíng*'s sound gloss 居 *jū* < *kjo* < **k(r)ja*.

357. Recall that upper-case **KH-* indicates an exceptional "palatalizing" velar. In Li's system, 赤 *chì* < *tsyhek* would be **khrjak* (1976 [1980]: 92); Gong Hwang-cherng (1980: 464) compares this with Tibetan *khrag* 'blood'.

358. The **sng-* cluster in 朔 *shuò* is confirmed by the phonetic 屰 *nì* < *ngjæk* < **ngrjak*, and by cases where 蘇 *sū* < *su* < **snga*—with phonetic 魚 **ngja*—is used as a sound gloss for 朔 *shuò*, as in the *Shuōwén*, the *Bái hǔ tōng yì*, and the *Shìmíng*; see Dīng Fúbǎo 1928–1932 [1976]: 2995.

359. Original unrounded vowels were also unaffected if they became rounded before ***r-color**; recall the example of 筥 *jǔ* < *kjoX* < **krjo?* < **krja?* 'round basket' in the **-a* group, section 10.2.4.2 above.

360. Cf. also the possibly related **e/o* binome 迟曲 *xìqū* < *khjæk-khjowk* < **khrjek-kh(r)jok* 'crooked walking' (section 10.2.8), where the **-r-* in the first syllable suggests that there was probably also an **-r-* in the second.

361. Karlgren erroneously included words with this final in the 之 Zhī group. Thus Karlgren's **Kɨwəg* corresponds to both my **K^{w}rji* (Li's **Kwjiəg*) and my **K^{w}rju* (Li's **Kwjiəgw*). An example of the latter is 軌 *guǐ* < *kwijX* < **k^{w}rju?* 'wheel axle ends'; Karlgren reconstructs it as **kɨwəg*, but it rhymes in Ode 34.2B as **-u?* (his **-ôg*). Because of *xiéshēng* connections, Karlgren also reconstructs some words with **-ɨŭg* which should have **-ɨôg* in his system; an example is 九 *jiǔ* < *kjuwX* < **k(*^{w}*)ju?* 'nine', which Karlgren reconstructs as **kɨŭg*, as if from the 之 Zhī group.

362. Karlgren assigned the MC final *-jiw* (Ancient Chinese *-ɨĕu*) to the 宵 Xiāo group rather than the 幽 Yōu group.

363. As I pointed out in Baxter (1986b: 273–75), *fǎnqiè* spellings from the original *Yùpiān* (studied by Zhōu Zǔmó 1966a) suggest that some Early Middle Chinese dialects kept *-jiw* and *-juw* distinct after acute initials as well as grave initials. This question deserves further study.

364. As I mentioned in Baxter (1986b: 276, note 11), Old English *cēosan* 'to choose' underwent a similar shift to become Modern English *choose*.

365. The *píngshēng* sequences are: two-word **-u* sequences, 1.1A, 7.2B, 9.1A, 39.4B, 54.1B, 65.1C–3C, 70.2A, 157.3A, 164.2B, 176.4A, 193.8B, 243.2A, 250.4B, and 264.6B; two-word **-iw* sequence, 117.1B–2B; two-word mixed sequences, 215.4A and 292.1B. Three-word **-u* sequences: 133.1B, 223.8A, and 262.1A. Four-word **-u* sequences: 114.3B, 253.2A, and 304.4A. The *shǎngshēng* sequences are: two-word **-iw* sequences, 289.1A, 291.1C; two-word **-u*

sequences, 34.2B, 46.1A, 75.2A, 78.3A, 82.2B, 136.3A, 143.2A, 154.6B, 154.8B, 174.2A, 195.3A, 200.5A, 210.5A, 212.2A, 217.3A, 234.4B, 257.6D, 260.3A, 261.1B, 282.1C, 283.1B, 286.1A, and 299.3A. Three-word **-u* sequences: 97.2A, 179.2A, 180.1A, 245.5A, and 259.5B. Four-word **-u* sequences: 115.2A, 165.2B, and 197.2A.

366. Karlgren's theory of labiodentalization, which is approximately that it was triggered by the medial combination *-jw-*, might provide a more natural account in this case. To make Karlgren's theory consistent with the theory that *-w-* was not contrastive after labial initials, one could assume that *-w-* was inserted phonetically in the environment **P(j)* ___ [+ back], that is, between initial **Pj-* and a back vowel; then labiodentalization applies to initial **Pjw-*. So far, this would be equivalent in its effects to the back-vowel version of labiodentalization that I have been assuming. But if medial *-w-* was lost through dissimilation in syllables like **Pjwaw* before labiodentalization had a chance to apply (or if it never developed in that environment in the first place), then the failure of original **Pjaw* to labiodentalize would be accounted for. The failure of **Pjaj* to labiodentalize would require a separate explanation.

367. The *píngshēng* sequences are: two-word **-aw* sequences, 57.3A, 113.3B, 181.3A, 193.7A, 202.1A, and 232.1A; two-word **-ew* sequences, 85.2B, 149.2A, and 155.4A; two-word mixed sequences, 142.1A and 254.3A; three-word **-aw* sequence, 179.3A; three-word mixed sequences, 161.2A and 210.5B. The *shǎngshēng* sequences are: two-word **-aw* sequences, 15.1B and 221.1A–3A; two-word **-ew* sequence, 143.1A.

368. I do not know why these are not homonyms in modern standard pronunciation; they are homonyms in some varieties of Mandarin, as they are in Middle Chinese. It is conceivable, though not likely, that the *lè / luò* distinction somehow reflects the original **-awk / *-ak* distinction.

369. In Ode 47.2A, 翟 *dí* < *dek* < **lewk* rhymes as **-ek*, but it may be a loan for 狄 *dí* < *dek* < **lek* (Qū Wànlǐ 1983a: 86). The substitution of 翟 **lewk* for 狄 **lek* reflects the change ****-wk* > *-k*** (see Appendix A).

370. Coblin (1986: 128) follows Li's reconstruction 鹽 **grjam* and derives Tibetan *rgyam-tshwa* from Pre-Tibetan **gryam*; but according to Li, Tibetan *rgy-* can also represent **ry-*; see Li (1959).

371. On the likelihood of a **K-l-* initial cluster in the *xiéshēng* series of 酋 *dàn*, see Bodman (1980: 110).

372. This is a departure from my earlier views cited by Bodman (1980: 118–19).

373. The 會 *huì* ~ 合 *hé* example, and many of the others cited below, are mentioned by Yú Mǐn (1948).

374. This assumes Duàn Yùcái's emendation of 桑 to 桑 (Dīng Fúbǎo 1928–1932 [1976]: 67).

375. A few words of this rhyme group, such as 風 *fēng* < *pjuwng* 'wind', have the Middle Chinese final *-juwng* (of the *Qièyùn*'s 東 Dōng rhyme); see discussion below.

376. As we shall see below, there is also evidence of such a distinction in the parallel *rùshēng* group 緝 Qī.

377. The only **-ng* word in 236.7B is 興 *xīng* < *xing* < **x(r)jing* 'arise', and this may be an error in the text; the Xīpíng stone classics, said to represent the Lǔ *Shī*, have 歆 *xīn* < *xim* < **x(r)jim* 'elated' instead (Ogawa 1960 [1977]: 18). But even if 興 *xīng* is a substitute character, the fact that a character with an unrounded vowel was substituted may indicate **-im* in this sequence, rather than **-um*; and it is consistent with the fact that 興 *xīng* also rhymes with **-im* in 245.3B (see below).

378. Some doubt is cast on this reconstruction by the fact that the Xīpíng stone classics (A.D. 175) have 今 *jīn* < *kim* in Ode 35.3 where the Máo version has 躬 *gōng* < *kjuwng* < **k(r)jung* (see Ogawa 1960 [1977]: 13). But this could simply reflect the effects of **labial neutralization** at the time of the substitution, and does not necessarily mean that the vowel of 今 *jīn* was rounded in Old Chinese times.

References

Ānhuī Shěng Wénwù Gōngzuò Duì 安徽省文物工作队 [Ānhuī province cultural relics work team] et al.

1978 "Fùyáng Shuānggǔduī Xī Hàn Rǔ Yīn hóu mù fājué jiǎnbào 阜阳双古堆西汉汝阴侯墓发掘简报" [Brief report on the excavation of the Western Hàn tomb of the marquis of Rǔ Yīn, at Shuānggǔduī, Fùyáng], *Wénwù* 文物 [Cultural relics], 1978, no. 8: 12–31.

Arisaka Hideyo 有坂秀世

1937–1939 [1957] "Karlgren-shi no yō'onsetsu o hyōsu カルグレン氏の拗音説を評す" [A critical study on Karlgren's medial *i* theory], in: *Kokugo on'inshi no kenkyū* 国語音韻史の研究 [Studies on the historical phonology of the national language], revised and enlarged by Kindaichi Kyōsuke 金田一京助, 327–57. Tokyo: Sanseidō. [See Arisaka 1962 for English translation.]

1962 "A critical study on Karlgren's medial *i* theory", *Memoirs of the Research Department of Tōyō Bunko* 21: 49–75. Translation by Kōno Rokurō 河野六郎 of Arisaka 1937–1939 [1957].

Ballard, W. L.

1969 Phonological history of Wu. [Unpublished Ph.D. dissertation, University of California, Berkeley.]

Barnard, Noel

1978 "The nature of the Ch'in 'Reform of the Script' as reflected in archaeological documents excavated under conditions of control", in: David T. Roy & Tsuen-hsuin Tsien (eds.), *Ancient China: studies in early civilization,* 181–213. Hong Kong: The Chinese University Press.

Baudouin de Courtenay, J. [Boduèn de Kurtenè]

1903 [1963] "Lingvističeskie zametki i aforizmy" [Linguistic notes and aphorisms], in: *Izbrannye trudy po obščemu jazykoznaniju* [Selected works on general linguistics], edited by O. G. Bar-

xudarov, vol. 2, 33–55. Moscow: Izdatel'stvo Akademii Nauk SSSR.

Baxter, William H. [Bái Yīpíng 白一平]

1977 Old Chinese origins of the Middle Chinese chóngniǔ doublets: A study using multiple character readings. [Unpublished Ph.D. dissertation, Cornell University.]

1979 "Studies in Old Chinese rhyming: some further results", paper presented to the 12th International Conference on Sino-Tibetan Languages and Linguistics, Paris, October 19–21.

1980a "Old Chinese **-ij*, **-ɨj*, and **-uj*", paper presented to the 13th International Conference on Sino-Tibetan Languages and Linguistics, Charlottesville, Virginia, October 24–26.

1980b "Some proposals on Old Chinese phonology", in: Frans van Coetsem & Linda R. Waugh (eds.), 1–33.

1982 "Computer-assisted statistical study of Old Chinese rhyming", paper presented to the 15th International Conference on Sino-Tibetan Languages and Linguistics, Beijing, August 17–19.

1983a "A look at the history of Chinese color terminology", *Journal of the Chinese Language Teachers Association* 19: 1–25.

1983b "Shànggǔ Hànyǔ **sr-* de fāzhǎn 上古汉语 *sr- 的发展" [The development of Old Chinese **sr-*], *Yǔyán Yánjiū* 语言研究 [Language research] 4: 22–26.

1984 "Reconstructing Old Chinese: the Bodman-Baxter system", paper presented at the 17th International Conference on Sino-Tibetan Languages and Linguistics, Eugene, Oregon, September 7–9.

1985 "Tibeto-Burman cognates of Old Chinese **-ij* and **-ɨj*", in: Graham Thurgood, James A. Matisoff, & David Bradley (eds.), 242–63.

1986a "New rhyme categories for Old Chinese", paper presented at the 19th International Conference on Sino-Tibetan Languages and Linguistics, Columbus, Ohio, September 11–14.

1986b "Old Chinese **-u* and **-iw* in the *Shī-jīng*", in: John McCoy & Timothy Light (eds.), 258–82.

1987a "An annotated translation of 'On the hypothesis of a genetic connection between the Sino-Tibetan languages and the Yeniseian and North-Caucasian languages', by S. A. Starostin", paper presented to the 20th International Conference on Sino-Tibetan Languages and Linguistics, Vancouver. [Translation of Starostin 1984].

1987b Review of Pulleyblank 1984. *Harvard Journal of Asiatic Studies* 47: 635–56.

in press "Zhōu and Hàn phonology in the *Shījīng*", in: Michael C. Shapiro & William G. Boltz (eds.), *Studies in the historical phonology of Asian languages.*

Benedict, Paul K.

1948 "Archaic Chinese *g and *d", *Harvard Journal of Asiatic Studies* 11: 197–206.

1972 *Sino-Tibetan: A conspectus*. Contributing editor: James A. Matisoff. Cambridge: Cambridge University Press.

1976a "Rhyming dictionary of Written Burmese", *Linguistics of the Tibeto-Burman Area* 3 (1): i-x, 1–93.

1976b "Sino-Tibetan: another look", *Journal of the American Oriental Society* 96: 167–97.

1987 "Archaic Chinese initials", in: The Chinese Language Society of Hong Kong (ed.), *Wang Li memorial volumes* [王力先生紀念論文集 *Wáng Lì xiānshēng jìniàn lùnwén jí*], English volume, 25–71.

Bodde, Derk

1938 *China's first unifier: a study of the Ch'in dynasty as seen in the life of Li Ssŭ (280?–208 B.C.)*. (Sinica Leidensia 3.) Leiden: E. J. Brill.

Bodman, Nicholas C. [Bāo Nǐgǔ 包擬古]

1954 *A linguistic study of the Shih-ming: initials and consonant clusters*. Cambridge, Mass.: Harvard University Press.

1967 "Historical linguistics", in: Thomas A. Sebeok (ed.), *Current trends in linguistics II: Linguistics in East Asia and South East Asia,* 3–58. The Hague: Mouton.

1969 "Tibetan *sdud* 'folds of a garment', the character 卒, and the *st- hypothesis", *Bulletin of the Institute of History and Philology, Academia Sinica* 39: 327–45.

1971 "A phonological scheme for Old Chinese", paper presented to the Chinese Linguistics Project, Princeton University.

1972 "Old Chinese *s-* clusters, some dialect alternations, and traces of the Sino-Tibetan *s-* causative", paper presented to the 5th International Conference on Sino-Tibetan Languages and Linguistics, Ann Arbor, Michigan, October 20–21.

1973 "Some Chinese reflexes of Sino-Tibetan s-clusters", *Journal of Chinese Linguistics* 1: 383–96.

1974a "Some random comments on Paul Benedict's 'The Chinese s-orgy'", paper presented to the 7th International Conference on Sino-Tibetan Languages and Linguistics, Atlanta, October 18–19.

1974b "Tibetan evidence for the *-ps, *-ts and *-ks origin of part of the Chinese *ch'ū-sheng*", paper presented to the 7th International Conference on Sino-Tibetan Languages and Linguistics, Atlanta, October 18–19.

1975 "Tibeto-Burman correspondences to the Chinese *teng* (divisions 1, 2, 3, 4) and the concept of 'primary yod' in Sino-Tibetan", paper presented to the 8th International Conference on Sino-Tibetan Languages and Linguistics, Berkeley, October 24–26.

1976 "Syllable types and yod in Sino-Tibetan", paper presented to the 9th International Conference on Sino-Tibetan Languages and Linguistics, Copenhagen, October 22–24.

1978 "Old Chinese reflexes of Sino-Tibetan *-ʔ, *-:k and related problems", paper for the 11th International Conference on Sino-Tibetan Languages and Linguistics, Tucson, Arizona, October 20–22.

1980 "Proto-Chinese and Sino-Tibetan: data towards establishing the nature of the relationship", in: Frans van Coetsem & Linda R. Waugh (eds.), 34–199.

1983 "The reflexes of initial nasals in Proto-Southern Min-Hinghua", paper presented to the 16th International Conference on Sino-Tibetan Languages and Linguistics, Seattle.

1985 "Evidence for 1 and r medials in Old Chinese and associated problems", in: Graham Thurgood, James A. Matisoff, & David Bradley (eds.), 146–67.

Bol'šaja sovetskaja èntsiklopedija [Great Soviet encyclopedia]

1970–1981 (3rd edition). 31 vols. Moscow: Izdatel'stvo Sovetskaja Èntsiklopedija. [See *Great Soviet encyclopedia* for English translation.]

Boltz, William G.

1986 "Early Chinese writing", *World Archaeology* 17: 420–36.

Chang, Betty Shefts & Kun Chang [Zhāng Kūn 張琨]

1976 "The prenasalized stop initials of Miao-Yao, Tibeto-Burman and Chinese: a result of diffusion or evidence of a genetic relationship?", *Bulletin of the Institute of History and Philology, Academia Sinica* 47: 467–502.

1977 "Tibetan prenasalized initials", *Bulletin of the Institute of History and Philology, Academia Sinica* 48: 229–43.

1977–1978 "On the relationship of Chinese 稠 **djəug* and 濃 **nəuŋ, *njəuŋ*." *Monumenta Serica* 33: 162–70.

Chāng Hòu 昌厚 *see* Lǐ Róng 李榮

Chang, Kun [Zhāng Kūn 張琨]

1974 "Ancient Chinese phonology and the *Ch'ieh-yün*", *Tsing Hua Journal of Chinese Studies,* n.s. 10: 61–82.

Chang, Kun [Zhāng Kūn 張琨] & Betty Shefts Chang

1972 *The Proto-Chinese final system and the Ch'ieh-yün.* (IHP Monographs, series A, 26.) Taipei: Institute of History and Philology, Academia Sinica.

Chang Yü-hung [Zhāng Yùhóng 張裕宏]

1972 The Hinghwa dialects of Fukien: a descriptive linguistic study. [Unpublished Ph.D. dissertation, Cornell University.]

Chao, Yuen Ren [Zhào Yuánrèn 趙元任]

1941 "Distinctions within Ancient Chinese", *Harvard Journal of Asiatic Studies* 5: 203–33.

1976 "Some contrastive aspects of the Chinese National Language movement", in *Aspects of Chinese sociolinguistics: essays by Yuen Ren Chao,* edited by Anwar S. Dil, 97–105. Stanford: Stanford University Press.

Chén Bānghuái 陈邦怀

1984 "Liǎng Zhōu jīnwén yùndú jíyí 两周金文韵读集遗" [Additional collected rhymes in bronze inscriptions of Western and Eastern Zhōu], *Gǔ wénzì yánjiū* 古文字研究 [Paleographical research] 9: 445–62.

Chén Dì 陳第

1606 [1957] *Máo shī gǔyīn kǎo* 毛詩古音考 [Investigation of the ancient pronunciation of the Máo *Shī*]. Chéngdū: Sìchuān Rénmín Chūbǎnshè 四川人民出版社.

Chén Hóngtiān 陈宏天 & Lǚ Lán 吕岚

1984 *Shījīng suǒyǐn* 诗经索引 [Index to the *Shījīng*]. (Gǔjí xuǎndú cóngshū 古籍选读丛书 [Selected readings from ancient texts].) Beijing: Shūmù Wénxiàn Chūbǎnshè 书目文献出版社.

Chén Lǐ 陳澧

1842 [1965] *Qièyùn kǎo* 切韻考 [Investigation of the *Qièyùn*]. Taipei: Táiwān Xuéshēng Shūjú 臺灣學生書局.

Chén Shìhuī 陈世辉

1979 "Liǎng Zhōu jīnwén yùndú hébiān 两周金文韵读合编" [Compilation of rhymes in bronze inscriptions of Western and Eastern Zhōu]. [Mimeographed MS, Jílín Dàxué 吉林大学. I have not had access to this; the reference is from Yú Nǎiyǒng 1985: 339.]

1981 "Jīnwén yùndú xùjí (1) 金文韵读续集 (一)" [Supplementary collection of rhymes in bronze inscriptions (1)], *Gǔ wénzì yánjiū* 古文字研究 [Paleographical research] 5: 169–90.

Chén Yínkè 陳寅恪

1949 "Cóng shǐshí lùn *Qièyùn* 從史實論切韻" [A discussion of the *Qièyùn* based on historical facts], *Língnán Xuébào* 嶺南學報 [Lǐngnán Journal] 9: 1–18.

Cheung Kwong-yue [Zhāng Guāngyù 張光裕]

1983 "Recent archaeological evidence relating to the origin of Chinese characters", in: David N. Keightley (ed.), 323–91. [Translated by Noel Barnard.]

Cheung Yat-shing *see* Zhāng Rìshēng 張日昇

Chomsky, Noam

1957 *Syntactic structures.* (Janua linguarum, Series minor, 4.) The Hague: Mouton.

Chomsky, Noam & Morris Halle

1968 *The sound pattern of English.* New York: Harper & Row.

Chou Fa-kao *see* Zhōu Fǎgāo 周法高

Chow Tse-tsung [Zhōu Cèzòng 周策縱]

1968 "The early history of the Chinese word *shih* (poetry)", in: Chow Tse-tsung (ed.), *Wen-lin: studies in the Chinese humanities,* 151–209. Madison: University of Wisconsin Press.

Cíhǎi 辭海 [Sea of words]

1979 3 vols. Shànghǎi: Shànghǎi císhū chūbǎnshè 上海辭书出版社.

Cíhǎi: Yǔyán wénzì fēncè 辭海: 语言文字分册 [Sea of words: separate fascicle on language and writing]

1978 Shanghai: Shànghǎi Císhū Chūbǎnshè 上海辭书出版社.

Coblin, W. South

1983 *A handbook of Eastern Han sound glosses.* Hong Kong: The Chinese University Press.

1986 *A sinologist's handlist of Sino-Tibetan lexical comparisons.* (Monumenta Serica monograph series, 18.) Nettetal: Steyler Verlag.

Couvreur, Séraphin

1934 *Cheu king: texte chinois avec une double traduction en français et en latin, une introduction et un vocabulaire.* (3rd edition.) Sien Hien: Imprimerie de la Mission Catholique.

Crabb, David W.

1988 "Niger-Congo languages", *Encylopædia Britannica* 22: 760–72.

Csongor, Barnabás

1953 "Chinese glosses in the Uighur script of the T'ang period", *Acta Orientalia Academiae Scientiarum Hungaricae* 2: 73–121.

1954 "Some more Chinese glosses in Uighur script", *Acta Orientalia Academiae Scientiarum Hungaricae* 4: 251–57.

1960 "Some Chinese texts in Tibetan script from Tun-huang", *Acta Orientalia Academiae Scientiarum Hungaricae* 10: 97–140.

1962 "Chinese glosses in Uighur texts written in Brāhmī", *Acta Orientalia Academiae Scientiarum Hungaricae* 15: 49–53.

Dīng Bāngxīn 丁邦新 *see* Ting Pang-hsin

Dīng Fúbǎo 丁福保

1928–1932 [1976] *Shuōwén jiězì gǔlín jí bǔyí* 說文解字詁林及補遺 [Forest of philological commentaries on the *Shuōwén jiězì*, with supplement]. 17 vols. Taipei: Táiwān Shāngwù Yìnshūguǎn 臺灣商務印書館.

Dīng Shēngshù 丁聲樹

1940 "*Shī* Juǎn ěr Fóu yǐ 'Cǎi cǎi' shuō 詩卷耳芣苢采采說" [Explanation of the phrase "Cǎi cǎi" in the poems "Juǎn ěr" and "Fóu yǐ" of the *Shījīng*], *Guólì Běijīng Dàxué sìshí zhōunián jìniàn lùnwén jí*, yǐ biān, shàng 國立北京大學四十週年論文集乙編上 [Collected papers in commemoration of the fortieth anniversary of the founding of National Beijing University, vol. 1], 1–15. Kūnmíng. [This volume is treated as vol. 6, no. 3 of *Guóxué Jìkān* 國學季刊 (Sinological quarterly).]

Dīng Shēngshù 丁聲樹 & Lǐ Róng 李榮

1981 *Gǔ-jīn zìyīn duìzhào shǒucè* 古今字音對照手册 [Comparative handbook of ancient and modern character pronunciations]. Beijing: Zhōnghuá Shūjú 中華書局. [Corrected version of an earlier edition (Beijing: Kēxué Chūbǎnshè 科學出版社, 1960).]

Dǒng Tónghé 董同龢

1944 [1948] "Shànggǔ yīnyùn biǎo gǎo 上古音韻表稿" [Draft phonological tables for Old Chinese], *Bulletin of the Institute of History and Philology, Academia Sinica* 18: 1–249. [Corrected reprint of original 1944 lithograph edition.]

1948a [1974] "*Guǎngyùn* chóngniǔ shì shì 廣韻重紐試釋" [Tentative explanation of the repeated entries in the *Guǎngyùn*], in: Dǒng Tónghé 1974: 13–32. [Originally published in *Bulletin of the Institute of History and Philology, Academia Sinica* 13: 1–20.]

1948b [1974] "Quánběn Wáng Rénxū *Kānmiù bǔquē Qièyùn* de fǎnqiè xiàzì 全本王仁煦刊謬補缺切韻的反切下字" [The final fǎnqiè spellers of the complete manuscript version of Wáng Rénxū's *Kānmiù bǔquē Qièyùn*], in: Dǒng Tónghé 1974: 113–52. [Originally published in *Bulletin of the Institute of History and Philology, Academia Sinica* 19: 549–88.]

1952 [1974] "Quánběn Wáng Rénxū *Kānmiù bǔquē Qièyùn* de fǎnqiè shàng zì 全本王仁煦刊謬補缺切韻的反切上字" [The initial fǎnqiè spellers of the complete manuscript version of Wáng Rénxū's *Kānmiù bǔquē Qièyùn*], in: Dǒng Tónghé 1974: 101–12. [Originally published in *Bulletin of the Institute of History and Philology, Academia Sinica* 23: 511–22.]

1968 *Hànyǔ yīnyùnxué* 漢語音韻學 [Phonology of the Hàn language]. Taipei: Wáng Shǒujīng 王守京; distributed by Xuéshēng Shūjú 學生書局.

1974 *Dǒng Tónghé xiānsheng yǔyánxué lùnwén xuǎnjí* 董同龢先生語言學論文選集 [Selected papers on linguistics by Professor Dǒng Tónghé], edited by Ting Pang-hsin [Dīng Bāngxīn 丁邦新]. Taipei: Shíhuò Chūbǎnshè 食貨出版社.

Downer, G. B.

1959 "Derivation by tone-change in Classical Chinese", *Bulletin of the School of Oriental and African Studies* 22: 258–90.

Elman, Benjamin A.

1984 *From philosophy to philology: intellectual and social aspects of change in late Imperial China.* (Harvard East Asian Monographs, 110.) Cambridge, Mass.: Council on East Asian Studies, Harvard University.

Fújiàn Shěng Bówùguǎn 福建省博物馆 [Fújiàn Provincial Museum] & Chóng'ān Xiàn Wénhuàguǎn 崇安县文化馆 [Chóng'ān County Cultural Center]

1980 "Fújiàn Chóng'ān Wǔyí shān Báiyán yádòng mù qīnglǐ jiǎnbào 福建崇安武夷山白岩崖洞墓清理简报" [Brief report on the sorting out of the tombs in the grottoes of Báiyán, Wǔyí mountain, Chóng'ān], *Wénwù* 文物 [Cultural relics], 1980, no. 6: 12–20.

Gāo Hēng 高亨

1980 *Shījīng jīn zhù* 詩經今注 [Modern annotations to the *Shījīng*]. (Zhōngguó gǔdiǎn wénxué cóngshū 中國古典文學叢書 [Chinese classical literature series].) Shanghai: Shànghǎi Gǔjí Chūbǎnshè 上海古籍出版社.

Gāo Míng 高明

1980 *Gǔ wénzì lèi biān* 古文字類編 [Classified table of ancient scripts]. Beijing: Zhōnghuá Shūjú 中華書局.

Gě Yìqīng 葛毅卿 [Ku Yeh-ching]

1932 "On the consonantal value of 喻-class words", *T'oung Pao* 29: 100–3.

Gong Hwang-cherng [Gōng Huángchéng 龔煌城]

1980 "A comparative study of the Chinese, Tibetan, and Burmese vowel systems", *Bulletin of the Institute of History and Philology, Academia Sinica* 51: 455–90.

Great Soviet encyclopedia

1973–1983 32 vols. New York: Macmillan. Translation of *Bol'šaja sovetskaja èniklopedija,* 3rd edition.

Gregerson, Kenneth, & David Thomas

1976 "Vietnamese hỏi and ngã tones and Mon-Khmer -h finals", in: Kenneth J. Gregerson & David Thomas (eds.), *Mon-Khmer Studies V,* 76–83. Manila: Summer Institute of Linguistics.

Guō Mòruò 郭沫若

1954 "Jīnwén yùndú bǔ yí 金文韻讀補遺" [Additional rhymes in bronze inscriptions], in: *Jīnwén cóng kǎo* 金文叢攷 [Collected investigations on bronze inscriptions] (revised edition), vol. 2, 137–61. Beijing: Rénmín Chūbǎnshè 人民出版社.

Hartman, Lawton M.

1944 [1957] "The segmental phonemes of the Peiping dialect", in: Martin Joos (ed.), *Readings in linguistics I: the development of descriptive linguistics in America 1925–56* (4th edition), 116–23. Chicago: The University of Chicago Press. [Originally published in *Language* 20: 28–42.]

Harvard-Yenching Institute

1934 [1962] *A concordance to Shih ching* (*Máo Shī yǐndé* 毛詩引得). (Sinological index series, supplement no. 9.) Tokyo: The Japan Council for East Asian Studies.

Hashimoto Mantarō 橋本萬太郎

1978–1979 *Phonology of Ancient Chinese.* 2 vols. (Study of languages & cultures of Asia & Africa monograph series, 10.) Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa.

Haudricourt, André

1954a [1972] "Comment reconstruire le chinois archaïque", in: Haudricourt 1972: 161–82. [Originally published in *Word* 10: 351–64.]

1954b [1972] "De l'origine des tons en vietnamien", in: Haudricourt 1972: 147–60. [Originally published in *Journal Asiatique* 242: 69–82.]

1972 *Problèmes de phonologie diachronique.* (Langues et civilisations à tradition orale, 1.) Paris: Société pour l'Étude des Langues Africaines.

Hoel, Paul G., Sidney C. Port, & Charles J. Stone

1971 *Introduction to probability theory.* (The Houghton-Mifflin series in statistics.) Boston: Houghton Mifflin.

Hóng Gù 洪固

1978 *Dài Dōngyuán zhī shēngyùnxué* 戴東原之聲韻學 [The phonological studies of Dài Dōngyuán (Dài Zhèn 戴震)]. Taipei: Wénjīn Chūbǎnshè 文津出版社.

Hsu, Cho-yun [Xǔ Zhuōyún 許倬雲]

1984 *Xī Zhōu shǐ* 西周史 [History of Western Zhōu]. Taipei: Liánjīng Chūbǎn Shìyè Gōngsī 聯經出版事業公司.

Hú Píngshēng 胡平生 & Hán Zìqiáng 韓自强

1988 *Fùyáng Hàn jiǎn* Shījīng *yánjiū* 阜陽漢簡詩經研究 [Investigation of the Hàn-dynasty bamboo-strip version of the *Shījīng* from Fùyáng]. Shanghai: Shànghǎi Gǔjí Chūbǎnshè 上海古籍出版社.

Hu Shih [Hú Shì 胡適]

1943 "A note on Ch'üan Tsu-wang, Chao I-ch'ing and Tai Chen: a study of independent convergence in research as illustrated in their works on the *Shui-Ching Chu*", in: Arthur E. Hummel (ed.), 970–82.

Hú Tǎn 胡坦

1980 "Zàngyǔ (Lāsà huà) shēngdiào yánjiū 藏语 (拉萨话) 声调研究" [Study of the tones of Tibetan (Lhasa dialect)], *Mínzú Yǔwén* 民族语文 [Minority languages] 1980, no. 1: 22–36. [For French translation see Hú Tǎn 1982.]

1982 "Recherches sur les tons du tibétain (dialecte de Lhasa)", *Cahiers de Linguistique Asie Orientale* 11 (1): 11–46. [Translation of Hú Tǎn 1980 by Michel Desirat.]

Huáng Cuìbó 黃淬伯

1930 "Huìlín *Yíqiè jīng yīn yì* fǎnqiè shēnglèi kǎo 慧琳一切經音義反切聲類考" [Investigation of the initial fǎnqiè categories of Huìlín's *Yíqiè jīng yīn yì*], *Bulletin of the Institute of History and Philology, Academia Sinica* 1: 165–82.

Hummel, Arthur E. (ed.)

1943–1944 *Eminent Chinese of the Ch'ing period (1644–1912).* 2 vols. Washington: U. S. Government Printing Office.

Ikeda Suetoshi 池田末利

1964 *Inkyo shokei kōhen shakubun kō* 殷虚書契後編釋文稿 [Draft interpretations of the *Yīnxū shūqì hòubiān* (Inscriptions from the Yīn ruins, latter volume, by Luó Zhènyù 羅振玉)]. Hiroshima: Hiroshima Daigaku Bungakubu Chūgoku Tetsugaku Kenkyūshitsu 廣島大学文学部中国哲学研究室.

Jakobson, Roman & Morris Halle

1971 *Fundamentals of language.* The Hague: Mouton.

Jaxontov, Sergej Evgen'evič [Xiè Yè Yǎhóngtuōfū 谢・叶・雅洪托夫]

1959 "Fonetika kitajskogo jazyka 1 tysjačeletija do n. e. (sistema finalej)" [The phonology of the Chinese language of the 1st millennium B.C. (system of finals)], *Problemy Vostokovedenija* [Problems of Oriental studies] 1959, no. 2: 137–47. [For English translation see Jaxontov 1968.]

1960a *Consonant combinations in Archaic Chinese.* (Papers presented by the USSR delegation at the 25th International Congress of Orientalists, Moscow.) Moscow: Oriental Literature Publishing House. [This is an English version of Jaxontov 1963; for a Chinese translation see Jaxontov 1986: 42–52.]

1960b "Fonetika kitajskogo jazyka 1 tysjačeletija do n. e. (labializovannye glasnye)" [The phonology of the Chinese language of the 1st millennium B.C. (rounded vowels)], *Problemy Vostokovedenija* [Problems of Oriental studies] 1960, no. 6: 102–15. [For an English translation see Jaxontov 1970; Chinese translation in Jaxontov 1986: 53–77.]

1963 "Sočetanija soglasnyx v drevnekitajskom jazyke" [Consonant combinations in Archaic Chinese], in: *Trudy dvadcat' pjatogo meždunarodnogo kongressa vostokovedov, Moskva, 9–16 avgusta 1960 g.* [Works of the 25th International Congress of Orientalists, Moscow, 9-16 August 1960]. Vol. 5: *Zasedanija sekcij XVI-XX* [Sessions of sections XVI-XX], 89–95. Moscow: Izdatel'stvo Vostočnoj Literatury. [Russian version of Jaxontov 1960a; for Chinese version see Jaxontov 1986: 42–52.]

1965 *Drevnekitajskij jazyk* [The Old Chinese language]. (Jazyki narodov Azii i Afriki [Languages of the peoples of Asia and Africa].) Moscow: Izdatel'stvo «Nauka». [For English translation of excerpts, see Jaxontov 1978–1979.]

1968 "Chinese phonology of the first millennium B.C.", *Chi-Lin* 麒麟 *(Unicorn)* 1: 1–20 (separately paged). [English translation, by Jerry Norman, of Jaxontov 1959.]

1970 "The phonology of Chinese of the first millennium B.C. (rounded vowels)", *Chi-Lin* 麒麟 *(Unicorn)* 6: 52–75. [English translation, by Jerry Norman, of Jaxontov 1960b.]

1978–1979 "Old Chinese phonology", *Early China* 4: 37–40. [Translation, by Jerry Norman, of excerpts from Jaxontov 1965.]

1986 *Hànyǔ shǐ lùn jí* 汉语史论集 [Collected studies on the history of the Hàn language]. Edited by Táng Zuòfān 唐作藩 and Hú Shuāngbǎo 胡双宝. Beijing: Běijīng Dàxué Chūbǎnshè 北京大学出版社.

Jiàoyù Bù Dúyīn Tǒngyī Huì 教育部讀音統一會 [Committee for the unification of character pronunciations, Ministry of Education]

1919 *Guóyīn zìdiǎn* 國音字典 [Dictionary of national pronunciation]. Shanghai: Shāngwù Yìnshūguǎn 商務印書館.

Juhl, Robert A.

1972 A survey of the rhyming of poets from the Wei dynasty into the Early T'ang. [Unpublished Ph.D. dissertation, University of Wisconsin.]

1974 "Phonological evolution of the Chinese rhymes: Wei to Liang", *Journal of the American Oriental Society* 94: 408–30.

1975 "The literary dialect of Xie Zhuang", *Journal of Chinese Linguistics* 3: 129–53.

Karlgren, Bernhard

1915–1926 *Études sur la phonologie chinoise.* Leiden: E. J. Brill.

1923 [1973] *Analytic dictionary of Chinese and Sino-Japanese.* Taipei: Ch'eng-wen Publishing Co. (Chéngwén Chūbǎnshè 成文出版社). [Original edition Paris: Geuthner, 1923.]

1933 "Word families in Chinese", *Bulletin of the Museum of Far Eastern Antiquities* 5: 9–120.

1940 "Grammata serica: script and phonetic in Chinese and Sino-Japanese", *Bulletin of the Museum of Far Eastern Antiquities* 12: 1–471.

1942–1946 [1964] *Glosses on the Book of odes.* Stockholm: Museum of Far Eastern Antiquities. [Originally published in *Bulletin of the Museum of Far Eastern Antiquities* 14: 71–247, 16: 25–169, and 18: 1–198.]

1954 "Compendium of phonetics in Ancient and Archaic Chinese", *Bulletin of the Museum of Far Eastern Antiquities* 26: 211–367.

1956 "Cognate words in the Chinese phonetic series", *Bulletin of the Museum of Far Eastern Antiquities* 28 : 1–18.

1957 "Grammata serica recensa", *Bulletin of the Museum of Far Eastern Antiquities* 29: 1–332.

1974 *The book of odes: Chinese text, transcription and translation.* Stockholm: Museum of Far Eastern Antiquities. [Translation originally published in *Bulletin of the Museum of Far Eastern Antiquities,* vols 16 and 17.]

Keightley, David N.

1985 *Sources of Shang history: the oracle-bone inscriptions of Bronze Age China.* (1st paperback printing.) Berkeley and Los Angeles: University of California Press. [Original edition published 1978.]

Keightley, David N. (ed.)

1983 *The origins of Chinese civilization.* (Studies on China, 1.) Berkeley and Los Angeles: University of California Press.

Kōno Rokurō 河野六郎

1939 "Chōsen kanji'on no ichi tokushitsu 朝鮮漢字音の一特質" [A characteristic of Sino-Korean], *Gengo Kenkyū* 言語研究 (Journal of the Linguistic Society of Japan) 3: 27–53.

1954 [1979] "Tōdai Chōan'on ni okeru 微 bibu ni tsuite 唐代長安音に於ける微母に就いて" [The initial 微 Wēi in the pronunciation of Cháng'ān in Táng times], in: Kōno 1979, vol. 2, 249–59.

1964–1967 [1979] "Chōsen kanji'on no kenkyū 朝鮮漢字音の研究" [Research on the Sino-Korean readings of Chinese characters], in: Kōno 1979, vol. 2, 295–512.

1979 *Kōno Rokurō chosaku shū* 河野六郎著作集 [Collected works of Kōno Rokurō]. 3 vols. Tokyo: Heibonsha 平凡社.

Ku Ye-ching *see* Gě Yìqīng 葛毅卿

Ladefoged, Peter

1971 *Preliminaries to linguistic phonetics.* Chicago: University of Chicago Press.

Legge, James

1893–1895 [1960] *The She king, or the Book of poetry.* (2nd edition, with minor text corrections.) Vol. 4 of *The Chinese Classics, with a translation, critical and exegetical notes, prolegomena, and copious indexes.* Reprint. Hong Kong: Hong Kong University Press.

Li Fang-kuei [Lǐ Fāngguì 李方桂]

1931 "*Qièyùn* â de láiyuán 切韻 â 的來源" [Origins of the Ancient Chinese vowel â], *Bulletin of the Institute of History and Philology, Academia Sinica* 3: 1–38.

1935 "Archaic Chinese **-i̯wəng*, **-i̯wək* and **-i̯wəg*", *Bulletin of the Institute of History and Philology, Academia Sinica* 5: 65–74.

1945 "Some Old Chinese loanwords in the Tai languages", *Harvard Journal of Asiatic Studies* 8: 333–42.

1959 "Tibetan glo-ba'-'dring", in: Søren Egerod & Else Glahn (eds.), *Studia serica Bernhard Karlgren dedicata: studies dedicated to Bernhard Karlgren on his seventieth birthday, October fifth, 1959*, 55–59. Copenhagen: E. Munksgaard.

1970 [1980] "Zhōngguó Shànggǔyīn shēngmǔ wèntí 中國上古音聲母問題" [Problems of the initial consonants of Old Chinese], in: Li 1980: 95–103. [Text of a lecture at the Chinese University of Hong Kong, 25 August 1970.]

1971 [1980] "Shànggǔ yīn yánjiū 上古音研究" [Studies on Old Chinese pronunciation], in: Li 1980: 1–83. [Originally published in *Tsing Hua Journal of Chinese Studies*, n.s. 9: 1–61.]

1974–1975 "Studies on Archaic Chinese", *Monumenta Serica* 31: 219–87. [Translation, by G. L. Mattos, of Li 1971 [1980].]

1976 [1980] "Jǐge shànggǔ shēngmǔ wèntí 幾個上古聲母問題" [Several problems on Old Chinese initials], in: Li 1980: 85–94. [Originally published in *Zǒngtǒng Jiǎng gōng shìshì zhōunián lùnwén jí* 總統蔣公逝世週年論文集 (Collected papers in commemoration of the anniversary of the death of President Jiǎng), 1143–50. Taipei: Zhōngyāng Yánjiū Yuàn 中央研究院 (Academia Sinica), 1976.]

1977 *A handbook of comparative Tai*. (Oceanic Linguistics special publication no. 15.) Honolulu: University Press of Hawaii.

1980 *Shànggǔ yīn yánjiū* 上古音研究 [Studies on Old Chinese pronunciation]. Beijing: Shāngwù Yìnshūguǎn 商務印書館.

1983 "Archaic Chinese", in: David N. Keightley (ed.), 393–408.

Lǐ Róng 李榮

1956 *Qièyùn yīnxì* 切韵音系 [The sound system of the *Qièyùn*]. Beijing: Kēxué Chūbǎnshè 科學出版社.

1961–1962 [1982] "Suí yùnpǔ 隋韵譜" [Rhyme tables for the Suí dynasty], in: Lǐ Róng 1982: 135–209. [Originally published in *Zhōngguó Yǔwén* 中国语文 (Chinese language) 1961:

10–11, 47–57; 1962, no. 1: 38–49, no. 2: 70–84, 162–66, under the pseudonym Chāng Hòu 昌厚.]

1965 [1982] "Cóng xiàndài fāngyán lùn gǔ 群 Qún mǔ yǒu yī, èr, sì děng 從現代方言論古群母有一、二、四等" [Showing from modern dialects that the 從 Qún initial had divisions I, II, and IV], in: Lǐ Róng 1982: 119–26.

1982 *Yīnyùn cún gǎo* 音韵存稿 [Accumulated drafts on phonology]. Beijing: Shāngwù Yìnshūguǎn 商務印書館.

1982 [1985] "Lùn Běijīng huà '榮 róng' zì de yīn 論北京話'榮'字的音" [On the pronunciation of the character '榮 róng' in the Beijing dialect], in: *Yǔwén lùn héng* 語文論衡 [Considerations on language], 103–6. Beijing: Shāngwù Yìnshūguǎn 商務印書館.

1985 "Guānhuà fāngyán de fēnqū 官话方言的分区" [The subgroups of the Mandarin dialects], *Fāngyán* 方言 [Dialect] 7: 2–5.

Lǐ Xiàodìng 李孝定

1965 *Jiǎgǔ wénzì jí shì* 甲骨文字集釋 [Collected explanations of oracle-bone script]. 14 vols. Taipei: Academia Sinica.

Lǐ Xīnkuí 李新魁

1982 Yùnjìng *jiàozhèng* 韵镜校证 [The *Yùnjìng* collated and verified]. Beijing: Zhōnghuá Shūjú 中华书局.

1983 *Hànyǔ děngyùnxué* 汉语等韵学 [Chinese rhyme-table phonology]. (1st edition.) Beijing: Zhōnghuá Shūjú 中华书局.

Lǐ Xuéqín 李学勤

1985 *Gǔ wénzìxué chūjiē* 古文字学初阶 [Initial steps in paleography]. (Wén shǐ zhīshi cóngshū 文史知识丛书 [Knowledge of literary history].) Beijing: Zhōnghuá Shūjú 中华书局.

Ligeti, Louis

1956 "Le *Po kia sing* (百家姓) en écriture 'Phags-pa", *Acta Orientalia Academiae Scientiarum Hungaricae* 6: 1–52.

1961 "Trois notes sur l'écriture 'Phags-pa", *Acta Orientalia Academiae Scientiarum Hungaricae* 13: 201–37.

1968 "Notes sur le lexique sino-tibétain de Touen-houang en écriture tibétaine", *Acta Orientalia Academiae Scientiarum Hungaricae* 21: 265–88.

Lín Tāo 林燾

1962 "Lù Démíng de *Jīngdiǎn shìwén* 陸德明的經典釋文" [The *Jīngdiǎn shìwén* of Lù Démíng], *Zhōngguó Yǔwén* 中国语文 [Chinese language] 1962, no. 3: 132–6.

Lín Zǔtài 林祖泰

1978 *Yīnxū bǔcí tōngjiǎ yánjiū* 殷虛卜辭通假研究 [An investigation of loan-characters in the oracular inscriptions of the ruins of Yīn]. Taipei: Gōngchéng Yìnshuāsuǒ 功成印刷所.

Liú Fù 劉復, Luó Chángpéi 羅常培, & Wèi Jiàngōng 魏建功 (eds.)

1937 *Shíyùn huìbiān* 十韻彙編 [A compilation of ten rhyme books]. 3 vols. Beijing: Běijīng Dàxué 北京大學.

Löffler, Lorenz G.

1966 "The contribution of Mru to Sino-Tibetan linguistics", *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 116: 118–70.

Lóng Yǔchún 龍宇純

1968 *Táng xiě quánběn Wáng Rénxū Kānmiù bǔquē Qièyùn jiàojiān* 唐寫全本王仁煦刊謬補缺切韻校箋 [A critical edition of the complete Táng manuscript version of Wáng Rénxū's *Kānmiù bǔquē Qièyùn*]. Hong Kong: The Chinese University Press.

Lú Wénchāo 盧文弨

1791 [1968] *Jīngdiǎn shìwén kǎozhèng* 經典釋文考證 [Textual research on the *Jīngdiǎn shìwén*]. Taipei: Wénhǎi Chūbǎnshè 文海出版社.

Lù Démíng 陸德明

583 [1975] *Jīngdiǎn shìwén* 經典釋文 [Explanatory glosses on the classics], edited by Yáng Jiāluò 楊家駱. Taipei: Dǐngwén Shūjú 鼎文書局.

Lù Zhìwéi 陸志韋

1947 [1971] *Gǔyīn shuōlüè* 古音説略 [Summary discussion of Old Chinese pronunciation]. (*Yānjīng Xuébào* 燕京學報 [Yānjīng Journal] Monograph no. 20.) Taipei: Táiwān Xuéshēng Shūjú 臺灣學生書局.

Lù Zōngdá 陸宗達

1932 "Wáng Shíqú xiānshēng *Yùn pǔ Hé yùn pǔ* yí gǎo bá 王石臞先生韵譜合韵譜遺稿跋" [Postscript to the posthumous manuscripts *Yùn pǔ* and *Hé yùn pǔ* by Wáng Shíqú (Wáng Niànsūn 王念孫)], *Guóxué Jìkān* 國學季刊 [Sinological quarterly] 3 (1): 163–74.

1935 "Wáng Shíqú xiānshēng *Yùn pǔ Hé yùn pǔ* gǎo hòu jì 王石臞先生韵譜合韵譜稿後記' [Notes on the posthumous manuscripts *Yùn pǔ* and *Hé yùn pǔ* by Wáng Shíqú (Wáng Niànsūn 王念孫)], *Guóxué Jìkān* 國學季刊 [Sinological quarterly] 5 (2): 275–320.

Luó Chángpéi 羅常培

1931a "*Qièyùn* 魚 Yú 虞 Yú zhī yīnzhí jí qí suǒ jù fāngyīn kǎo 切韻魚虞之音值及其所據方音考" [The value of the *Qièyùn* rhymes 魚 Yú and 虞 Yú and the ancient dialects on which their distinction was based], *Bulletin of the Institute of History and Philology, Academia Sinica* 2: 258–385.

1931b "知 Zhī 徹 Chè 澄 Chéng 娘 Niáng yīnzhí kǎo 知徹澄娘音值考" [An investigation of the phonetic values of the initials 知 Zhī, 徹 Chè, 澄 Chéng, and 娘 Niáng], *Bulletin of the Institute of History and Philology, Academia Sinica* 3: 121–57.

1933 "Shì nèi wài zhuǎn 釋内外轉" [Explaining the terms *nèizhuǎn* and *wàizhuǎn*], *Bulletin of the Institute of History and Philology, Academia Sinica* 4: 209–26.

1935 "*Tōngzhì Qīyīn lüè* yánjiū 通志七音略研究" [Research on the *Tōngzhì Qīyīn lüè*], *Bulletin of the Institute of History and Philology, Academia Sinica* 5: 521–36.

1950 *Běijīng sú qǔ bǎi zhǒng zhāi yùn* 北京俗曲百種摘韻 [Rhymes from a hundred vernacular songs of Beijing]. Beijing: Láixūn Gé Shūdiàn 來薰閣書店.

Luó Chángpéi 羅常培 & Zhōu Zǔmó 周祖謨

1958 *Hàn Wèi Jìn Nán-běi cháo yùnbù yǎnbiàn yánjiū* 漢魏晉南北朝韻部演變研究 [A study of the evolution of rhyming categories in the Hàn, Wèi-Jìn, and Nán-běi cháo periods], vol. 1. Beijing: Kēxué Chūbǎnshè 科學出版社.

McCoy, John

1966 Szeyap data for a first approximation of Proto-Cantonese. [Unpublished Ph.D. dissertation, Cornell University.]

1980 "The reconstruction of upper register nasals and laterals in Proto-Cantonese", in: Frans van Coetsem & Linda R. Waugh (eds.), 200–213.

1986 "Modern suprasegmental evidence for consonant clusters in Proto-Yue", in: John McCoy & Timothy Light (eds.), 367–74.

McCoy, John & Timothy Light (eds.)

1986 *Contributions to Sino-Tibetan studies*. (Cornell linguistic contributions, vol. 5.) Leiden: E. J. Brill.

Maclay, R. S. & C. C. Baldwin

1929 *Dictionary of the Foochow dialect*. Revised and enlarged by Samuel H. Leger. Shanghai: The Presbyterian Mission Press.

Manaster Ramer, Alexis

n.d. Metrics and the Wizard of Oz. [Unpublished MS.]

Mannheim, Bruce

n.d. On semantic parallelism in Quechua verse. [Unpublished MS.]

Martin, Samuel E.

1953 *The phonemes of Ancient Chinese.* Supplement to *Journal of the American Oriental Society* 73: 2.

Martin, Samuel E. & Sung-Un Chang

1967 *A Korean-English dictionary.* New Haven: Yale University Press.

Mathews, R. H.

1943 *Mathews' Chinese-English dictionary.* (Revised American edition.) Cambridge, Mass.: Harvard University Press.

Matisoff, James A.

1970 "Glottal dissimilation and the Lahu high-rising tone; a tonogenetic case study", *Journal of the American Oriental Society* 90: 13–44.

1973 "Tonogenesis in Southeast Asia", in: Larry Hyman (ed.), *Consonant types and tone,* 71–96. (Southern California occasional papers in linguistics, 1.) Los Angeles: University of Southern California.

Măwángduī Hàn Mù Bóshū Zhěnglǐ Xiǎozǔ 马王堆汉墓帛书整理小组 [Small team for sorting out the silk manuscripts from the Hàn tombs at Măwángduī]

1976 *Măwángduī Hàn mù bóshū Lǎozǐ* 马王堆汉墓帛书老子 [The silk manuscript versions of *Lǎozǐ* from the Hàn tombs at Măwángduī]. Beijing: Wénwù Chūbǎnshè 文物出版社.

Mayrhofer, Manfred

1956–1972 *Kurzgefasstes etymologisches Wörterbuch des Altindischen.* 4 vols. (Indogermanische Bibliothek, 2. Reihe: Wörterbücher.) Heidelberg: Carl Winter/Universitätsverlag.

Mei, Tsu-lin [Méi Zǔlín 梅祖麟]

1970 "Tones and prosody in Middle Chinese and the origin of the rising tone", *Harvard Journal of Asiatic Studies* 30: 86–110.

1982a "Gēn 见 jiàn xì zì xiéshēng de 照三 zhàosān xì zì 跟见系字谐声的照三系字" [Characters of the 照三 Zhào-sān (palatal) series in phonetic series with characters of the 见 Jiàn

(velar) series], *Zhōngguó Yǔyán Xuébào* 中国语言学报 [Chinese linguistics journal] 1: 114–26.

1982b "Shuō shǎngshēng 說上聲" [On the rising tone], *Tsing Hua Journal of Chinese Studies,* n.s. 14: 233–41.

Mei, Tsu-lin [Méi Zǔlín 梅祖麟] & Jerry L. Norman [Luó Jiéruì 羅杰瑞]

1971 "Shì lùn jǐge Mǐnběi fāngyán zhōng de 來 lái mǔ S- shēng zì 試論幾個閩北方言中的來母 S- 聲字" [*Cl-* > *s-* in some Northern Min dialects], *Tsing Hua Journal of Chinese Studies,* n.s. 9: 96–105.

Miller, Roy Andrew

1967 *The Japanese language.* Chicago: University of Chicago Press.

Molino, Jean & Joëlle Tamine

1982 *Introduction à l'analyse linguistique de la poésie.* Paris: Presses Universitaires de France.

Morohashi Tetsuji 諸橋轍次

1955–1960 *Dai Kan-Wa jiten* 大漢和辭典. 13 vols. Tokyo: Taishūkan 大修館. [Compact edition, 1966–1968.]

Mosteller, Frederick, Robert E. K. Rourke, & George B. Thomas

1961 *Probability with statistical applications.* (Addison-Wesley series in statistics.) Reading, Mass.: Addison-Wesley.

Nivison, David S.

1983 "The dates of Western Chou", *Harvard Journal of Asiatic Studies* 43: 481–580.

Norman, Jerry L. [羅杰瑞 Luó Jiéruì]

1969 The Kienyang dialect of Fukien. [Unpublished Ph. D. dissertation, University of California, Berkeley.]

1973 "Tonal development in Min", *Journal of Chinese Linguistics* 1: 222–38.

1974 "The initials of Proto-Min", *Journal of Chinese Linguistics* 2: 27–36.

1977–1978 "A preliminary report on the dialects of Mintung", *Monumenta Serica* 33: 326–48.

1981 "The Proto-Min finals", in: *Zhōngyāng Yánjiūyuàn Guójì Hànxué Huìyì lùnwén jí: Yǔyán wénzì zǔ* 中央研究院國際漢學會議論文集: 語言文字組 [Proceedings of the Academia Sinica International Conference on Sinology, Section on language and script], 35–73. Taipei: Zhōngyāng Yánjiūyuàn 中央研究院 (Academia Sinica).

1986 "The origin of the Proto-Min softened stops", in: John McCoy & Timothy Light (eds.), 375–84.

1988 *Chinese.* (Cambridge language surveys.) Cambridge: Cambridge University Press.

Norman, Jerry L. & Tsu-lin Mei [Méi Zǔlín 梅祖麟]

1976 "The Austroasiatics in ancient South China: some lexical evidence", *Monumenta Serica* 32: 274–301.

Ogawa Tamaki 小川環樹

1960 [1977] "*Shikyō* ibun no on'inteki tokushitsu 詩經異文の音韻的特質" [Phonological characteristics of textual variants in the *Shījīng*], in: In *Chūgoku gogaku kenkyū* 中國語學研究 [Research in Chinese linguistics], 5–31. (Tōyōgaku sōsho 東洋學叢書 [East Asian studies series].) Tokyo: Sōbunsha 創文社.

Pankenier, David W.

1981–1982 "Astronomical dates in Shang and Western Zhou", *Early China* 7: 2–37.

Pejros, Il′ja Iosifovič & Sergej Anatol′evič Starostin

1977 "O genetičeskom sravnenii kitajskogo i tibetskogo jazykov (fonetičeskie sootvetstvija)" [On the genetic relationship of the Chinese and Tibetan languages (phonetic correspondences)], in: *Rannjaja ètničeskaja istorija narodov vostočnoj Azii* [Early ethnic history of the peoples of East Asia], 209–21. Moscow: Izdatel′stvo «Nauka», Glavnaja Redakcija Vostočnoj Literatury.

1984 "Sino-Tibetan and Austro-Tai", *Computational Analyses of Asian & African Languages* 22: 123–27.

Pokorny, Julius.

1989 *Indogermanisches etymologisches Wörterbuch.* (2nd edition.) 2 vols. Bern: Francke.

Poppe, Nicholas

1970 *Mongolian language handbook.* Washington: Center for Applied Linguistics.

Pound, Ezra

1954 *The Classic anthology according to Confucius.* Cambridge: Harvard University Press. [Translation of the *Shījīng* 詩經. Reprint: New York: New Directions, 1959, under the title *The Confucian odes: The classic anthology defined by Confucius.*]

Pulleyblank, Edwin G. [Pú Lìběn 蒲立本]

1962 "The consonantal system of Old Chinese", *Asia Major* 9: 58–144, 206–65.

1963 "An interpretation of the vowel systems of Old Chinese and Written Burmese", *Asia Major* 10: 200–221.

1965 "The transcription of Sanskrit *k* and *kh* in Chinese", *Asia Major* 11: 199–210.

1968 "The rhyming categories of Li Ho (791–817)", *Tsing Hua Journal of Chinese Studies,* n.s. 7: 1–25.

1970–1971 "Late Middle Chinese", *Asia Major* 15: 197–239, 16: 121–68.

1973a "Some further evidence regarding Old Chinese *-s* and its time of disappearance", *Bulletin of the School of Oriental and African Studies* 36: 368–73.

1973b "Some new hypotheses concerning word families in Chinese", *Journal of Chinese Linguistics* 1: 111–25.

1977–1978 "The final consonants of Old Chinese", *Monumenta Serica* 33: 180–206.

1984 *Middle Chinese: a study in historical phonology.* Vancouver: University of British Columbia Press.

1986 "Ablaut and initial voicing in Old Chinese morphology: **a* as an infix and prefix", paper for the 2nd International Conference on Sinology, Taipei, December 1986.

Purnell, H. C.

1970 Toward a reconstruction of Proto-Miao-Yao. [Unpublished Ph.D. dissertation, Cornell University.]

Pyles, Thomas & John Algeo

1982 *The origins and development of the English language*. (3rd edition.) New York: Harcourt Brace Jovanovich.

Qū Wànlǐ 屈萬里

1963 [1983] "Lùn *Guó fēng* fēi mínjiān gēyáo de běnlái miànmù 論國風非民間歌謠的本來面目" [On the fact that the *Guó fēng* odes do not have the original appearance of folksongs], in: Lín Qìngzhāng 林慶彰 (ed.), *Shījīng yánjiū lùn jí* 詩經研究論集 [Collected researches on the *Shījīng*], 19–38. Taipei: Táiwān Xuéshēng Shūjú 臺灣學生書局. [Originally published in *Bulletin of the Institute of History and Philology, Academia Sinica* 34: 477–491.]

1983a *Shījīng quán shì* 詩經詮釋 [Explanations of the *Shījīng*]. (Qū Wànlǐ Xiānsheng quán jí 屈萬里先生全集 [Complete works of Qū Wànlǐ], 5.) Taipei: Liánjīng Chūbǎn Shìyè Gōngsī 聯經出版事業公司.

1983b *Xiān Qín wén shǐ zīliào kǎo biàn* 先秦文史資料考辨 [Critical investigation of pre-Qín literary materials]. (Qū Wànlǐ Xiānsheng quán jí 屈萬里先生全集 [Complete works of Qū Wànlǐ], 4.) Taipei: Liánjīng Chūbǎn Shìyè Gōngsī 聯經出版事業公司.

Sagart, Laurent

1984 "Le destin des obstruantes sonores du chinois ancien dans les dialectes Min", *Cahiers de Linguistique Asie Orientale* 13: 91–99.

Sapir, Edward

1915 [1949] "Notes on Judeo-German phonology", in: *Selected writings of Edward Sapir in language, culture and personality*, edited

by David G. Mandelbaum, 252–72. Berkeley: University of California Press.

Schane, Sanford

1971 "The phoneme revisited", *Language* 47: 503–21.

Schuessler, Axel

1985 "The function of *qusheng* in Early Zhou Chinese", in: Graham Thurgood, James A. Matisoff, & David Bradley (eds.), 344–62.

1987 *A dictionary of Early Zhou Chinese*. Honolulu: University of Hawaii Press.

Shào Róngfēn 邵荣芬

1982 *Qièyùn yánjiū* 切韵研究 [A study of the *Qièyùn*]. Beijing: Zhōngguó Shèhuì Kēxué Chūbǎnshè 中國社會科學出版社.

Shěn Jiānshī 沈兼士

1945 [1977] *Guǎngyùn shēng xì* 廣韻聲系 [The sound system of the *Guǎngyùn*]. Taipei: Dàhuà Shūjú 大化書局.

Simon, Walter

1927–1928 "Zur Rekonstruktion der altchinesischen Endkonsonanten", *Mitteilungen des Seminars für orientalische Sprache* 30: 147–67, 31: 157–204.

Starostin, Sergej Anatol'evič

1982 "Praenisejskaja rekonstrukcija i vnešnie svjazi enisejskix jazykov" [Proto-Yeniseian reconstruction and the external connections of the Yeniseian languages], in: E. A. Alekseenko et al. (eds.), *Ketskij sbornik: antropologija, ètnografija, mifologija, lingvistika* [Collected Ket papers: anthropology, ethnography, mythology, linguistics], 144–237. Leningrad: Izdatel'stvo «Nauka».

1984 "Gipoteza o genetičeskix svjazjax sinotibetskix jazykov s enisejskimi i severnokavkazskimi jazykami" [On the hypothesis of a genetic connection between the Sino-Tibetan languages and the Yeniseian and North-Caucasian languages], in: *Lingvističeskaja rekonstrukcija i drevnejšaja istorija vostoka: tezisy*

i doklady konferencii [Linguistic reconstruction and the earliest history of the East: theses and conference papers], part 4: *Drevnejšaja jazykovaja situacija v vostočnoj Azii* [The earliest linguistic situation in East Asia], 19–38. Moscow: Izdatel'stvo «Nauka». [English translation in Baxter 1987a.]

1989 *Rekonstrukcija drevnekitajskoj fonologičeskoj sistemy* [A reconstruction of the Old Chinese phonological system]. Moscow: «Nauka», Glavnaja Redakcija Vostočnoj Literatury.

Starostin, Sergej Anatol'evič, & Il'ja Iosifovič Pejros

n.d. Materialy k ètimologičeskomu slovarju sinotibetskix jazykov [Materials for an etymological dictionary of the Sino-Tibetan languages]. [Unpublished MS.]

Stimson, Hugh M.

1966 *The* Jongyuan in yunn: *a guide to Old Mandarin pronunciation.* (Sinological series, no. 12.) New Haven: Yale University Far Eastern Publications.

Thurgood, Graham, James A. Matisoff, & David Bradley (eds.)

1985 *Linguistics of the Sino-Tibetan area: the state of the art—Papers presented to Paul K. Benedict for his 71st birthday.* (Pacific Linguistics, Series C, No. 87.) Canberra: The Australian National University.

Ting Pang-hsin [Dīng Bāngxīn 丁邦新]

1975 *Chinese phonology of the Wei-Chin period: Reconstruction of the finals as reflected in poetry.* (IHP special publications, no. 65.) Taipei: Institute of History and Philology, Academia Sinica.

1977–1978 "Archaic Chinese *g, *gw, *ɣ, and *ɣw", *Monumenta Serica* 33: 171–79.

Van Coetsem, Frans & Linda R. Waugh (eds.)

1980 *Contributions to historical linguistics: Issues and materials.* (Cornell linguistic contributions, vol 3.) Leiden: E. J. Brill.

Waley, Arthur (trans.)

1954 *The book of songs.* (2nd edition.) London: G. Allen & Unwin. [Translation of the *Shījīng* 詩經.]

Walton, A. Ronald

1986 "The Taishun phonological system: a descriptive study of a Northeastern Min dialect", in: John McCoy & Timothy Light (eds.), 426–77.

Wáng Guówéi 王國維

1917 *Jīnběn Zhú shū jì nián shūzhèng* 今本竹書紀年疏證 [Critical commentary on the modern version of the *Bamboo annals*]. Taipei: Yìwén Yìnshūguǎn 藝文印書舘. Published (on pages 39–138) in a single volume with *Gǔběn Zhú shū jì nián jí jiào* 古本竹書紀年輯校 [Critical edition of the ancient version of the *Bamboo annals*] (pages 1–38).

1917 [1968] "Liǎng Zhōu jīnshíwén yùndú 兩周金石文韻讀" [Rhymed passages in bronze and stone inscriptions of Western and Eastern Zhōu], in: *Wáng Guāntáng xiānshēng quán jí* 王觀堂先生全集 [Complete works of Professor Wáng Guāntáng (Wáng Guówéi 王國維)], vol. 6, 1961–1988. Taipei: Wén Huá Chūbǎn Gōngsī 文華出版公司.

Wáng Lì 王力

1936 "Nán-běi cháo shīrén yòng yùn kǎo 南北朝詩人用韻考" [Investigation of the rhyme practice of poets of the Nán-běi cháo period], *Tsing Hua Journal of Chinese Studies* 11: 783–842. [Reprinted as Wáng Lì 1936 [1958] and 1936 [1980], with minor changes.]

1936 [1958] "Nán-běi cháo shīrén yòng yùn kǎo 南北朝詩人用韻考 [Investigation of the rhyme practice of poets of the Nán-běi cháo period], in: Wáng Lì 1958: 1–76. [Reprint of Wáng Lì 1936, with minor changes.]

1936 [1980] "Nán-běi cháo shīrén yòng yùn kǎo 南北朝詩人用韻考" [Investigation of the rhyme practice of poets of the Nán-běi cháo period], in: Wáng Lì 1980a, vol. 1, 1–62. [Reprint of Wáng Lì 1936, with minor changes.]

1936–1937 *Zhōngguó yīnyùnxué* 中國音韻學 [Chinese phonology]. 2 vols. Shanghai: Shāngwù Yìnshūguǎn 商務印書館.

1936–1937 [1957] *Hànyǔ yīnyùnxué* 漢語音韵學 [Phonology of the Hàn language]. Beijing: Zhōnghuá Shūjú 中華書局. [One-

volume reprint of Wáng Lì 1936–1937, with minor corrections.]

1937 "Shànggǔ yùnmǔ xìtǒng yánjiū 上古韻母系統研究" [A study of the Old Chinese system of finals], *Tsing Hua Journal of Chinese Studies* 12: 433–540. [Reprinted, with slight changes, as Wáng Lì 1937 [1958] and 1937 [1980].]

1937 [1958] "Shànggǔ yùnmǔ xìtǒng yánjiū 上古韻母系統研究" [A study of the Old Chinese system of finals], in: Wáng Lì 1958: 77–156. [Reprint of Wáng Lì 1937, with slight changes.]

1937 [1980] "Shànggǔ yùnmǔ xìtǒng yánjiū 上古韻母系統研究" [A study of the Old Chinese system of finals], in: Wáng Lì 1980a: 80–154. [Reprint of Wáng Lì 1937, with slight changes.]

1948 [1958] "Hàn-Yuè yǔ yánjiū 漢越語研究" [A study of Sino-Vietnamese], in: Wáng Lì 1958: 290–406.

1957 [1973] *Hànyǔ shīlǜxué* 漢語詩律學 [Prosody of the Hàn language]. Hong Kong: Zhōnghuá Shūjú Xiānggǎng Fēnjú 中華書局香港分局. [Originally published by Zhōnghuá Shūjú 中華書局, Beijing.]

1958 *Hànyǔ shǐ lùnwén jí* 漢語史論文集 [Collected papers on the history of the Hàn language]. Beijing: Kēxué Chūbǎnshè 科學出版社.

1980a *Lóng chóng bìng diāo zhāi wén jí* 龍蟲並雕齋文集 [Collected papers from the studio in which both dragons and bugs are carved]. 2 vols. Beijing: Zhōnghuá Shūjú 中华书局.

1980b *Shījīng yùn dú* 诗经韵读 [The rhymes of the *Shījīng*]. Shanghai: Shànghǎi Gǔjí Chūbǎnshè 上海古籍出版社. [Also reprinted in Wáng Lì 1984–, vol. 6.]

1981 *Zhōngguó yǔyánxué shǐ* 中国语言学史 [History of Chinese linguistics]. Taiyuan: Shānxī Rénmín Chūbǎnshè 山西人民出版社.

1982 *Tóngyuán zìdiǎn* 同源字典 [Dictionary of etymologically related words]. Beijing: Shāngwù Yìnshūguǎn 商務印書館.

1984 "*Jīngdiǎn shìwén* fǎnqiè kǎo 经典释文反切考" [An investigation of the fǎnqiè spellings of the *Jīngdiǎn shìwén*], in: Zhōngguó Yīnyùnxué Yánjiū Huì 1984: 23–77.

1984– *Wáng Lì wén jí* 王力文集 [Collected writings of Wáng Lì]. 6 vols. to date. Jǐnán 济南: Shāndōng Jiàoyù Chūbǎnshè 山东教育出版社.

Wáng Xiānqiān 王先謙

1915 [1973] *Shī sān jiā yì jí shū* 詩三家義集疏 [Collected commentaries on the *Shījīng* interpretations of the 'three schools']. (Guóxué míngzhù zhēnběn huìkān: Jīn sānbǎi nián jīngxué míngzhù huìkān 國學名著珍本彙刊近三百年經學名著彙刊 [Collected rare editions of famous works of sinology: Collected famous works of classical studies of the last three hundred years, 1.] Taipei: Dǐngwén Shūjú 鼎文書局. [Bound together with *Shījīng xué zuǎn yào* 詩經學纂要 (Essentials of *Shījīng* study), by Xú Chéngyǔ 徐澄宇 (Xú Yīng 徐英)].

Webster's New World dictionary of the American language

1980 2nd college edition. Cleveland: William Collins.

Wénwù Jú Gǔ Wénxiàn Yánjiūshì 文物局古文献研究室 [Ancient Document Research Center, Bureau of Cultural Relics], Ānhuī Fùyáng Dìqū Bówùguǎn 安徽阜阳地区博物馆 [Fùyáng Regional Museum, Ānhuī Province], & Fùyáng Hànjiǎn Zhěnglǐ Zǔ 阜阳汉简整理组 [Team for sorting out the Hàn bamboo strips from Fùyáng]

1984 "Fùyáng Hànjiǎn *Shījīng* 阜阳汉简《诗经》" [The Hàn bamboo-strip version of the *Shījīng* from Fùyáng]. *Wénwù* 文物 [Cultural relics], 1984, no. 8: 1–12.

Xiàng Xī 向熹

1986 *Shījīng cídiǎn* 诗经词典 [Dictionary of the *Shījīng*]. Chengdu: Sìchuān Rénmín Chūbǎnshè 四川人民出版社.

Xú Zhōngshū 徐中舒 (ed.)

1980 *Hànyǔ gǔwénzì zìxíng biǎo* 漢語古文字字形表 [Table of character shapes of ancient Hàn scripts]. (1st edition.) Chengdu: Sìchuān Rénmín Chūbǎnshè 四川人民出版社. [Reprinted: Hong Kong: Zhōnghuá Shūjú 中華書局, 1981.]

Xǔ Zhuōyún 許倬雲 *see* Hsu, Cho-yun

Xuě Rú 雪如

1928 [1971] *Běipíng gēyáo jí* 北平歌謠集 [Collection of Běipíng folk songs]. (Guólì Běijīng Dàxué Zhōngguó Mínsú Xuéhuì Mínsú cóngshū, dì èr jí 國立北京大學中國民俗學會民俗叢書第二輯 [Folklore series of the Chinese Folklore Society of National Beijing University, second series], 36.) Taipei: Dōngfāng Wénhuà Shūjú 東方文化書局 [The Orient Cultural Service].

Yakhontov, S. E. *see* Jaxontov, Sergej Evgen′evič

Yú Mǐn 俞敏

1948 "Lùn gǔ yùn 合 Hé 怗 Tiē 屑 Xiè 沒 Mò 曷 Hé wǔ bù zhī tōngzhuǎn 論古韻合怗屑沒曷五部之通轉" [On the etymological relations of words of the five ancient rhymes 合 Hé, 怗 Tiē, 屑 Xiè, 沒 Mò, and 曷 Hé], *Yānjīng Xuébào* 燕京學報 [Yānjīng Journal] 34: 29–48.

Yú Nǎiyǒng 余迺永 [Yu Nai-wing]

1980 Liǎng Zhōu jīnwén yīnxì kǎo 兩周金文音系考 [An investigation of the phonological system of bronze inscriptions of Western and Eastern Zhōu]. [Unpublished Ph.D. dissertation, Taiwan Normal University.]

1985 *Shànggǔ yīnxì yánjiū* 上古音系研究 [A study of the Old Chinese sound system]. Hong Kong: Zhōngwén Dàxué Chūbǎnshè 中文大學出版社 [The Chinese University Press].

Yú Xǐngwú 于省吾

1962 "Cóng gǔ wénzìxué fāngmiàn lái píngpàn Qīng dài wénzì, shēngyùn, xùngǔ zhī xué de dé-shī 从古文字学方面来评判清代文字声韵训诂之学的得失" [Evaluating the accomplishments and failings of Qīng-dynasty paleography, phonology, and philology from the point of view of paleography], *Lìshǐ Yánjiū* 历史研究 [Historical research] 1962, no. 6: 135–44.

Zhān Bóhuì 詹伯慧

1981 [1985] *Xiàndài Hànyǔ fāngyán* 现代汉语方言 [The dialects of the modern Hàn language]. (Xiàndài Hànyǔ zhīshi cóngshū 现代汉语知识丛书 [Knowledge about the Modern Hàn language].) N.p.: Húběi Jiàoyù Chūbǎnshè 胡北教育初版社. [Original 1981 edition: n.p.: Húběi Rénmín Chūbǎnshè 胡北人民出版社.]

Zhāng Guāngyù 張光裕 *see* Cheung Kwong-yue

Zhāng Qǐzhī 张岂之

1982 *Gù Yánwǔ* 顾炎武 [Gù Yaǹwǔ]. Beijing: Zhōnghuá Shūjú 中华书局.

Zhāng Rìshēng 張日昇 [Cheung Yat-shing]

1968 "Shì lùn shànggǔ sìshēng 試論上古四聲" [A study of the tones in Archaic Chinese], *Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong* 1: 113–70.

Zhāng Yùhóng 張裕宏 *see* Chang Yü-hung

Zhāng Yǔnzhōng 張允中

1987 *Shījīng gǔ yùn jīn zhù* 詩經古韻今注 [Modern notes on the ancient rhymes of the *Shījīng*]. Taipei: Táiwān Shāngwù Yìnshūguǎn 臺灣商務印書館.

Zhào Yuánrèn 趙元任 *see* Chao, Yuen Ren

Zhào Zhènduó 趙振鐸

1962 "Cóng *Qièyùn xù* lùn *Qièyùn* 从切韵序論切韵" [Discussion of the *Qièyùn* on the basis of the *Qièyùn* preface], *Zhōngguó Yǔwén* 中国语文 [Chinese language] 1962, no. 10: 467–76.

Zhèng-Zhāng Shàngfāng 郑张尚芳

1983 "Wēnzhōu fāngyán 歌 Gē yùn dúyīn de fēnhuà hé lìshǐ céngcì 温州方言歌韵读音的分化和历史层次" [Splits and historical levels in the readings of the 歌 Gē rhyme group in the Wēnzhōu dialect], *Yǔyán Yánjiū* 语言研究 [Language research] 1983, no. 2: 108–20.

1987 "Shànggǔ yùnmǔ xìtǒng hé sìdeng, jièyīn, shēngdiào de fāyuán wèntí 上古韵母系统和四等、介音、声调的发源

问题" [The Old Chinese final system and the problem of the origins of division IV, medials, and tones]. *Wēnzhōu Shīyuàn Xuébào (Shèhuì Kēxué Bǎn)* 温州师院学报 (社会科学版) [Journal of Wēnzhōu Normal College (Social Science edition)] 1987, no. 4: 67–90.

n.d. Hànyǔ shànggǔ yīnxì biǎo jiě 汉语上古音系表解 [The Old Chinese phonological system explained in tables]. [Unpublished MS.]

Zhōngguó Yīnyùnxué Yánjiū Huì 中国音韵学研究会 [Chinese Phonological Research Association]

1984 *Yīnyùnxué yánjiū* 音韵韵学研究 [Phonological research]. Vol. 1. Beijing: Zhōnghuá Shūjú 中华书局.

Zhōu Cèzòng 周策縱 *see* Chow Tse-tsung

Zhōu Fǎgāo 周法高

1948a [1968] "*Guǎngyùn* chóngniǔ de yánjiū 廣韻重紐的研究" [A study of the repeated entries of the *Guǎngyùn*], in: Zhōu Fǎgāo 1968b: 1–69. [Originally published in *Bulletin of the Institute of History and Philology, Academia Sinica* 13: 49–117.]

1948b [1968] "Xuányìng fǎnqiè kǎo 玄應反切考" [An investigation of the fǎnqiè spellings of Xuányìng], in: Zhōu Fǎgāo 1968b: 153–238. [Originally published in *Bulletin of the Institute of History and Philology, Academia Sinica* 20: 359–444.]

1954 [1968] "Lùn gǔdài Hànyǔ de yīnwèi 論古代漢語的音位" [On the phonemes of Ancient Chinese], in: Zhōu Fǎgāo 1968b: 263–81. [Originally published in *Bulletin of the Institute of History and Philology, Academia Sinica* 25: 1–19.]

1968a "Lùn *Qièyùn* yīn 論切韻音" [On the phonology of Ancient Chinese], *Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong* 1: 89–112.

1968b *Zhōngguó yǔyánxué lùnwén jí* 中國語言學論文集 [Collected writings on Chinese linguistics]. Hong Kong: Chóngjī Shūdiàn 崇基書店.

1969 "Lùn Shànggǔ yīn 論上古音" [On Old Chinese pronunciation], *Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong* 2: 109–78.

1970 "Lùn Shànggǔ yīn hé *Qièyùn* yīn 論上古音和切韻音" [On the phonology of Archaic and Ancient Chinese], *Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong* 3: 321–457.

1971 "Chronology of the Western Chou dynasty", *Journal of the Institute of Chinese Studies of the Chinese University of Hong Kong* 4: 173–205.

Zhōu Fǎgāo 周法高, Zhāng Rìshēng 張日昇, Xú Zhǐyí 徐芷儀, & Lín Jiémíng 林潔明 (eds.)

1974a *An etymological dictionary of ancient Chinese bronze inscriptions* (*Jīnwén gǔlín* 金文詁林). 16 vols. Hong Kong: The Chinese University Press of Hong Kong.

1974b *A pronouncing dictionary of Chinese characters in Archaic & Ancient Chinese, Mandarin & Cantonese* (*Hànzì gǔ-jīn yīn huì* 漢字古今音彙). Hong Kong: The Chinese University Press.

Zhōu Zǔmó 周祖謨

1941 [1966] "Gǔyīn yǒu wú shǎng qù èr shēng biàn 古音有無上去二聲辨" [On whether ancient pronunciation had the rising and departing tones], in: Zhōu Zǔmó 1966d: 32–80. [Also in Zhōu Zǔmó 1957: 159–88.]

1943 [1966] "*Yán shì jiā xùn yīn cí piān zhù* bǔ 顏氏家訓音辭篇注補" [Supplement to *Notes on the chapter on sounds and words of the Family instructions of the Yán clan*], in: Zhōu Zǔmó 1966d: 405–33. [Also in Zhōu Zǔmó 1957: 75–88.]

1945 [1966] "Wú Yù de gǔyīnxué 吳棫的古音學" [The studies of Wú Yù on ancient pronunciation], in: Zhōu Zǔmó 1966d: 213–17.

1946 [1966] "Sì shēng bié yì shì lì 四聲別義釋例" [Cases where the four tones distinguish meanings: sample interpretations], in: Zhōu Zǔmó 1966d: 81–119. [Also in Zhōu Zǔmó 1957: 51–74.]

1957 *Hànyǔ yīnyùn lùnwén jí* 漢語音韻論文集 [Collected papers on the phonology of the Hàn language]. Shanghai: Shāngwù Yìnshūguǎn 商務印書館.

1963 [1966] "*Qièyùn* de xìngzhì hé tāde yīnxì jīchǔ 切韻的性質和它的音系基礎" [The nature of the *Qièyùn* phonological system and its phonological foundation], in: Zhōu Zǔmó 1966d: 434–73. [Originally published in *Yǔyánxué lùncóng* 语言学论丛 (Collected articles on linguistics) 5: 39–70. For English translation see Zhōu Zǔmó 1968.]

1966a "*Banshō meigi* zhōng zhī yuánběn *Yùpiān* yīnxì 萬象名義中之原本玉篇音系" [The sound system of the original version of the *Yùpiān* as found in the *Banshō meigi*], in: Zhōu Zǔmó 1966d: 270–404.

1966b "*Shījīng* yùn zì biǎo 詩經韻字表" [Table of *Shījīng* rhyme words], in: Zhōu Zǔmó 1966d: 218–69.

1966c "Wáng Rénxū *Qièyùn* zhùzuò niándài shì yí 王仁煦切韻著作年代釋疑" [Resolving doubts on the date of composition of Wáng Rénxū's version of the *Qièyùn*], in: Zhōu Zǔmó 1966d: 483–93.

1966d *Wèn xué jí* 问学集 [Collected scholarly inquiries]. 2 vols. Beijing: Zhōnghuá Shūjú 中華書局.

1968 "Chou Tsu-mo on the *Ch'ieh-yün*", *Bulletin of the Museum of Far Eastern Antiquities* 40: 33–78. [Translation, by Göran Malmqvist, of Zhōu Zǔmó 1963 [1966].]

1983 "Wèi Jìn Sòng shíqī shīwén yùnbù de yǎnbiàn 魏晋宋时期诗文韵部的演变" [The evolution of rhyme categories in poetry of the Weì-Jìn and Sòng periods], *Zhōngguó Yǔyán Xuébào* 中國語言學報 [Chinese linguistics journal] 1: 91–113.

1984 "Hàn dài zhúshū yǔ bóshū zhōng de tōngjiǎ zì yǔ gǔyīn de kǎodìng 汉代竹书与帛书中的通假字与古音的考订" [Loan characters in bamboo and silk manuscripts of the Hàn dynasty and the establishment of ancient pronunciation], in: Zhōngguó Yīnyùnxué Yánjiū Huì 1984: 78–91.

Zhū Déxī 朱德熙 & Qiú Xīguī 裘錫圭

1984 "Qīshí niándài Zhōngguó chūtǔ de Qín Hàn jiǎncè hé bóshū 七十年代中國出土的秦漢簡册和帛書" [Bamboo slips and silk manuscripts of the Qín and Hàn dynasties excavated in China in the seventies], *Zhōngguó Yǔwén Yánjiū* 中國語文研究 [Chinese language study] 6: 3–12.

Zhū Jùnshēng 朱駿聲

1833 *Shuōwén tōng xùn dìng shēng* 説文通訓定聲 [Connecting glosses to establish the sounds of the *Shuōwén*]. Reproduced in Dīng Fúbǎo 1928–1932 [1976].

Zhū Qiānzhī 朱謙之

1984 *Lǎozǐ jiào shì* 老子校釋 [Textual notes and interpretations of the *Laǒzi*]. (Xīn biān zhū zǐ jí chéng 新編諸子集成 [New series of ancient authors], 1.) Beijing: Zhōnghuá Shūjú 中華書局.

Index

-a > -u (sound change) 481–482, 572, 575
Abstractness 18, 815 n. 17, 824 n. 70
Acute fronting (sound change) 73, 278, 375, 379, 380, 385, 386, 574–575
Acute initials 59
African languages 303
***-aj* monophthongization** (sound change) 293–294, 312, 314–315, 361, 415, 570, 815 n. 17, 835 n. 158, 847 n. 234
American Structuralism 17
Amoy (*see* Xiàmén)
Analogy 333, 337–338
Ānhuī 安徽 province 10
Ānhuī school 157
Anhwei (*see* Ānhuī province)
***a*-raising** (sound change) 73, 277, 285–287, 574, 575, 578, 579
Areal features 303
Arisaka Hideyo 242, 283, 286, 842 n. 199
Asterisk, use of 16
Austroasiatic languages 233, 539, 846 n. 231
See also Mon-Khmer languages, Vietnamese
Bahnar language 308, 309
Báihuà 白話 'plain speech' 10
Bái hǔ tōng yì 白虎通義 233, 265, 470, 525, 863 n. 358
Bàn chǐyīn 半齒音 'half front-tooth sounds' 55
Bān Gù 班固 850 n. 265
See also *Hàn shū*
Banshō Meigi 萬象名義 (see *Tenrei Banshō Meigi*)
Bantu languages 303
Barnard, Noel 814 n. 6
Bèi 邶 (ancient state) 419
Beijing 北京 38, 160, 307
Beijing dialect 817–818 n. 30
See also Mandarin dialects
Beijing University 168, 832 n. 129
Benedict, Paul K. 221, 334, 335, 833 n. 141, 836 n. 159, 844 n. 210, n. 212
Bernoulli, Jacques 825 n. 76
Bernoulli trails 102, 103, 105, 112, 113, 114
Biuniqueness 17
Bodman, Nicholas C. 5, 25–26, 220, 225, 228, 229, 231, 232–235, 247, 288, 409, 509, 539, 540, 559, 814 n. 7, 816 n. 22, 859 n. 326
Bodman-Baxter system 814 n. 7
Boldface type, use of 16
Bó xué piān 博學篇 346
Bronze inscriptions 2, 14, 295, 345–346, 383, 403, 406, 464, 467, 505–506, 558, 840 n. 186
See also Chinese script: early script
Bù 部 'rhyme group' 141
Buddha 287
Buddhism 41, 322
Burmese language 203, 207, 208, 217, 539, 540, 545
See also Tibeto-Burman languages
Bushman language 303
Cāng Jié piān 倉頡篇 346, 849 n. 255
Cantonese dialect 9, 11, 48, 57, 260, 262, 269, 497, 819 n. 44, 847 n. 234
Caucasus, languages of 813 n. 5
Chang, Betty Shefts 221, 255, 816 n. 22
Chang, Kun 221, 255, 816 n. 22

Cháng'ān 長安 36, 37
Changes, phonological 18–19
See also Irregular pronunciations
Chángjiāng 長江 (Yangtze river) 9, 10
Chángshā 長沙 10
Chao, Yuen Ren 47, 62, 252, 272, 581, 817 n. 30
Cháoyáng 潮陽 dialect 294
See also Mǐn dialects
Characters (*see* Chinese script)
Chekiang (*see* Zhèjiāng province)
Chén 陳 (ancient state), dialect of 296
Chén Dì 陳第 154–155, 172, 304, 829 n. 107, n. 109, 845 n. 221
Chén Lǐ 陳澧 54, 56
Chepang language 409
Chinese language
historical stages 14–15
modern dialects 7, 9–11, 25, 32, 42, 45–46, 49, 51, 55, 56, 77, 240, 260, 262, 268–269, 282, 306–307, 322, 579, 818 n. 34
syllable structure 6–7
See also Mandarin, Cantonese, etc.
Chinese script 4–5, 12, 152
as evidence 3, 4–5
early script 140, 162, 270, 272, 274, 338–339, 380, 382, 386, 464, 545, 557, 558, 848 n. 246, 857 n. 308
See also Bronze inscriptions, *Dà zhuàn*, *Kǎishū*, *Lìshū*, Oracle bones, *Xiǎo zhuàn*, *Zhuànshū*
Chi-square analysis 515
Chóngniǔ 重紐 syllables (*see under* Middle Chinese)
Chrau language 308, 309, 846 n. 230
Chǔcí 楚辭 417, 436, 856 n. 304
Chữ nôm 542
Cì qīng 次清 'second clear' initials 45
Circularity, in statistical reasoning 121–126, 368, 854 n. 289
Cì zhuó 次濁 'second muddy' initials 46
Clan (in Marxist linguistics) 8
Clerical script (see *Lìshū*)
Coblin, W. South 198–199, 203, 281, 299, 301, 311, 335, 482, 550, 569, 817 n. 28, 834 n. 148, 844 n. 212, 864 n. 370
Coda 6
See also under Middle Chinese, Old Chinese
Common language (in Marxist linguistics) 8
Comparative method 11
Computers 27, 29, 30, 111, 139, 825 n. 78
Confucius 346, 356–357, 357, 831 n. 125, 845 n. 223
Cotton, terms for 309, 846 n. 231
Dài Zhèn 戴震 37, 160, 162–164, 166, 433, 828 n. 99, 830 n. 116, 831 n. 121, n. 122, n. 124
Danish language 9
Dà zhuàn 大篆 'large seal' script 346, 849 n. 256
See also Chinese script: early script
DeMoivre, Abraham 825 n. 79
DeMoivre-Laplace theorem 112, 114–116, 131, 826 n. 80, n. 81
Denasalization (sound change) 294–295, 298, 351, 576
Děng 等 'divisions' 42
See also Middle Chinese: divisions
Děngyùnxué 等韻學 41, 157
See also Rhyme tables
Dental palatalization (sound change) 178, 191, 193–194, 228, 290, 569, 570
Devanāgarī alphabet 819 n. 39
Dialect, definition of 7–9, 814 n. 9

Dialect mixture 57, 414, 479–481, 485, 521, 533, 842 n. 198, 847 n. 234, 854 n. 288
See also Chinese language: dialects; Middle Chinese: dialects; Old Chinese: dialects
Dictionaries, American 37
Dìng'ān 定安 dialect 322
Dīng Shēngshù 828 n. 99
Distinctive features 17, 180
Dǒng Tónghé
Middle Chinese reconstruction 78, 284
Old Chinese reconstruction 169, 210, 245–246, 249, 268–269, 294, 328, 329, 331, 333, 416, 448, 465, 466–467, 497, 537–538, 581, 837–838 n. 174, 841 n. 191, 848 n. 245, 860 n. 336
Downer, G. B. 315, 316
Duàn Yùcái 段玉裁 139, 141, 160–162, 164, 166, 169–171, 172, 304–305, 343, 353, 389, 406, 468, 548, 830 n. 115, n. 116, 830–831 n. 117, 831 n. 118, 838 n. 176, 848 n. 245, 850 n. 257, 855 n. 298, 862 n. 354, n. 356, 865 n. 374
Dūnhuáng 敦煌 38
Dú shū zá zhì 讀書雜誌, by Wáng Niànsūn 168
Dù Táiqīng 杜臺卿 35
**elo* binomes 385–386, 387, 409–410, 468, 469, 496, 502, 505, 546–547, 863 n. 360
Early Middle Chinese 14, 15, 29, 41, 46, 55, 63, 66, 478
rhyming 241, 579
See also Middle Chinese; Pulleyblank: Early Middle Chinese reconstruction
Eastern Hàn 漢 dynasty, phonology of 361, 570, 576
See also Hàn dynasty
Eastern Zhōu 周 dynasty 310, 343, 389
See also Zhōu dynasty
English language 19, 37, 332, 861 n. 349, 942 n. 196
Ěryǎ 爾雅 13, 832 n. 130
Etymological works, as evidence 13
European languages 1, 332–333
Fāngyán 方言, by Yáng Xióng 13
Fāngyán 方言 'dialect', definition of 7, 814 n. 9
Fǎnqiè 反切 spellings 33, 40–41, 50, 54, 59, 62, 69–71, 152, 154, 189, 206, 207, 242, 267, 279, 363, 818 n. 32, 821 n. 52, 822 n. 59, 829 n. 102, 858 n. 323
Final 6
See also under Middle Chinese
Final cluster simplification (sound change) 311–313, 314, 315, 318, 337–338, 435, 438, 474, 487, 496, 504, 519, 521, 534, 535, 544, 562, 568–569, 573, 815 n. 17, 847 n. 234, 848 n. 247
Final voiced stop hypothesis 325–339
See also Karlgren, Bernhard: Archaic Chinese reconstruction
Finnish language 823 n. 69
Foochow (*see* Fúzhōu)
French language 332, 824 n. 70, 489–490
Front-vowel hypothesis 179, 235, 236, 240–247, 247, 248, 343, 361, 367, 368, 371, 422, 447, 507, 518, 523, 526, 530, 548, 554, 560, 845 n. 218
Fújiàn 福建 province 9, 11, 322
Fukien (*see* Fújiàn province)
Fusion words 334
Fùyáng *Shī* (see *Shījīng:* Fùyáng version)
Fúzhōu 福州 dialect 11, 294, 822 n. 61
See also Mǐn dialects
Fuzzy theory of rhyming 823 n. 65
Gàn 贛 dialects 9, 10
Gāo Míng 338–339

Gāo Yòu 高誘 281, 295
Gāoyóu Wáng shì yí shū 高郵王氏遺書 166–167
Genetic relationship 21
Germanic languages 332
German language 333, 823 n. 68
Gě Yìqīng 820 n. 45
Glosses on the classics, as evidence 13
Gong Hwang-cherng 862 n. 357
Gōngyáng zhuàn 公羊傳 845 n. 217
Go'on 呉音 14
Grave initials 59
Greek language 2
Gregerson, Kenneth 308
Guǎngdōng 廣東 province 10, 11
Guǎngxī 廣西 autonomous region 10
Guǎngyǎ 廣雅 832 n. 130
Guǎngyǎ shū zhèng 廣雅疏證 168
Guǎngyùn 廣韻 38–40
Guǎngyùn 83, 141, 155, 159, 162, 171–172, 206, 267–268, 362, 417, 445, 448, 817 n. 25, 844 n. 214, 854 n. 289
  arrangement of 820 n. 49, n. 50
  phonology of 56, 480, 508, 512, 533, 581, 836 n. 164, 861 n. 346
Guǎngzhōu 廣州 11
Guìzhōu 貴州 province 9
Guō Pú 郭璞 (A.D. 276–324) 68–69, 363, 432, 817 n. 29, 829 n. 101
Gǔwén 古文 'old script' 347, 407
Gù Yánwǔ 顧炎武 155–157, 157–159, 160, 166, 169–171, 171–172, 304, 829–830 n. 110, 830 n. 111
Gù Yěwáng 顧野王 13, 40
Gǔ yùn biāozhǔn 古韻標準, by Jiāng Yǒng 157, 304
Gǔ yùn pǔ 古韻譜, by Wáng Niànsūn 166–168
Hǎinán 海南 province 11, 322
Hakka (Kèjiā 客家) dialects 9, 10, 47, 57, 819 n. 41
  See also Méixiàn dialect
Hàn 漢 dynasty (206 B.C. to A.D. 220) 4–5, 13, 33, 357–358,
  dialects 295, 298–299
  phonology 289, 290, 293, 565, 567, 569, 570, 573, 574, 577, 851 n. 270
  script 346–347
  standardization of texts in 343
  See also Eastern Hàn dynasty, Western Hàn dynasty
Hàn learning (see *Hànxué pài*)
Hàn 漢 nation 8
Hàn shū 漢書, by Bān Gù 班固 296, 850 n. 265
  Yìwén zhì 藝文志 356
Hànxué pài 漢學派 'Hàn learning school' 155
Haudricourt, André 308–309, 313, 315, 320, 322, 336
Hebrew language 823 n. 64
Hékǒu 合口 'closed mouth' 42, 43, 62
Hénán 河南 province 419
Hé yùn pǔ 合韻譜, by Wáng Niànsūn 169
Hi > mid (sound change) 183–184, 251, 252, 261 (Table 7.4), 289, 290, 400, 418, 426, 512, 542, 577, 578, 579, 580, 838 n. 177, 843 n. 205
Hmong-Mien languages (*see* Miao-Yao)
Homophone groups, in rhyme books 35
  See also Rhyme books
Hong Kong 11
Hottentot language 303
Hóu yīn 喉音 'throat sounds' 55, 58
Huáinánzǐ 淮南子 281
Huáng Kǎn 黃侃 173, 837 n. 171, 859 n. 327

Hugo, Victor 824 n. 70
Huìlín 慧琳 242, 279, 508
See also *Yíqiè jīng yīnyì*
Húmǔ Jìng 胡母敬 346
Húnán 湖南 province 9, 10
Hu Shih (Hú Shì 胡適) 831 n. 124
Hú Shì (*see* Hu Shih)
Hypotheses, phonological 18
India 41
Indian phonology 33
Indic loans in Chinese 542
Indo-European languages 1, 2
Initial 6
Interjections 334
International Phonetic Alphabet (IPA) 17, 45, 48, 832 n. 137
IPA (*see* International Phonetic Alphabet)
Irregular pronunciations 15–16
***i*-fronting** (sound change) 247, 251, 252, 426, 432, 440, 446, 449, 456–457, 558, 574, 577, 833, 838 n. 177, n. 178
-ja* > *-jo (sound change) 467, 481, 482, 568, 572, 842 n. 195
***-jA(k)* fronting** (sound change) 479–481, 485–486, 570, 571
Japan 12
Japanese language 12–13, 282
See also Go'on, Old Japanese language, Sino-Japanese
Jaxontov, S. E. 4, 23, 176, 178, 179, 224, 235, 236, 237, 238–239, 240, 250, 262, 288, 385, 828 n. 95, 838 n. 178, 840 n. 185, 848 n. 246
***j*-backing** (sound change) 286, 287 (Table 7.10), 579–580
jE* > *je (sound change) 286, 287 (Table 7.10), 581
Jiǎjiè zì 假借字 'loan characters' 360, 386
Jiāngsū 江蘇 province 10
Jiāngxī 江西 province 9, 10, 480
Jiāng Yǒng 江永 157–159, 160, 162, 166, 169–171, 172, 172, 304, 336, 830 n. 112, n. 114
Jiāng Yǒugào 江有誥 140, 141, 166, 169–171, 172, 305, 412, 446, 447, 448, 450, 828 n. 97, 831 n. 127, 832 n. 133, 848 n. 245, 859 n. 327
Jiànyáng 建陽 dialect 322
Jiānyīn 尖音 'sharp sounds' 52, 817 n. 30
Jiāo Hóng 焦竑 152
Jiarong language 201
Jièyīn 介音 'medial' 6
See also Middle Chinese: medials; Old Chinese: medials
Jìn 晉 dialects 10, 814 n. 11
Jìn 晉 dynasty (A.D. 265–420) 486
Jǐnán 濟南 307
Jīngdiǎn shìwén 經典釋文, 13, 40, 152, 153, 218, 268, 300, 357, 363, 388, 417, 421, 423, 432, 445, 446, 462, 508, 534, 568, 852 n. 277, n. 278, 841 n. 188, 854 n. 289, 856 n. 300, 862 n. 356
Jinghpaw language 201, 202
Jīnlíng 金陵 37
***j*-insertion** (sound change) 418, 471, 474, 492–493, 578–579
-jiw(k)* > *-juw(k) (sound change) 512, 577
Jíyùn 集韻 38, 39, 838 n. 177
-ji(K)* > *-i(K) (sound change) 279, 470, 473, 477, 580
-jo* > *-ju (sound change) 502
Kāikǒu 開口 'open mouth' 42, 43, 62
Kǎishū 楷書 'standard script' 346–347
Kalevala 823–824 n. 69
Kanauri language 203
Kāngxī zìdiǎn 康熙字典 818 n. 33

Kǎogǔ pài 考古派 'antiquity-investigating school' 157, 168, 171, 162, 830 n. 114
Karlgren, Bernhard 3–4, 16, 19, 28, 229
Analytic dictionary 325–327
Ancient Chinese reconstruction 3, 11, 15, 18, 27, 28, 50, 52, 55, 57, 65, 69, 77, 82–85 (Table 2.29), 240–241, 242–243, 243, 243, 262–263, 369, 370, 497, 816 n. 23, 817 n. 27, 820 n. 50, 821 n. 51, 822 n. 62, 840 n. 182, 842 n. 199, n. 200, 855 n. 297,
See also Middle Chinese
Archaic Chinese reconstruction 3–4, 14, 18, 19, 22–23, 169, 178, 181, 196, 210, 218, 222, 235, 240, 243, 249–250, 254, 262–263, 265, 271, 272, 291, 292, 293, 294, 297, 298, 301, 311, 325–339, 340–342, 371, 414, 419, 429, 449, 465, 472, 479, 484, 497, 537, 544, 561, 813 n. 3, 814 n. 6, 827 n. 95, 833 n. 138, 833 n. 145, 834 n. 149, 838 n. 176, 838 n. 178, 843 n. 206, 845 n. 218, 848 n. 245, 853 n. 284, 857 n. 310, 858 n. 319, 859 n. 328, 862 n. 352, 863 n. 361, 863 n. 362
See also Old Chinese
on *Shījīng* 359, 362, 364, 405, 406, 410, 432, 460, 851 n. 271, 856, 857 n. 310
theory of labiodentalization 864 n. 366
yodisation theory 69, 821–822 n. 55
Kèjiā dialects (*see* Hakka)
Khmu? language 233, 320, 539
Khoisan languages 303
Kiangsi (*see* Jiāngxī autonomous region)
Kiangsu (*see* Jiāngsū province)
Kǒng Guǎngsēn 孔廣森 162, 164–166, 169, 169, 304, 831 n. 122, n. 124, 845 n. 223
Kōno Rokurō 241, 242, 283, 842 n. 199
Korean language 13, 294, 843 n. 208
See also Sino-Korean
Kuāng miù zhèng sú 匡謬正俗 319
Kūkai 空海 41
Kūmarajīva 287, 289
Kwangsi (*see* Guǎngxī province)
Kwangtung (*see* Guǎngdōng province)
Kweichow (*see* Guìzhōu province)
Labial dissimilation (sound change) 298, 300, 576
Labial neutralization (sound change) 541–542, 544, 551, 552, 553, 556, 558, 559, 568, 851 n. 270, 865 n. 378
Labiodentalization (sound change) 41, 47, 72–73, 75, 189–191, 272, 273, 277, 279, 280, 415, 508, 527, 541, 542, 581–582, 841–842 n. 195, 864 n. 366
Lahu language 322
Lǎozǐ 老子 862 n. 356
Mǎwángduī version 383, 412, 474
rhyming 411–413, 420, 421–422, 434, 826 n. 85, 858 n. 315, 858 n. 318
Laplace, Pierre Simon, Marquis de 825 n. 79
See also DeMoivre-Laplace theorem
Large seal script (see *Dà zhuàn*)
Late Middle Chinese 14–15, 29, 47, 53, 59, 63, 66, 73, 189–191, 242–243, 262, 268, 277, 279, 282, 415, 478, 528, 581, 840 n. 183
See also Middle Chinese; Pulleyblank: Late Middle Chinese reconstruction
Latin language 2, 332, 842 n. 196
Lepcha language 201, 216, 409
Liáng 梁 dynasty (A.D. 502–57) 259
Lǐ Fāngguì (*see* Li Fang-kuei)
Li Fang-kuei 200, 224
Old Chinese reconstruction 142, 168, 169, 172, 181, 209, 214, 225, 228,

246, 249–250, 253–256, 262, 271, 291, 292, 293, 294, 297, 298, 301, 305, 325, 328, 329, 331, 333, 340–342, 371, 416–417, 418, 449, 465, 479, 509, 537, 540, 544, 827 n. 92, 832 n. 131, 835 n. 157, 836 n. 162, 837 n. 170, 173, 839 n. 179, 840 n. 182, n. 184, 848 n. 245, 853 n. 286, 856 n. 299, 857 n. 306, 858 n. 313, 859 n. 331, 862 n. 351, n. 357
Lǐ jì 禮記 295, 299, 838 n. 176
Lǐ Jìjié 李季節 35, 817 n. 29
Linguistics 1, 140
Lǐ Róng 10, 78, 210, 815 n. 19, 839 n. 181
Lìshū 隸書 'clerical script' 346
Lǐ Sī 李斯 346
Liù shū yīn yùn biǎo 六書音均表, by Duàn Yùcái 160
Liú Xī 劉熙 13
Liú Xié 劉勰 258–259
Liú Xīn 劉歆 813 n. 1
Loan characters (see *Jiǎjiè zì*)
Löffler, Lorenz G. 288
Lolo-Burmese languages 201
Lǒng 隴 (ancient region), dialect of 318
Loose rhyming theory 153, 171
Lǔ 魯 (ancient state), dialect of 296
Lù Démíng 陸德明 13, 40, 153, 171, 218
Lù Fǎyán 陸法言 13, 33, 35–36, 39, 318
Lù Jī 陸機 829 n. 101
Lúnyǔ 論語, *Shījīng* quotations in 433
See also *Shījīng:* textual problems
Luó Chángpéi 50, 469, 817 n. 27
Luòyáng 洛陽 37, 358
Luó Zhènyù 羅振玉 167, 832 n. 128
Lù Zhìwéi 52, 78
Lǚ Jìng 呂靜 35, 486
Lǜshī 律詩 'regulated verse' 303, 823 n. 64
Lǚ shì chūn qiū 呂氏春秋 295
Manaster Ramer, Alexis 93, 823 n. 68, n. 69
Manchukuo 832 n. 128
Manchus 830 n. 110
Mandarin dialects 8, 9–10, 47, 48, 51, 54, 57, 58, 150, 154, 240, 260, 268, 269, 279, 302, 306–307, 319, 322, 478, 815 n. 18, 819–820 n. 44, 821 n. 54, 840 n. 183
irregular pronunciations 497, 557, 832 n. 135, 834 n. 153, 838 n. 175, 844 n. 211, 845 n. 220, 846 n. 228, 847 n. 234, 850 n. 258, 858 n. 323, 864 n. 368
rhyming 824 n. 71
tonal development 819 n. 40
Man'yōgana script 12, 77, 282
See also Japanese language
Máo Shī gǔ yīn kǎo 毛詩古音攷 154, 304
Máo Shī qún jīng Chǔcí gǔ yùn pǔ 毛詩羣經楚辭古韻譜 166
Martin, Samuel E. 815 n. 15
Mǎ Ruìchén 馬瑞辰 828 n. 99
Marxist linguistics 7–8
Matisoff, James A. 302, 322
Mǎwángduī manuscripts, script of 557
Medial 6
See also under Middle Chinese, Old Chinese
Mei Tsu-lin 320, 322
Méixiàn 梅縣 dialect 294
See also Hakka (Kèjiā) dialects
Méi Yīngzuò 梅膺祚 818 n. 33
Metathesis 176
Methodology 17–26

Miao-Yao (Hmong-Mien) languages 187, 233
See also Yao (Mien) languages
Middle Chinese 3, 5, 11, 18, 27–85, 539
chóngniǔ 重紐 syllables 5, 28, 32, 63, 66, 72, 75–81, 184, 199, 211, 213, 214, 235, 242–243, 245, 263, 278, 279, 280–282, 282–287, 418, 419, 424, 436, 463, 493–494, 496, 498, 509, 532, 535, 540, 546, 553–554, 579–580, 580, 581, 818 n. 32, 821 n. 51, 822 n. 59, 822 n. 62, 839 n. 179, 848 n. 241, 857 n. 312
codas 61–62
dialects 40, 68–69, 268, 275, 282, 285, 318–319, 492, 508, 512, 533, 572, 575, 577, 579, 582, 821 n. 52, 821 n. 53, 823 n. 63, 833 n. 140, 839 n. 181, 841 n. 192, 843 n. 205, 847–848 n. 241
See also *Qièyùn:* language of
division-I finals 64–66, 242, 248, 252, 256, 343
division-II finals 67–69, 178, 184, 201, 232, 235, 236, 247, 258–269, 528, 580, 840 n. 185
division-III finals 69–81, 178, 232, 235, 242, 247, 269–290, 841 n. 189
division-IV finals 66–67, 235, 237, 241–243, 247, 252, 256, 343
divisions 42, 43–44
finals 63–85
independent division-III finals 71–73
initials 32, 40, 45–61, 62–63, 65, 66, 69–71, 178, 192–196, 207, 214, 242, 267–269, 818 n. 32
irregular pronunciations 550, 821 n. 52, 838 n. 177
-jo / *-jæ* contrast 479–481
labiodentalizing finals 413
main vowels 61
medials 75–81
mixed division-III finals 71, 73–75
other reconstructions 27
rùshēng syllables 291, 302, 448
simple finals 248
transcription 30–31, 58, 61, 370, 816 n. 25, 841 n. 189
yángshēng syllables 448
yīnshēng syllables 291, 325, 448
See also Karlgren, Bernhard: Ancient Chinese; Early Middle Chinese; Late Middle Chinese
Mien (*see* Yáo languages)
Mǐn 閩 dialects 9, 11, 15, 25, 33, 47, 50, 57, 78, 187, 200, 210, 219–220, 322, 322, 485–486, 571, 815 n. 16, 819 n. 41, 833 n. 141, 834 n. 152
See also Chaóyáng dialect, Fúzhōu dialect, Xiàmén (Amoy) dialect
Minor sound changes 19, 478, 816 n. 20
mjuw(K)* > *muw(K) (sound change) 191, 467, 476, 508, 581
Mnong language 309
Mongols 8
Mon-Khmer languages 308–309, 313, 320, 846 n. 230
See also Austroasiatic languages, Vietnamese
Mon language 308, 309
Morohashi Tetsuji 844 n. 214
Mru language 288
Multinational state (in Marxist linguistics) 8
Nán-běi cháo 南北朝 period (420–589) 152
phonology of 579, 580
rhyming 258
Nanjing 南京 37, 830 n. 110
Nation (in Marxist linguistics) 8

Nationality (in Marxist linguistics) 8
Naturalness 3–4, 17, 20–22, 256, 290, 332–334, 813 n. 5
Nèizhuǎn 内轉 42, 818 n. 35
Neo-Confucianism 155
Niǔ 紐 'button' 822 n. 58
Nivison, David S. 813 n. 1
Norman, Jerry 210, 219–220
Northern and Southern dynasties period (*see* Nán-běi cháo period)
Northern dialects (*see* Mandarin dialects)
Northern Mǐn dialects 11
See also Mǐn dialects
Northern Qí 齊 dynasty (550–577) 68
Norwegian language 9
Notation in examples 15–16
**-o(K) > -uw(K)* (sound change) 257–258, 502, 503–504, 573, 576
Ockham's Razor 22
Ogawa Tamaki 358–359
Old Chinese
codas 175, 181, 184, 236, 237, 291–302, 843 n. 209
consonant clusters 22–23, 176, 197–198, 199–201, 218–234, 362, 363, 385, 865 n. 371
definition 1, 14, 23–25, 345, 466
dialects 296, 301, 318–319, 384, 400, 418–419, 432, 440, 442, 444, 446, 456–457, 466–469, 471, 484, 518, 549–550, 551–552, 558, 566, 567, 568, 569, 844 n. 216, 859 n. 325, 861 n. 346
See also Dialect mixture
evidence for 2–3
initials 4, 175, 177–178, 182, 187–234, 237, 250, 252–253, 323, 561, 836 n. 162
medial **-j-* 61, 70, 178, 182, 199, 235, 269–290, 289–290, 579–580
medial **-l-* 179
medial **-r-* 61, 178, 182, 184, 236, 258–269, 542
See also **r*-hypothesis
medial **-rj-* 178–179, 184, 235, 269–290, 569, 575. 851 n. 272
See also **rj*-hypothesis
medials 21, 175, 178–180
morphology 175, 176, 181–182, 187, 199, 218–222, 228, 231, 289, 290, 310, 311, 312, 314, 315–318, 321–322, 323–324, 325, 337, 350, 351, 551, 557–559, 815 n. 17, 848 n. 242
post-codas 175, 181–182, 184, 302–324
pre-initials 175–177, 182, 218–232
rhymes, as evidence 235, 247, 259 486
rhyming, traditional analysis 4, 87, 243–244, 246–247, 248, 250. 251, 253, 269, 448
syllable structure 175
tonal categories 7, 291, 302–324
vowels 4, 175, 180, 248–258
See also Old Chinese rhyme groups; Qīng dynasty: traditional phonology
Old Chinese rhyme groups 141–150
Dōng 冬 148 (Table 4.1), 164, 169, 171, 524–525, 844 n. 216
Dōng 東 149 (Table 4.1), 164, 169, 171, 269, 270, 369, 505–507
Duó 鐸 144 (Table 4.1), 448, 484–488, 489
Gē 歌 144 (Table 4.1), 283–284, 293–294, 333, 361, 370, 413–422, 527, 570
Gēng 耕 149 (Table 4.1), 269, 274–278, 497–500
Hé 盍 147 (Table 4.1), 369, 543–548, 555

Hóu 侯 144 (Table 4.1), 158, 159, 160, 164, 260, 328, 466–469, 500–503, 503, 504, 566, 573, 830 n. 117
Jì 祭 146 (Table 4.1), 164, 370, 389–413, 413, 418
Jué 覺 143 (Table 4.1), 518–524, 524, 561, 830 n. 117, 862 n. 352
Qī 緝 147 (Table 4.1), 555–560, 865 n. 376
Qīn 侵 148 (Table 4.1), 157, 525, 548–555, 827 n. 92, 844 n. 216
Tán 談 148 (Table 4.1), 157, 537–543
Wēi 微 141, 146 (Table 4.1), 164, 168, 169, 171, 416, 418, 420, 446–464, 577, 825 n. 75, 826 n. 86, 827 n. 95
Wén 文 149 (Table 4.1), 157, 160, 164, 166, 243, 248, 249, 250, 251, 284, 369, 370, 425–434, 437, 438, 448–449, 464, 577, 838 n. 176
Wū 屋 144 (Table 4.1), 503–505, 505, 830 n. 117
Wù 物 146 (Table 4.1), 164, 437–446
Xī 錫 145 (Table 4.1), 160, 494–497, 498
Xiāo 宵 143 (Table 4.1), 158, 159, 278–280, 526–532, 561, 863 n. 362
Yáng 陽 149 (Table 4.1), 269, 270–273, 274, 275–276, 276–278, 448, 489–491, 849 n. 254
Yào 藥 143 (Table 4.1), 532–536, 561
Yōu 幽 143 (Table 4.1), 158, 160, 164, 467, 507–518, 521, 524, 561, 828 n. 100, 830 n. 117, 849 n. 254, 863 n. 362
Yú 魚 144 (Table 4.1), 158, 159, 160, 328, 361, 448, 478–483, 489
Yuán 元 150 (Table 4.1), 157, 164, 243, 244–247, 247, 248, 249, 250, 251, 269, 276–278, 279, 367, 368, 370–389, 413, 418, 419, 420, 464, 537, 539, 826 n. 83, 841 n. 193
Yuè 月 147 (Table 4.1), 164, 370, 389–413, 413, 418, 858 n. 319
Zhēn 真 149 (Table 4.1), 157, 160, 164, 166, 243, 248–249, 250, 251, 284, 370, 422–425, 433, 435, 448–449, 464, 577, 831 n. 118
Zhēng 蒸 148 (Table 4.1), 166, 273, 476–478, 827 n. 92
Zhī 支 145 (Table 4.1), 160, 172, 283–284, 419, 491–494, 494, 498
Zhī 脂 141, 145 (Table 4.1), 164, 168, 169, 171, 172, 437, 446–464, 473, 577, 825 n. 75, 826 n. 86, 827 n. 95, 859 n. 327
Zhī 之 141, 142 (Table 4.1), 160, 166, 172, 391, 464–472, 500, 509, 575, 828 n. 100, 849 n. 254, 859 n. 330, 863 n. 361
Zhí 職 142 (Table 4.1), 160, 472–476
Zhì 質 145 (Table 4.1), 434–437, 444, 831 n. 118, 858 n. 319
Zhì 至 (in Wáng Niànsūn's analysis) 168, 169, 171
Old English language 332, 861 n. 349, 863 n. 364
Old French language 842 n. 196
Old Japanese language 77
See also Japanese language
"Old" languages 816 n. 21
Old Mandarin 15, 47, 77
See also Mandarin dialects
Old Vietnamese, Chinese loans in 541–542
See also Vietnamese language
Oracle-bone inscriptions 3, 344–345, 353
See also Chinese script: early script
Pacŏh language 309

Paleography (*see* Chinese script: early script)
P(r)o* > *P(r)i (sound change) 465–469, 500, 566
Pali language 819 n. 42
Pankenier, David W. 813 n. 1
Parallelism, in verse 88
Pejros, I. I. 288
People's Republic of China 15
'Phags-pa alphabet 13, 77
Phoneme 17, 823 n. 67
Phonemic identity hypothesis 244, 246–247, 250, 261–262
Phonetic notation 172
Phonologically unambiguous words 367
Phonological reconstruction, as a set of hypotheses 18
Phonological representations 17–18
Phonological rules 17
Píngshēng 平聲 'level tone' 303
Pīnyīn romanization 15
Post-coda (*see under* Old Chinese)
Prakrit languages 819 n. 42
Pre-initial (*see under* Old Chinese)
Primary yod 288–289
Proto-Chinese 25, 232, 255, 288, 816 n. 22
Proto-Indo-European (*see* Indo-European languages)
Proto-languages 24
Proto-Lolo-Burmese (*see* Lolo-Burmese languages)
Proto-Miao-Yao (*see* Miao-Yao)
Proto-Mǐn (*see* Mǐn dialects)
Proto-Sino-Tibetan (*see* Sino-Tibetan languages)
Proto-Tai (*see* Tai languages)
Proto-Wa language 233
Proto-writing 344
Proto-Yao (*see* Yao languages)
-ps* > *-ts (sound change) 309–311, 318, 349, 398–399, 406, 411, 440, 446, 545–546, 558, 559, 565–566, 568, 830 n. 111, 849 n. 249
Pǔchéng 浦城 dialect 322
Pulleyblank, E. G. 15, 289, 819 n. 39
  Early Middle Chinese reconstruction 52, 58, 70–71, 578, 822 n. 56, n. 57, n. 62, 833 n. 140, 842 n. 204
  Late Middle Chinese reconstruction 48, 189–191, 833 n. 143
  Old Chinese reconstruction 70–71, 178–179, 196–197, 211, 213, 220, 223, 229, 230, 235, 244–245, 255–256, 262, 280, 288, 309, 313–315, 320, 340–342, 371, 813 n. 5, 834 n. 146, 836 n. 160, 836 n. 167, 837 n. 172, 839 n. 180, 853 n. 285, n. 286, 856 n. 299, 862 n. 361
  transcriptional evidence 323
Pǔtōnghuà 普通話 8, 9
  See also Mandarin dialects
Qí 齊 (ancient state), dialect of 295
Qián Dàxīn 錢大昕 162, 831 n. 123
Qièyùn 切韻 7, 13, 14, 33, 35–40, 141, 370, 538, 814 n. 8, 817 n. 29, 820 n. 49, 854 n. 289
  language represented 14, 36–38, 255, 258, 282, 299, 363, 485, 492–493, 512, 517, 577, 579
    See also Middle Chinese: dialects
  phonological system 30, 68, 69–70, 206, 207, 258, 266, 267–268, 269, 271, 275, 283, 285, 299, 300, 313, 466, 478, 485, 486, 492–293, 512, 577–579, 819 n. 41, 841 n. 192
  preface 35–36, 318, 486
  qùshēng rhymes 34, 62, 314–315, 390 (Table 10.12)

Qièyùn zhǐzhǎngtú 切韻指掌圖 43
Qín 秦 (ancient region), dialect of 318, 319
Qín 秦 dynasty
  burning of the books 357–358
  script of 345, 346, 347
Qīng 青 (Hàn-dynasty province), dialect of 296
Qīng chúnyīn 輕脣音 'light labials' (labiodentals) 48
Qīng 清 dynasty (1644–1911) 3, 4, 162
  traditional phonology 4, 5, 139–141, 243, 253, 316, 326, 828 n. 98
Qín Shǐhuáng 秦使皇 346, 357–358
Qīyīn lüè 七音略 41
Quán qīng 全清 'fully clear' initials 45
Quán zhuó 全濁 'fully muddy' initials 46
Quechua language 823 n. 64
Qǔ 曲 poetry 89
Qùshēng 去聲 'departing tone' 168, 181, 182, 303, 308–319
***Qùshēng* formation** (sound change) 313, 544, 578
Qū Wànlǐ 310, 408, 838 n. 176
Racine, Jean 824 n. 70
Radicals (of Chinese characters) 40, 347, 818 n. 33
***r*-color** (sound change) 184, 259–262, 261 (Table 7.4), 266, 271–271, 273, 275, 282, 285–287, 314, 353, 380, 385, 385, 386, 388, 428, 441, 470, 481, 482, 487, 490, 492, 493, 496, 501, 503–504, 508–509, 510, 519, 525, 540, 552, 570, 572, 573, 573–574, 575, 579, 580, 841 n. 195, 844 n. 213, 852 n. 276, 863 n. 359
Reconstruction system 2
Regulated verse (see *Lǜshī* 律詩)
Restressing of unstressed forms 337, 833 n. 145, 849 n. 249
Rhyme analysis, types of inadequacy 140
Rhyme books (*yùnshū* 韻書) 13–14, 32, 33–40
  See also *Qièyùn*, *Guǎngyùn*
Rhyme relations 329–330, 823 n. 65
Rhymes as evidence 12
Rhyme tables (*yùntú* 韻圖) 14, 32, 34, 41–44, 52, 62, 63, 64, 66, 72, 74, 157, 206, 242, 277, 282, 817 n. 26
Rhyming binomes 461, 513, 531–532, 861 n. 342
**r*-hypothesis 178, 201, 235, 262–267
Riang language 320
**rj*-hypothesis 179, 199, 235, 263, 280–282
***r*-loss** (sound change) 183, 184, 259–262, 261 (Table 7.4), 273, 282, 285–287, 314, 441, 481, 487, 501, 540, 574, 579, 580, 841–842 n. 195
Roman alphabet 13
Rongao language 308, 309
Rounded-vowel hypothesis 179–180, 235, 236, 236–240, 248, 250, 343, 364, 366, 367, 368, 371, 402, 426, 438, 445, 447, 560, 839 n. 180, 860 n. 340
Rounding assimilation (sound change) 273, 469–470, 473, 476, 508, 510, 570, 575, 829 n. 100
Rounding diphthongization (sound change) 180, 183, 237, 252, 252, 255, 260, 267, 293, 353, 366, 375, 381, 385, 388, 410, 415, 428, 431, 441, 544, 566–567, 852 n. 276, 855 n. 298
Rounding dissimilation (sound change) 509–510, 570, 575, 843 n. 205
Rú Chún 如淳 296

Rùshēng 入聲 'entering tone' 141, 155–157, 159, 162–164, 164, 168, 171, 181, 303
Russian language 333
Sānguó 三國 period (A.D.220–280) 296, 469
Sanskrit language 2, 18, 19, 53, 66, 140, 309, 313, 322, 819 n. 39, 819 n. 42, 846 n. 231
Schane, Sanford 489
Schuessler, Axel 16, 848 n. 242, 861 n. 347
Seal script (see *Dà zhuàn*, *Xiǎo zhuàn*, *Zhuànshū*)
Secondary yod 288–289
Shǎanxī 陝西 province 319
Shāndōng 山東 peninsula, early dialects 295–297
Shāndōng 山東 province 307, 419, 480, 486
Shāng 商 dynasty 3, 310, 356, 357
  conquest of 813 n. 1
  divination 344
Shanghai 上海 10
Shǎngshēng 上聲 'rising tone' 175, 182, 303
  origins 319–325
Shàngshū 尚書 (*see Shūjīng*)
Shansi *See* Shānxī province
Shānxī 山西 province 10, 829 n. 101
Shào Róngfēn 78, 288
Shè 攝 (in rhyme-table phonology) 816 n. 25, 817 n. 26
Shēngdiào 聲調 'tone' 6
Shēng lèi biǎo 聲類表, by Dài Zhèn 162
Shēngmǔ 聲母 'initial consonant' 6
Shēng yùn kǎo 聲韻考, by Dài Zhèn 162
Shěnyīn pài 審音派 'sound-discriminating school' 157, 162, 171, 830 n. 114
Shěn Yuē 沈約 303
Shěn Zhòng 沈重 152
Shǐjì 史記, by Sīmǎ Qiān 344
Shījīng 1, 5, 813 n. 2
  Bèi fēng 邶風 857 n. 307
  Bīn fēng 豳風 299, 549
  Chénfēng 陳風 296
  dating 399, 408
  Dà yǎ 大雅 318, 330, 337, 355, 355
  dialect features 299, 300, 318, 330, 425
  form of references 16
  Fùyáng 阜阳 version 357, 360, 457, 855 n. 294
  Guó fēng 國風 318, 330, 337, 355, 356, 549, 824 n. 72
  Hán 韓 version 357, 364, 366, 404, 408, 410, 444, 462, 474, 550, 851 n. 271, 852 n. 278
  irregular rhymes 322, 389, 399, 403, 443–446, 449–450, 517–518, 523–524, 531–532, 549–550, 560, 567, 826–827 n. 88, 847 n. 238, 852 n. 280, 864 n. 369
  language of 24–25, 255, 566, 816 n. 22, 824–825 n. 72
  Lǔ sòng 魯頌 318, 356, 408
  Lǔ 魯 version 357, 408, 851 n. 269, 851 n. 271, 858 n. 317, 865 n. 377
  Máo 毛 commentary 362, 363, 364, 405, 406, 410, 433, 509, 532, 557, 828 n. 99, 852 n. 277, 852 n. 279
  Máo 毛 version 357, 358, 359, 360, 364, 433, 444, 457, 484, 514, 550, 851 n. 271, 855 n. 294, 865 n. 378
  oral transmission 360
  origins 356
  parallels in bronze inscriptions 345
  pronunciation errors 358–366
  Qín fēng 秦風 299, 549
  Qí 齊 version 357

rhymes as evidence 150–153, 252, 254, 327–331, 274, 343, 375–379, 381, 397–402, 420–421, 429–430, 442–444, 448, 449–450, 455–458, 466, 467, 485, 507, 515–517, 521–524, 529–531, 535–536, 537–538, 540–541, 544, 550, 554–555, 560, 565, 570, 577, 581, 826 n. 86, 839 n. 179, 842 n. 197, 844 n. 216, 847 n. 236, 848 n. 247, 859 n. 331, 862 n. 352
Shāng sòng 商頌 318, 356, 847 n. 239
textual history 355–366
textual problems 300, 308 n. 308, 343–344, 388, 403–411, 518, 521, 532, 555, 847 n. 237, 852 n. 280, 858 n. 316, 861 n. 348, 864 n. 369
tonal distinctions 304–306, 316–317
translations 813 n. 2
versions 357
Wèi fēng 衛風 857 n. 307
Xiǎo yǎ 小雅 318, 330, 337, 355, 356
Xīpíng 熹平 stone classics version 358–359, 851 n. 271, 865 n. 377, n. 378
Yōng fēng 鄘風 857 n. 307
Zhōu sòng 周頌 355, 356, 518, 524, 847 n. 238
Shījīng yùndú 詩經韻讀, by Jiāng Yǒugào 169
Shī jí zhuàn 詩集傳, by Zhū Xī 152, 268
Shìmíng 釋名, by Liú Xī 13, 296, 480, 862 n. 356, 863 n. 358
Shī shēng lèi 詩聲類 164
Shǐ Zhòu 史籀 346, 836 n. 166, 849 n. 256
Shǐ Zhòu piān 史籀篇 234, 836 n. 166, 849 n. 256
Shǔ 蜀 (ancient state), dialect of 299
Shuānggǔduī 双古堆 849 n. 255
Shūjīng 書經 2, 295, 356
parallels in bronze inscriptions 345
Shuōwén jiězì 説文解字, by Xǔ Shèn 4–5, 13, 40, 160, 161–162, 173, 176, 221, 222, 225, 226, 230, 231, 233–234, 238, 239, 265, 344, 346, 347, 353, 354, 382, 386–387, 407, 420, 424, 431, 474, 514, 529, 544, 546, 548, 828 n. 98, 832 n. 136, 836 n. 160, 836 n. 165, 838 n. 177, 840 n. 186, n. 187, 844 n. 216, 845 n. 217, 850 n. 257, 855 n. 298, 862 n. 356, 863 n. 358
radical system 818 n. 33
Shuōwén jiězì zhù 説文解字注, by Duàn Yùcái 160, 161–162
*-*s* hypothesis 181–182, 320
Sìchuān 四川 province 9
Sìkù cóngshū 四庫叢書 162
Sīmǎ Qiān 司馬遷 344
Sīmǎ Xiāngrú 司馬相如 298
Simon, Walter 848 n. 244
Simplified characters 347, 349
Sino-Japanese 13
See also Japanese language
Sino-Korean 13, 77, 240–242, 242, 282, 283, 285
See also Korean language
Sino-Tibetan languages 1, 26, 198–199, 203, 205, 232, 289–290, 303, 317, 333, 333–334, 552, 561, 835 n. 156
Sino-Vietnamese 13, 50, 77, 282, 283, 285, 308, 320, 473, 541–542, 846 n. 230, 851 n. 275
See also Vietnamese language
Sino-xenic loans 13, 14
Sìshēng Qièyùn biǎo 四聲切韻表, by Jiāng Yǒng 157
Small-sample method 166–118, 377, 378, 399, 400, 402, 430, 516, 530, 856 n. 303
Small seal script (see *Xiǎo zhuàn*)

Sòng 宋 (ancient state) 296, 356
Sòng 宋 dynasty (960–1279) 10, 14, 38, 152, 154
Sòngxué pài 宋學派 'Sòng learning school' 155
Soochow (*see* Sūzhōu)
Sound changes 140
  naming of 16
Southeast Asia 11
Southern Mǐn 11 dialects 11
  See also Mǐn dialects
Standard script (see *Kǎishū*)
Starostin, S. A. 288, 813 n. 4, 833 n. 141, 834 n. 147, 838 n. 178, 842 n. 202, 843 n. 209
Statistical analysis of rhyming 4, 97–128, 140, 368, 560–561
Stock rhymes 458–462, 523, 531
Suí 隋 dynasty (581–618) 3, 36
  rhyming 29, 30 258
Sūzhōu 蘇州 dialect 10, 294
  See also Wú dialects
Swedish language 9, 332
Syllable structure 18
Szechwan (*see* Sìchuān province)
Tai languages 539, 542
  See also Thai language
Táiwān 台灣 11, 15
Táng 唐 dynasty (618–907) 3, 13, 14, 172
  poetry 313
Tángyùn 唐韻 38, 39
Tenrei Banshō Meigi 篆隸萬象名義 by Kūkai 空海 41, 818 n. 34
Thai language 178, 179, 199, 201, 263, 303
  See also Tai languages
Theoretical assumptions 17–26
Thirty-six *zìmǔ* 字母 (initial consonants) 14, 43, 46, 48, 54, 59, 819 n. 41
Thomas, David 308
Three Kingdoms period (*see* Sānguó period)
Thulung language 201
Tibetan language 13, 198–199, 200, 201, 202, 207, 208, 221, 222, 228, 229, 233, 287, 299, 301, 302–303, 311, 317, 333, 409, 437, 445, 469, 473, 482, 496, 513, 525, 540, 545, 550, 834 n. 148, 835 n. 156, 847 n. 235, 848 n. 244, 848 n. 248, 862 n. 357, 864 n. 370
  tones 302–303
  See also Tibeto-Burman languages
Tibetans 8
Tibeto-Burman languages 25–26, 187, 205, 207, 208, 215, 2;16, 217, 287, 288, 289, 291, 294, 297, 299, 301, 333–334, 411, 446, 462, 472, 482, 483, 491, 520, 545, 550, 551, 553, 554, 557, 558–559, 559, 835 n. 156, 844 n. 210, 844 n. 212
  See also Burmese, Lahu, Lolo-Burmese languages, Tibetan, etc.
Ting Pang-hsin 209, 261, 432, 469, 502
Tocharian languages 313, 323
Tones 6, 9, 31–32, 33–34
  irregularities 306–307
  traditional names 303–304
Tōngsú wén 通俗文 319
Tōngzhì 通志 42
Tonogenesis 302–303
Traditional Chinese phonology 326
Transcriptions as evidence 11, 12–13, 287, 289, 313, 323, 842 n. 203, 842–843 n. 204
Tribe (in Marxist linguistics) 8
TSrj-* > *TSr- (sound change) 53, 204, 267, 269, 275, 371, 373, 394, 416, 492, 495, 498, 580–581, 821 n. 53, 836 n. 164, 839 n. 181
Tuán yīn 團音 'rounded sounds' 52, 817 n. 30

Typable notation 28–32, 322
Typology 332–334
-u(K) > -aw(K) (sound change) 257–258, 260, 266, 508–509, 519, 525, 572–573, 573, 576
Uygur 13
Velar palatalization (sound change) 178, 207, 210–214, 289, 290, 514, 559, 569–570, 834 n. 154, 835 n. 155, 844 n. 214
exceptions 569, 844 n. 215
unexpected 429, 550, 569, 862 n. 356, n. 357
Vietnamese language 13, 294, 303, 308–309, 320–321, 322, 473, 541–542, 846 n. 229, n. 230, 851 n. 275
See also Old Vietnamese, Sino-Vietnamese
Wàizhuǎn 外轉 42, 43, 818 n. 35
Wa language 233
Wáng Bāo 王褒 298
Wáng Guówéi 王國維 38
Wáng Lì 77, 141, 168, 169, 171, 446–450, 455, 542, 822 n. 60, 825 n. 75, 826 n. 86, 827 n. 90, 827 n. 95, 859 n. 327, 859 n. 332. 860 n. 335
Old Chinese reconstruction 246, 340–342
Wáng Niànsūn 王念孫 139, 140, 141, 162, 166–169, 171, 172, 305, 828 n. 97, 831 n. 126, n. 127, 832 n. 132, 848 n. 245
Wáng Rénxū 王仁煦 36, 38, 39, 40, 68, 69, 206
Wáng Yì 王逸 359
Wǎn xuépài 皖學派 'Ānhuī school of learning' 157
Warring States period (*see* Zhànguó period) Wèi-Jìn 魏晉 period (220–420)
phonology of 259–262, 432, 502, 572, 574, 577, 578, 829 n. 101
Wèi Yànyuān 魏彥淵 36
Wénchāng 文昌 dialect 322
Wén xīn diāo lóng 文心雕龍 by Liú Xié 劉勰 258–259
Wēnzhōu 溫州 dialect 294, 322
See also Wú dialects
Western Hàn 漢 dynasty (206 B.C.–A.D. 23)
phonology of 469, 829 n. 100
See also Hàn dynasty
Western Zhōu 周 dynasty 270, 310, 318, 343, 355, 389, 505
See also Zhōu dynasty
-wk > -k (sound change) 521, 533, 576–577, 864 n. 369
***w*-neutralization** (sound change) 252, 267, 353, 366, 374, 378, 396, 401, 415, 416, 428, 431, 441, 466, 567, 568
Wú 吳 (ancient region), dialect of 319
Wú 吳 area 40
Wú 吳 dialects 9, 10, 322, 821 n. 54
See also Sūzhōu dialect, Wēnzhōu dialect
Wú Yù 吳棫 154, 829 n. 106, 831 n. 119
Xhosa language 303
Xiàhóu Gāi 夏侯該 35
Xiàmén 厦門 (Amoy) 47, 50
See also Mǐn dialects
Xiāng 湘 dialects 9, 10
Xiāo Gāi 蕭該 36
Xiǎo zhuàn 小篆 'small seal' script 4, 229, 346, 347, 850 n. 256
See also Chinese script: early script
Xià Xiè 夏燮 305
Xiéshēng 諧聲 characters
as evidence 11–12, 22–23, 53, 141–142, 160–161, 168, 176, 178, 179, 189,

194, 196–197, 210, 225, 238–240, 247, 252, 262–265, 270, 272, 280–281, 291, 301–302, 312, 324, 325–326, 343, 347–355, 379–381, 381–385, 400, 448, 467, 480, 482–483, 485, 501, 506, 512, 514, 517, 520, 521–523, 528–529, 532, 533–534, 538, 540, 541, 546, 550. 551, 554, 565, 575, 815 n. 13, 828 n. 98, 831 n. 119, 836 n. 162, 839 n. 179, 842 n. 195, 849 n. 249, 851 n. 272
of late origin 835 n. 158, 850 n. 261, 851 n. 274
Xiéshēng similarity 343, 348–349, 352, 353–355, 411, 575
Xiéyùn 叶韻 theory 150–153, 154–155
Xú 徐 (Hàn-dynasty province), dialect of 296
Xuān 宣, king of Zhōu 836 n. 166, 849 n. 256
Xuányìng 玄應 37
Xuánzàng 玄奘 41
Xú Chǎn 徐鏟 831 n. 119
Xú Kǎi 徐鍇 836 n. 165
Xǔ Shèn 許慎 13, 345
Xú Xuàn 徐鉉 836 n. 165
Yakhontov, S. E. (*see* Jaxontov, S. E.)
Yáng Shèn 楊慎 152
Yángshēng 陽聲 syllables 155–157, 164–166
Yáng Shùdá 楊樹達 231
Yangt e *See* Chángjiāng
Yáng Xióng 揚雄 13, 298
Yáng Xiūzhī 陽休之 35
Yānjīng 燕京 University 307
Yán Shīgǔ 顏師古 319
Yán shì jiā xùn 顏氏家訓, by Yán Zhītuī 52–53, 218, 486
Yán Zhītuī 顏之推 36, 52, 69, 218, 363
Yao (Mien) languages 220, 233, 294, 409
See also Miao-Yao (Hmong-Mien) languages
Yáyīn 牙音 'back-tooth sounds' 57–58
Yè 鄴 37
Yiddish language 333
Yìjīng 易經 3
Măwángduī version 501
rhymes 383, 468, 856 n. 304, 855 n. 296
Yí lǐ 儀禮 352, 845 n. 217
Yīn 殷 dynasty (*see* Shāng dynasty)
Yīnpǔ 音譜 by Lǐ Jiié 35, 68, 817 n. 29
Yīnshēng 陰聲 syllables 156, 164, 164–166, 168, 181
Yīnxué biàn wēi 音學辨微 by Jiāng Yǒng 157
Yīn xué wǔ shū 音學五書, by Gù Yánwǔ 155
Yīn-yáng duìzhuǎn 陰陽對轉 'interchange of *yīn* and *yáng*' 164–166
Yíqiè jīng yīnyì 一切經音義 by Huìlín 41, 242, 279, 319, 508
Yíqiè jīng yīnyì 一切經音義 by Xuányìng 37, 41, 319
Yodisation 69–71, 81, 82
Yuán 元 dynasty (1279–1368) 13, 15, 77
Yuán lì piān 爰歷篇 346
Yuè 粵 dialects (*see* Cantonese)
Yùn 韻 'rhyme' 141
Yú Nǎiyǒng 820 n. 46
Yùn bǔ 韻補 by Wú Yù 154
Yùnjí 韻集 by Lǔ Jīng 35, 486
Yùnjìng 韻鏡 32, 41
arrangement 817 n. 25
language 478
representation of finals 42–44
representation of initials 43
See also Rhyme tables
Yùnlüè 韻略 by Dù Táiqīng 35
Yùnlüè 韻略 by Xiàhóu Gāi 35
Yùnlüè 韻略 by Yáng Xiū hī 35

Yùnmǔ 韻母 'final' 6
Yúnnán 雲南 province 9
Yùn pǔ 韻譜, by Wáng Niànsūn 166–168
Yùnshū 韻書 (*see* Rhyme books)
Yùntú 韻圖 (*see* Rhyme tables)
Yùnwěi 韻尾 'coda' 6
See also Coda
Yùpiān 玉篇, by Gù Yěwáng 13, 37, 40–41, 818 n. 32, 863 n. 363
Yú Yuè 俞樾 366
Zhān Bóhuì 819 n. 41
Zhāng Bǐnglín 章炳麟 77, 79, 173, 284, 859 n. 327
Zhāng Línzhī 張麟之 41
Zhànguó 戰國 period (475–221 B.C.)
bronze inscriptions 383
language of 547
script 345
Zhāng Yī 張揖 832 n. 130
Zhào Gāo 趙高 346
Zhào Yuánrèn (*see* Chao, Yuen Ren)
Zhào Zhènduó 318–319
Zhèjiāng 浙江 province 10
Zhèng chǐyīn 正齒音 'true front-tooth sounds' 54
Zhèng Qiáo 鄭樵 41–42
Zhèng Xuán 鄭玄 295, 296, 299, 352, 357, 360, 362, 363, 364, 406
Zhèng-Zhāng Shàngfāng 843 n. 208
Zhèng Zhòng 鄭衆 474
Zhíyīn 直音 'direct sounds' 33, 817 n. 28
Zhòng chúnyīn 重脣音 'heavy lip sounds' 48
Zhōngshān Wáng Fāng Dǐng 中山王方鼎 (bronze vessel) 383
Zhōng yōng 中庸 361
Zhōngyuán yīnyùn 中原音韻, by Zhōu Déqīng 周德清 15, 832 n. 135, 840 n. 183
Zhōu 周 dynasty 1, 14
conquest of Shāng 345, 813 n. 1
See also Eastern Zhōu dynasty, Western Zhōu dynasty
Zhōu Fǎgāo 78, 79, 244, 245
Middle Chinese reconstruction 284
Old Chinese reconstruction 255
Zhōu lǐ 周禮 474, 855 n. 298
Zhōu shū 周書 862 n. 352
Zhōu sòng (see under *Shījīng*)
Zhòu wén 籀文 'script of the scribe Zhòu 籀' 347, 849 n. 256
Zhōu Yóng 周顒 303
Zhōu Zǔmó 41, 469, 817 n. 29, 818 n. 34
Zhuǎn 轉 (in rhyme-table phonology) 42
See also *nèizhuǎn, wàizhuǎn*
Zhuàng 壯 language 294, 509
Zhuànshū 篆書 'seal script' 850 n. 256
See also *Dà zhuàn, Xiǎo zhuàn*
Zhū Jùnshēng 朱駿聲 464
Zhū Qiānzhī 412
Zhū Xī 朱熹 152–153, 268, 410, 829 n. 102, n. 103, 841 n. 188
Zìhuì 字彙, by Méi Yīngzuò 梅膺祚 818 n. 33
Zìlín 字林 445
Zìmǔ 字母 (*see* Thirty-six *zìmǔ*)
Zǐ Xià 子夏 357
Zulu language 303
Zuǒ zhuàn 左傳 468

OE 36.2 (1993): 185-207

Notes on the Reconstruction of Old Chinese*

William G. Boltz (University of Washington, Seattle)

When Western studies of Chinese language, literature or texts have occasion to mention Middle or Old Chinese it has become customary to rely on the work of Bernhard Karlgren above all others, and to cite his reconstructions. There are two main reasons for this. The first is that Karlgren was the first Western scholar to make a systematic and linguistically sound investigation into the reconstruction of Middle and Old Chinese (which he called Ancient and Archaic Chinese, respectively), and the second is that Karlgren presented his methods and couched his results in easily usable and comprehensive published forms.

Karlgren's *Analytic Dictionary of Chinese and Sino-Japanese*, published in 1923,[1] includes not only Middle Chinese reconstructions for several thousand characters, but also a sketch of Middle Chinese phonology as Karlgren saw it and an explanation of how he arrived at his results. Seventeen years later he followed the same pattern in the *Grammata Serica*, his work on Old Chinese, again giving a sketch of how he arrived at his reconstructions, and then presenting those reconstructions in a dictionary format of again several thousand characters.[2] Finally, for students who wanted to get to the heart of the reasoning and methods that underlay Karlgren's reconstructions, he published a work he called a *Compendium of Phonetics in Ancient and Archaic Chinese*.[3]

Many scholars have followed Karlgren in studying the phonological history of Chinese, and in working out systems of reconstructions for Middle and Old Chinese. As a result there have been in the past three or four decades a great many advances in our understanding of the linguistic history of Chinese; so much so in fact that Karlgren's work, though still highly regarded for the major achievement it represents in the first half of this century, is now considered almost universally as having been only a first approximation, now superseded by new proposals in many respects. Heretofore none of this "post-Karlgrenian"

---

* This is a review article of William H. Baxter, *A Handbook of Old Chinese Phonology*, Berlin & New York: Mouton de Gruyter, 1992. (Trends in Linguistics, Studies and Monographs 64, series editor, Werner Winter.)

1 Paris: Librairie Orientaliste Paul Geuthner.

2 : Stockholm: *Bulletin of the Museum of Far Eastern Antiquities*, vol. 12 (1940); published in a revised version with the title "Grammata Serica Recensa", in the *Bulletin of the Museum of Far Eastern Antiquities*, vol. 29 (1957).

3 Stockholm: *Bulletin of the Museum of Far Eastern Antiquities*, vol. 26 (1954).

work has been comprehensively codified in any way comparable to Karlgren's *Analytic Dictionary* or *Grammata Serica* in laying out the phonological history of the language and in providing a dictionary of Old Chinese reconstructions. E.G. Pulleyblank has perhaps come closest to achieving this for Middle Chinese, both Early and Late, through his two books, *Middle Chinese, A Study in Historical Phonology* and *Lexicon of Reconstructed Pronunciation in Early Middle Chinese, Late Middle Chinese, and Early Mandarin.*[4] But for Old Chinese there has been no usable successor to Karlgren until now. The present work under review, *A Handbook of Old Chinese Phonology* by William H. Baxter, now provides at least in part that heretofore wanting successor to the *Grammata Serica* and *Grammata Serica Recensa.*

Baxter's *Handbook* has ten chapters and three appendices. Chapter one is concerned with necessary preliminary matters of definitions, goals, sources, notations, and so forth. The following three chapters set the stage for his discussion of the reconstruction of Old Chinese by focussing on three important initial considerations: the sound system of Middle Chinese (chapter 2), the nature of rhymes as evidence in historical phonology (chapter 3), and the traditional, mostly Ch'ing, research into the *Shih ching* rhyming system (chapter 4).

The core part of Baxter's thesis comes in chapters five through ten. These are the sections in which he sets out his reconstruction of the sound system of Old Chinese together with his reasons and arguments. It is this part of the work that corresponds to the 89 introductory pages of the *Grammata Serica* in which Karlgren summarizes the phonetic evolution of Chinese from the archaic to the ancient, and from the ancient to the modern periods, as well as sketches the phonetic aspects of Sino-Japanese. Baxter's presentation is admirably straightforward, and clearly presented. Chapter five gives an overview of the Old Chinese syllable, chapters six, seven and eight treat initials, medials and main vowels, and codas and post-codas (by which Baxter means final consonants, off-glides/semi-vowels, and post-final consonants) respectively. In chapter nine Baxter explains how he thinks the Chinese script should be used as a source of information about the pronunciation of Old Chinese, in particular how the received text of the *Shih ching* differs from extant manuscript fragments and may distort or camouflage some of the rhyme group evidence. Finally, chapter ten gives a reconstruction, with full discussion and many examples in each case, of all of the *Shih ching* rhyme groups as Baxter recognizes them.

The first appendix sketches the main phonological changes from Old to Middle Chinese, with examples. The second gives all of the rhyme words of the *Shih ching* in their *Shih ching* order, with Baxter's Old Chinese and Middle Chinese reconstructions. The third appendix gives a seriatim list of the same *Shih*

4 Both Vancouver [British Columbia]: University of British Columbia Press, 1984 and 1991 respectively.

cluing rhyming words, now in alphabetical order by modern Chinese ("pinyin") romanization, again with their Middle and Old Chinese reconstructions. While these two lists are not as comprehensive as even a small dictionary of the Classical Chinese lexicon might be, they do contain well over 2000 words, and therefore are to some extent comparable to the dictionary part of the *Grammata Serica.*

Writing recently in the *Journal of the American Oriental Society* E.G. Pulleyblank set out four kinds of desiderata that he thinks must be taken into account in any reconstruction of Old Chinese: (1) adherence to the best relevant linguistic theory, (2) the need to have the best possible Middle Chinese reconstruction as a starting point, (3) proper appreciation for the role of, and limitations of, linguistic typology, and (4) the need to use all of the available evidence without giving privileged status to any one kind.[5] I shall comment on Baxter's reconstruction of Old Chinese in connection with each of these four considerations individually.

(1) Theoretical assumptions

Baxter does not spend much time on points of linguistic theory, save to set out a few of his assumptions in chapter one. His expressed theoretical slant is neither intricately abstract nor particularly controversial. What he means by a 'reconstruction' of Old Chinese is a 'reconstructed phonological system' for Old Chinese, and a phonological system has, for Baxter, two components, "(1) a set of phonological representations which embody what is phonologically distinctive about each basic expression of the language [i.e., each w o r d (W.G.B.)], and (2) a set of phonological rules which apply generally" (p. 17). Baxter recognizes that both parts of the system can, and always do, change over time, and he includes as a requirement for his reconstruction that it must specify a set of changes to account for the later stages of the language (p. 19). Baxter allows the units of phonological representation to be called p h o n e m e s , though he distinguishes himself from the school of American structuralist phonemics by not insisting that phonemes be 'biunique'. When he has recourse to distinctive features it is to the well-known feature system of Chomsky and Halle.[6]

On the central issue of what exactly is the reality that lies behind the phonological system and rules that one reconstructs, Baxter makes an interesting point. He avers that his notion of Old Chinese can in a loose sense refer to any

5 "How Do We Reconstruct Old Chinese", *Journal of the American Oriental Society*, vol. 112, no. 3 (1992), pp. 365–382; this was Pulleyblank's Presidential Address to the national meeting of the American Oriental Society, March 1992, in Berkeley, California.

6 Noam Chomsky and Morris Halle, *The Sound Pattern of English*, New York: Harper & Row, 1968.

variety of Chinese of the early and mid-Chou period; in a strict sense he defines Old Chinese by what its reconstruction should account for: "A reconstruction of Old Chinese should account for the rhymes of the *Shijing*, the *xiéshēng* characters of [the] Zhōu-dynasty script, the phonological system of Middle Chinese, and the modern Chinese dialects" (p. 24). This statement just quoted is Baxter's fourth explicitly enumerated methodological assumption, which he claims "does not require that our Old Chinese reconstruction be identical with, say, the language of the *Shijing* – only that the language of the *Shijing* is derivable from it" (ibid.).

When we take the implications of the loose sense in which Baxter uses the label 'Old Chinese' and those of the strict sense together, we come up with a slightly more sophisticated view of what Baxter thinks Old Chinese is than he himself has described expressly; he seems to think of a reconstruction of Old Chinese as a reconstructed phonological system (including the kinds of rules that we identified above as a required part of the reconstruction) that describes a s e t o f l a n g u a g e s. This set of languages has a diachronic subset consisting of the historically attested stages of the language in question, each of which is a distinct language itself, and a synchronic subset of related languages, i.e., dialects. In the case of Old Chinese, each of these dialects reflects one or more of the things that Baxter requires his Old Chinese reconstruction to account for, e.g., the language that reflects the *Shih ching* rhymes ("the *Shih ching* dialect"), the language that reflects the *hsieh-sheng* 諧聲 structure of the characters of the Chou script ("the *hsieh-sheng* dialect"), the language that is directly ancestral to Middle Chinese ("the Middle Chinese parent dialect"), etc. By definition in his linguistic theory every language can be described by a phonological system; therefore a set of languages is describable by a set of phonological systems. What Baxter is really reconstructing, then, is a set of phonological systems, expressed not discretely one apart from the other, but unitarily as a kind of integrated single phonological metasystem.

This notion of Old Chinese now begins to sound very different from the one Pulleyblank gives in the aforementioned article where he says:

> ... the reconstruction of Old Chinese is a historical problem in which one is not merely trying to set up abstract formulas that will accomodate comparisons between phonemic systems but to get as close as possible to the actual pronunciation of the language at specific periods of time in the past. (p. 380)

The suggestion that the goal of any linguistic reconstruction should be "to get as close as possible to the actual pronunciation of the language" in question must, I think, be taken *cum grano salis* lest we end up striving for an unreachable result and in the process lose sight of the value of reconstructing phonological systems that can account for the data at hand without purporting to in-

corporate a high degree of phonetic reality. Baxter alludes briefly to this when he says:

> A phonological reconstruction is sometimes thought of simply as a collection of spellings ... intended to represent the pronunciations of an earlier age. This characterization, correct as far as it goes, obscures the conceptual structure of a reconstruction. The spellings ... reflect a set of hypotheses about the phonology of a language and about its development. (p. 18)

Sometimes, we might add, those spellings reflect only such a set of hypotheses, and to think of them as in any real sense reflecting actual pronunciations of an earlier stage is not "correct as far as it goes", but entirely off the mark. This is particularly the case, we shall see below, in connection with the reconstruction of, and orthographic representation of, initial consonant clusters in Old Chinese.

(2) The Middle Chinese foundation

Baxter acknowledges that Middle Chinese (MC) is one of the most important pieces of evidence for the reconstruction of Old Chinese (OC), but he also says that it is not necessary to solve all of the phonological problems that pertain to a reconstruction of Middle Chinese if instead we use a "transcription which adequately represents all the phonological distinctions of Middle Chinese while leaving controversial questions open" (p. 27). The most often discussed, if not the most notorious, of such "controversial questions" is surely the problem of the so-called *ch'ung niu* 重紐 doublets, which occur in certain of the *Ch'ieh yün* rhymes. Baxter suggests a notational, but not a phonological, solution for this problem, writing either *-j-* or *-i-* for those that are placed in division III of the rhyme tables, and *-ji-* for those in division IV (pp. 75–81). This, of course, does not explain anything real about the difference between them, and Baxter acknowledges that, but it does preserve the distinction formally, in case that turns out to be relevant to the reconstruction of Old Chinese.

Baxter sketches the kinds of evidence on which an understanding of Middle Chinese phonology is based, and sets out his "transcription" (not reconstruction) for Middle Chinese, comparing it with Karlgren's Ancient Chinese and Pulleyblank's Early Middle Chinese (EMC) as he proceeds. More than twenty years ago Pulleyblank drew a sharp distinction between the language of the *Ch'ieh yün* 切韻 rhyming dictionary (ca. A.D. 600) and that of the *Yün ching* 韻鏡 rhyme tables of about three centuries later, calling the former Early Middle Chinese and the latter Late Middle Chinese (LMC).[7] Baxter does not distin-

7 *Asia Major*, vol. 15, pp. 197–239 and vol. 16, pp. 121–168 (1970–71); see also Pulleyblank's *Middle Chinese*, pp. 60–62.

guish EMC and LMC from each other in his transcription of MC, but on the whole his MC transcription matches Pulleyblank's EMC more closely than it does his LMC, and the references to Pulleyblank's MC reconstructions that come up in his discussions suggest that this is his intention. With regard to initials, Baxter's MC in fact differs very little, except for a few orthographic conventions, from Pulleyblank's EMC. The only thing that might be mentioned as a kind of caution is to point out that Baxter uses the letter *h* for a voiced laryngeal fricative; he uses *x* for the voiceless counterpart. (In his OC reconstruction he uses the more conventional and more expected *ɦ* for the same sound.)

The finals of MC are a little more complicated. Baxter, following tradition, deals with the finals in terms of their rhyme table divisions, namely, divisions I, II, III, and IV. For the division I finals, Baxter agrees *grosso modo* with both Karlgren and Pulleyblank in reconstructing back, mostly unrounded head vowels, but for the *hai* 咍, *hen* 痕, *teng* 登, and *t'an* 覃 rhymes he writes this vowel with the letter o, where Pulleyblank and Karlgren have *-ə-*. Baxter describes his o as "probably best thought of as representing a mid-back unrounded vowel [ʌ]" (p. 61, emphasis added), indicating that he has pretty much the same view of the phonetic value of these rhymes as Karlgren and Pulleyblank have. As with Baxter's use of *h* to represent a voiced laryngeal spirant [ɦ] or [ɣ] that we mentioned above, we can only wonder at the advisability of using letters as phonetic transcriptions in a way that differs significantly from their conventional associations.

In division II Baxter and Karlgren have more or less the same idea, namely that the head vowels were the front counterparts to *-a-* and *-ə-* (Baxter's *o*, = [ʌ]). Pulleyblank considers all of the division II vowels in his EMC reconstruction as being characterized by "retroflexion", i.e., as having an *-r-* "coloring", which he transcribes as a^r or ε^r and ultimately relates to the supposition that they are likely to have devolved from OC initial clusters in *-r-*.

Apart from the four divisions of *Ch'ieh yün* finals, the finals of MC can be divided into two large classes, those before which dental and velar initial consonants palatalize and those before which they do not. If we allow ourselves to phrase it in causitive terms, we could say the two classes are those finals that cause palatalization and those that do not. The second class has what Y.R. Chao called "palatal spellers" as the first character of their *fan-ch'ieh* formulas, whereas the first class has a different set of characters typically with non-palatal initials.[8] A syllable such as *kan*, for example, belongs to the non-palatalizing first class, and gives modern Chinese *kan*; its counterpart *kjan* belongs to the palatalizing second class, and gives modern Chinese *chien*.

[8] Y.R. Chao, "Distinctions within Ancient Chinese", *Harvard Journal of Asiatic Studies*, vol. 5, nos. 3–4 (1941), pp. 203–233.

While many scholars have recognized this distinction, most have followed the convention established by Karlgren of considering the palatalizing class of syllables to have had a high front unrounded medial or on-set to the final, what is sometimes called a y o d, written variously as *-j-* or *-i̯-*, and have projected that yodizing feature back largely unchanged into OC. For several reasons, including the fact that syllables of the palatal class are regularly used to transcribe foreign, especially Sanskrit, words w i t h o u t any corresponding yod, considerable doubt has arisen about the wisdom of reconstructing these syllables in early stages of MC and in OC with this yod. Pulleyblank calls the non-palatalizing class type A and the palatalizing class type B syllables and explains the distinction as having to do not with the presence or absence of a y o d semi-vowel, but with which mora of the syllable received the stress accent. He thus eliminates the *-j-* feature from the palatalizing class of syllables, in both EMC and OC, and substitutes in its stead a presumed difference in stress patterns on the morae of the syllable.[9] Other scholars have tried to eliminate the yod in other ways, offering various other explanations for the distinction.

Most recently Jerry Norman has pointed out that syllables of the palatalizing class are more numerous than those of the non-palatalizing class, in particular in view of the fact that those of the non-palatalizing class constitute two clearly identifiable sub-classes (corresponding to divisions I and II of the rhyme tables), and therefore ought to be the unmarked class. He has proposed that the palatalizing class be regarded as the u n m a r k e d class in OC, and that all syllables developed a palatal medial (yod) "unless this process was somehow impeded", i.e., unless it was blocked by some phonological feature of the syllable that was incompatible with "automatic" palatalization. He speculates that for division II syllables that OC feature was a medial *-r-* and for division I syllables it was pharyngealization.[10] He thus gets rid of the yods, and at the same time accounts for the distinction between these two classes in a way consistent with the concept of phonological markedness. Baxter keeps the yods in both MC and OC, and in this respect is nearly as conservative as Karlgren.

Baxter recognizes that division IV finals of the rhyme tables occur with the same set of initials that are found in division I syllables, and he treats these two as forming a single distributional class. As many other scholars do, he reconstructs all division IV finals as having a *-e-* head vowel, with no palatalizing medial.

9 *Middle Chinese*, pp. 167–68 et passim.

10 J. Norman, "Pharyngealization in Early Chinese", *Journal of the American Oriental Society*, forthcoming.

(3) The role of linguistic typology

In a way the role of typology in linguistic reconstruction is simply the role of what we may call "intuitive common sense". We would not think it reasonable to reconstruct a parent language that was typologically very different from the descendent languages, unless we had very good reasons for doing so, and could explain the typological anomaly. Baxter deals with this under the heading "Naturalness in reconstruction" in chapter 1 as a part of his introductory methodological remarks (pp. 20–22). His point there is just that reconstructed languages should conform to the constraints of "naturalness" and that later stages of these languages should devolve by "natural" diachronic processes. The question is, of course, how do we understand "natural", and the answer to that is on the one hand determined by the linguistic environment in which we are working and on the other governed by what we intuitively feel to be universal constraints on human language.

On the whole Baxter tries to keep both his reconstructions and the proposed phonological changes that he identifies "natural". He appears to contradict himself slightly when he says "I place special importance on the phonological pattern of Middle Chinese and the clues it provides about earlier stages [of the language]" (p. 4) and then later says "Old Chinese may have been typologically rather different from Middle and Modern Chinese" (p. 21). The phonological patterns of Middle Chinese are typological features, and Baxter suggests in the first passage that they should have a "special importance" for a reconstruction of Old Chinese. Then in the second passage he allows that Old Chinese might be typologically "rather different" from Middle Chinese. While neither of these approaches is necessarily wrong, even when taken together, there is nothing in the discussion to suggest how one can know when a typological feature should be given special importance in a reconstruction and when it should be ignored. He then goes on to say that "typological characteristics are not a reliable guide to genetic relationships among languages", by which he means that two languages sharing the same or similar typological features are not by virtue of that fact alone necessarily cognate. This is, of course, true; all the same, we need to ask if there is ever a time when typological characteristics do in fact constitute significant evidence for a genetic relation between two languages, or indeed if the notion of genetic relation needs to be refined in some way to allow a role for shared typological features, especially in geographically contiguous areas, in other words, to allow for the effect of areal influences beyond the level of secondary and superficial accident.

That Baxter does not pursue these questions about the role of typology further than he does is not so much a short-coming of Baxter's work itself as it is a reflection of the fact that historical linguistics in general has so far not been de-

veloped in any way that accomodates either linguistic typology or the related matter of areal features as pertinent aspects of the genetic relations among languages. To phrase the same thing from the opposite perspective, we might say that the notion of a genetic relation has not yet been refined enough to incorporate the implications of shared typological characteristics within a linguistic area. This is not, of course, something that Baxter takes as within the scope of his study, and it is no criticism of his work to mention it here as missing. It is something, though, that I think will eventually have to be taken into account if we wish to obtain as true a diachronic picture of the genetic and areal relations among the languages of China as we can.

(4) The use of all available evidence

In the aforementioned article on how we reconstruct Old Chinese Pulleyblank does not try to camouflage the fact that his purpose in listing this as one of his four desiderata is to draw attention to the importance, as he sees it, of early Chinese transcriptions of foreign words as evidence for the reconstruction of Old Chinese. While most other scholars, including Karlgren, recognized that transcriptions of foreign words could be a useful kind of evidence in their efforts to reconstruct Old Chinese, no one has given as much weight to this kind of evidence as Pulleyblank has. Pulleyblank laments what he sees as the privileged position that *Shih ching* rhyme groups and *hsieh-sheng* character structures have as evidence for the reconstruction of Old Chinese.[11]

Baxter for his part follows established custom and gives just such a "privileged position" to *Shih ching* and *hsieh-sheng* evidence, and it is not clear to me that this is objectionable. Indeed, one might say that the seriousness and thoroughness with which Baxter approaches these two categories of evidence underscores their right to a privileged position. Baxter says nothing about early Chinese transcriptions of foreign words as evidence, presumably because their relevance seems to be to a comparatively late stage of Old Chinese, viz., the language of the Han period, whereas his concern is the language of four or more centuries earlier.

Baxter's only comments about other kinds of evidence for the reconstruction of Old Chinese have to do with the role of Tibeto-Burman data in the enterprise. In this connection he says, briefly, that when it seems reasonable to do so, there is nothing wrong with letting our knowledge of Tibeto-Burman languages, or Tibeto-Burman forms, guide our hypotheses about Old Chinese, as long as the ultimate test of those hypotheses is against the data from Chinese itself. This seems an eminently sensible position, calling for no real defense. In practice

11 "How Do We Reconstruct Old Chinese", p. 375.

there is very little in Baxter's work here that appears to derive from Tibeto-Burman evidence, with the one exception of his treatment of initial consonant clusters (on which see below).

Turning now to the central matter of Baxter's study, the reconstruction of Old Chinese, I would like to arrange the remaining part of my review around three points: (a) Baxter's use of *Shih ching* rhyme evidence, (b) his use of *hsieh-sheng* evidence, and (c) his treatment of initial consonant clusters. Other aspects of his OC reconstruction will be discussed en passant.

(a) *Shih ching* rhyme evidence

One cannot fail to be impressed by the extent to which Baxter has acquainted himself with the basics of modern statistical methods in order to be able to judge what constitutes a rhyme and what does not in a way that is not wholly based on the intuition or arbitrary decision of the investigator. The entirety of chapter three, a total of 51 pages, is devoted to a discussion of what rhyme is in a literary context and to a presentation of a statistical method for analyzing rhyme data. Rather than trying to reproduce the substance of Baxter's statistical methods, which in any case I am not qualified to do, let me instead say simply that the imposing appearance of this chapter is a bit misleading; the explanation is clear and the statistical procedures and concepts are straightforward and not as arcane as they might at first seem. In the end Baxter has devised a testing procedure that lends considerable weight to his suggestion that certain of the traditional *Shih ching* rhyme groups ought to be sub-divided.

Starting from the MC *Ch'ieh yün* rhymes, and the MC notation that he established in chapter two, Baxter reconstructs values for the OC finals (in the traditional Chinese sense, i.e., medial, head vowel, final consonant, if any, and "post"-final consonant, if any, all taken together as a unit, in sum, that part of the syllable apart from the initial) based on the following assumptions:

(1) OC rhyming was phonologically well-motiviated, i.e., was based on identity of head vowel, and was not artificial,

(2) there was no medial *-*w*- in OC,

(3) there was no contrast between "strong vocalic" *-*i*- and medial *-*j*- in OC,

(4) division II finals of MC are to be reconstructed with *-*r*- in OC,

(5) division III finals of MC are to be reconstructed with *-*j*- or *-*rj*-, the distinction accounting for contrasts among MC division III finals within a single OC rhyme group, such as the *ch'ung niu* distinction.

Given these assumptions, and the requirement that his OC reconstructions account for all of the notational distinctions in his MC scheme, Baxter proceeds to reconstruct the phonological values of the OC finals. In some cases he ends up attributing more than one final, that is, more than one head vowel, to the same *Shih ching* rhyme group. For example, he reconstructs three different OC head vowels before *-n* in words of MC divisions I and IV, viz., **-an*, **-en*, and **-on*, all of which correspond to the traditional *Shih ching yüan* 元 rhyme group. But such a situation is inconsistent with assumption (1) above, that requires rhyming in the *Shih ching* to be based on identity of head vowel. Rhyming among words in *-an*, *-en*, and *-on* clearly violates this assumption. There are three possible explanations for such cases: (i) the reconstructed phonological values are wrong, (ii) the assumption is wrong, and (iii) the traditional *yüan* 元 rhyme group actually consists of three distinct rhyme groups corresponding to the three finals Baxter has reconstructed. Baxter's thesis is that the third of these explanations is the correct one, and he demonstrates this very persuasively by applying the statistical techniques adumbrated in chapter three to the data of the *yüan* 元 rhymes in the *Shih ching* to show that in fact there are three non-overlapping rhyming classes in the traditional *yüan* group (pp. 370–381). To do this, Baxter has had to re-examine all of the *Shih ching* odes anew, and to determine for himself what the rhyme patterns are in every case. These data are listed in Appendix B (pp. 583–743) which gives in the traditional order of the 306 odes all of the rhyme sequences by ode and stanza with modern, Middle, and Old Chinese pronunciations for each rhyme word indicated. The effect of this is to underscore the validity of Baxter's reconstructions, and to illustrate that there is nothing sacrosanct about the traditional *Shih ching* rhyme groups that makes it obligatory to adhere to them.

Baxter reconstructs parallel forms for the non-nasal counterpart acute finals, **-at(s)*, **-et(s)*, and **-ot(s)*, and establishes the same kind of three-way sub-division within the traditional *yüeh* 月 and *chi* 祭 rhyme groups (pp. 389–403), and parallel forms in **-j* for the *ko* 歌 rhyme group: **-aj*, **-oj*, and, with some uncertainty, **-ej*, again implying a sub-division into three distinct *Shih ching* rhyme groups, except that the data for these finals are not very numerous, and thus are not as amenable to statistical testing as they were for the rhymes in *-n* (pp. 413–422).

The division of several of the traditional *Shih ching* rhyme groups into sub-groups, representing distinctive and non-overlapping rhymes in OC is one of the most important consequences of Baxter's reconstruction. The chart below sets out the traditional rhyme groups with Baxter's reconstructions, showing for which of the groups his reconstructions require a sub-grouping. Compared with a total of 31 traditional groups, Baxter identifies 51 groups that are actually distinguished by non-overlapping rhyming in the *Shih ching*.

Traditional *Shih ching* rhyme groups:		Baxter's reconstruction(s):
真	*chen*	*-in*
文	*wen*	*-in, -un*
元	*yüan*	*-en, -an, -on*
質	*chih*	*-it*
物	*wu*	*-it, -ut*
月 *yüeh* / 祭 *chi*		*-et, -at, -ot*
脂	*chih*	*-ij*
微	*wei*	*-ij, -uj*
歌	*ko*	(*-ej* ?), *-aj, -oj*
之	*chih*	*-i*
幽	*yu*	*-u, -iw*
支	*chih*	*-e*
魚	*yü*	*-a*
侯	*hou*	*-o*
職	*chih*	*-ik*
覺	*chüeh*	*-uk, -iwk*
錫	*hsi*	*-ek*
鐸	*to*	*-ak*
屋	*wu*	*-uk*
蒸	*cheng*	*-ing*
冬	*tung*	*-ung*
耕	*keng*	*-eng*
陽	*yang*	*-ang*
東	*tung*	*-ong*
宵	*hsiao*	*-ew, -aw*
藥	*yao*	*-ewk, -awk*
侵	*ch'in*	*-im, -im, -um*
談	*t'an*	*-em, -am, -om*
緝	*ch'i*	*-ip, -ip, -up*
盍	*ho*	*-ep, -ap, -op*

This chart gives a complete inventory of the OC finals that Baxter reconstructs, except for the so-called "post-codas", i.e., the segmental features that follow the finals that he, following a number of other scholars, considers the source of the MC tones; these consist of an **-s* that is thought to have given rise to the MC *ch'ü* 去 tone, and a *-ʔ* that is supposed to have given rise to the *shang* 上 tone.

(b) *Hsieh-sheng* 諧聲 evidence

Baxter subscribes to the same general understanding of the so-called "*hsieh-sheng* principle" as most other scholars who work on the reconstruction of OC:

> In order to be written with the same phonetic element, words must normally have identical main vowels and codas, and their initial consonants must have the same position of articulation. (Additionally, nasal and obstruent initials are generally kept separate.) Otherwise, pre-initial, medial, and post-coda elements, and the manner of articulation of the initial, may differ. (p. 348)

Because Baxter understands MC tones to have developed out of segmental features of the OC syllable, specifically the "post-codas", by not taking post-coda elements into consideration in formulating his view of the *hsieh-sheng* principle, he allows for legitimate *hsieh-sheng* contacts between words that from a MC perspective are in different tone classes. Phrased another way, we can say that in Baxter's understanding tone is irrelevant to the *hsieh-sheng* principle. This is a conclusion that seems to be supported by the data of the writing system, and is generally agreed upon. By the same token, because initial consonant clusters are expressed in his scheme by "pre-initials", which he also exempts from the phonetic constraints on a *hsieh-sheng* series, Baxter implicitly allows for all manner of initial consonant clusters in the same *hsieh-sheng* series, providing the second consonants of the clusters are homorganic with one another. This is a rather liberal view of the homorganicity constraint; we shall have more to say about it below in section (c).

Baxter's use of *hsieh-sheng* evidence for his OC reconstructions shows by and large the same analytical care that his use of *Shih ching* rhyme group evidence does. In particular he is careful to distinguish between early and late *hsieh-sheng* characters, and not to attribute sound values to an early stage of a word based on a late *hsieh-sheng* representation. For example, the two characters 賄 *hui* 'valuables' and 有 *yu* 'have' appear to be an unproblematic *hsieh-sheng* pair, and can be reconstructed with the same finals, differing only in medial and the voicing of the initial, no matter whose reconstruction system is used; Li Fang-kui would have **hwəgx* and **gwjəgx* respectively, Baxter would have **hwi?* and **wji?*, in both cases a perfect match. But Baxter does not reconstruct **hwi?* for 賄 because of a note by Cheng Hsüan 鄭玄 (127–200) in the *Yi li* 儀禮 that says the "old text" (*ku wen* 古文) graph for *hui* 'valuables' was regularly 悔, a character conventionally used to write the word *hui* 'regret'. The obvious *hsieh-sheng* basis of 悔 *hui* is 每 *mei* (ultimately, of course, 母 *mu*) with initial *m-*, implying an initial **hm-* (voiceless *m-*) in 悔 *hui*. The full reconstruction Baxter gives for 悔 *hui* is **hmi?*, which he argues must apply to both the Old Chinese words 'regret' (mod. *hui*, written 悔) and 'valuables' (mod. *hui* written in early texts 悔, in later texts 賄). The *hsieh-sheng* character 賄, with 有

yu < **wji?* as a phonetic, could only have arisen after the word **hmi?* had lost its voiceless *m-* initial, and become *hw-* (Baxter gives *xwojX* as the MC form for both 賄 and 悔), and thus is not an accurate guide to the true OC pronunciation of the word *hui* 'valuables' (p. 352).

The reasoning in this example is sound as far as it goes. Cheng Hsüan's comment on the graphic form of the word *hui* 'valuables' is certainly worth noting, and may indeed mean what Baxter takes it to mean, with exactly the consequences for the OC pronunciation that he describes. But it may also reflect merely an anomalous orthographic tradition, or an orthographic convention associated with a non-standard dialect, something that in either case Cheng Hsüan, all of his erudition notwithstanding, failed to recognize. Unfortunately, there is no clear way to know. One recourse, admittedly conjectural, is to scrutinize the two alternatives from an "etymological" perspective.

It is well-known that sometimes some of the words written with characters in the same *hsieh-sheng* series share a semantic common denominator, so to speak. Consider, for example, the *yang* 昜 series: 昜 *yang* 'rising sun, sunlight', 揚 *yang* 'raise', 颺 *yang* 'wind-tossed', 鍚 *yang* 'raised ornamental knob, boss, on a shield', 瘍 *yang* 'ulcer, raised sore', 場 *ch'ang* 'arena' < 'raised mound or platform', 湯 *t'ang* 'boiling liquid', etc. It can readily be seen, I think, that not only do all of these characters share a common phonetic element, but the words for which they stand have a common semantic denominator, viz., a meaning of RAISE(D) UP in some sense. Such semantic affinity is not, of course, a requirement for membership in a *hsieh-sheng* series, but it is not infrequently an accidental feature of them.

This kind of shared semantic common denominator might constitute a kind of test as to which of two competing *hsieh-sheng* series a given character might belong to, when the phonological facts are equally amenable to both. It may be, of course, that the word in question will have no obvious semantic affinity with either *hsieh-sheng* series, in which case there is no test. It may also be that an apparent semantic affinity is artificial, a kind of folk-etymology that is unconsciously suggested by an a priori association of the character with a particular *hsieh-sheng* series. The test would then be circular, and no test at all. But it may be that occasionally the test will work, if not definitively, at least suggestively.

We could phrase the case of Baxter's word *hui* 'valuables' (conventionally written 賄), which he suggests should be reconstructed not as **hwi?*, with 有 *yu* < **wji?* as a phonetic, but as **hmi?* because of Cheng Hsüan's observation that its *ku wen* scription was 悔, which has 每 < *mei* < **mi?* as a phonetic, as just such a problem: into which of the two *hsieh-sheng* series, 有 or 每, does the word *hui* 'valuables' fit better from a semantic point of view? Notice that it is the semantic fit of the word that we need to examine, not that of the character or the pronunciation, since both of these latter two features have already

been found to fit one way or the other, depending on how much weight we give to Cheng Hsüan's observation.

Before jumping to embrace the implication of Cheng Hsüan's note I would wonder about the possible semantic connection between the verb *yu* 'to have, hold, possess' and a phonologically relatable noun 'valuables' < 'holdings, possessions', in particular, I would wonder if the latter were morphologically derivable from the former through a now obscured affixation process. Baxter treats *hui* 'valuables' exclusively as a MC rising tone word, originating in his view from an OC glottal stop post-coda. And admittedly, the *Ch'ieh yün* registers the word (and character) *hui* 賄 only in the rising tone. But the modern Chinese reading is in the fourth tone, which, since this word has by all accounts a voiceless initial, could have come regularly only from a MC departing tone source. The *Chi yün* 集韻 registers a departing tone reading for 賄, giving 呼內切 (ch. 4, sec. 18). The OC source for MC departing tone words is postulated by Baxter (and many others) to have been a post-coda *-s*. Thus, there is some evidence that the OC for *hui* 'valuables' might have had a form with **-s* in addition to one with **-ʔ*. We might now speculate that this **-s* may have served as a morphologically productive suffix, making nouns out of verbs, just as in English we turn verbs like 'hold' and 'possess' into nouns like 'holdings' and 'possessions' through established morphological processes. This would, clearly, make the relation between *hui* 賄 and *yu* 有 much closer than that portrayed in Baxter's analysis, and may serve as a counterweight to the implication of Cheng Hsüan's note about the *ku wen* form of the character.

The *Chi yün* in fact registers an allograph of 賄 written 賄 under both the rising tone and the departing tone entries for this word. There is obviously some connection between this allographic form with *mei* 每 as a phonetic in the *Chi yün* and the 悔 that Cheng Hsüan invokes in his *Yi li* note, on which Baxter based his OC reconstruction. The ultimate solution may require that we recognize a more complicated relation between OC **m-*, **hm-*, and labio-velars like **hw-*, or **w-* (which can be treated as if it were a voiced labio-velar **gw-*) than the one Baxter has postulated.

(c) Initial consonant clusters

Baxter opens his discussion of OC initials by acknowledging that "initial consonants are more difficult to reconstruct than ... finals, because we have less evidence about them" (p. 187). The *Shih ching* rhymes, which figure so prominently in the reconstruction of finals, reveal nothing about initials. Baxter's approach to the OC initials overall is to "project the Middle Chinese initials backwards in time in a way which is consistent with the graphic evidence" (ibid.). When it comes to the reconstruction of initial consonant clusters, the problem

becomes even more difficult because the projection of the Middle Chinese initials backwards is no longer particularly relevant or revealing.

Baxter reconstructs four types of initial clusters for OC, based either on graphic or on morphological evidence, that is, either when he can identify a *hsieh-sheng* contact or when he can explain the cluster morphologically: (i) clusters formed with the pre-initial **ɦ-*, (ii) clusters with the pre-initial **N-*, (iii) clusters with pre-initial **s-*, and (iv) clusters with **-l-*. Except for type (iv) Baxter speaks of Old Chinese initial consonant clusters as consisting of an initial, which somehow seems to have pride of place in the cluster, preceded by a pre-initial, which by implication is somehow secondary. We will comment on each type individually, focussing attention primarily on Baxter's reconstructions, and reserving a discussion of some further, and more general, considerations about initial consonant clusters for the last part of this review.

(i) Clusters with **ɦ-*

The **ɦ-* is a "voicing element" that Baxter, following Pulleyblank, uses as a prefix to a voiceless consonant to produce the voiced counterpart. In this way he can account by a "prefixation rule" for apparent alternations between initials that differ only in respect to voicing in pairs of words that are otherwise phonetically identical. For example, the pair of words 見 *chien* < **kens* 'see' and 見 (modern 現) *hsien* < **gens* 'appear' are obviously related to each other both in meaning and in pronunciation; the difference is only in the voicing or absence of voicing of the initial consonant. If that difference is analyzed such that the voiceless initial **k-* is the unmarked form, and the voiced **g-* consists of the unmarked *k* plus a "voicing prefix" *ɦ*, it then becomes possible to describe the difference as a process (as opposed to an arrangement) by saying (or implying) that the form in **g-* is derived from the form in **k-* by prefixing an element *ɦ*. This then allows for the implication, if not outright claim, that this is a morphological process and that it is therefore to be associated with some predictable and definite change in meaning. In this case the change is one of "intransitivization"; the normally "transitive" verb 'see' has become "intransitive", meaning 'appear, be visible', a sense sometimes interpreted as passive, 'be seen'. Baxter gives two other examples of this process: *pai* < **prats* 'defeat' / *pai* (< *brats*) < **ɦprats* 'be defeated' (both words written 敗), and *huai* < **krujs* 'destroy' / *huai* (< *grujs*) < **ɦkrujs* 'be destroyed' (both written 壞).

Baxter identifies other pairs that seem intuitively to be semantically related, but that do not follow the 'transitive/intransitive' pattern. Some of them are 'noun/verb' pairs, e.g., *pei* < **piks* 'the back' / *pei* < **ɦpiks* 'turn the back' (both 背), some are 'general meaning/specific nuance' cases, e.g., *ch'ing* < **tshjeng* 'clear' / *ch'ing* < **ɦtshjeng* 'clear sky' (清 and 晴), and some are simply synonyms, i.e., pairs with no apparent difference in meaning at all, in which

case this is just free variation between a voiced and voiceless initial in the same word, e.g., *ch'e* < **thrjet* 'remove, take away' / (*che*) < **hthrjet* id. (both 撤).

(ii) Clusters with **N*-

Baxter reconstructs a pre-initial **N*- before words with stop initials when they have MC nasals and at the same time have *hsieh-sheng* contacts, or morphological relations, or both, with words that have stop initials. For example, 幦 *mi* < **Npjit* 'to wipe a vessel clean', with 必 *pi* < **pjit* phonetic, and 武 *wu* < MC *mjuX* < **Np(r)ja?* 'martial', phonetic in 賦 *fu* < **p(r)jas* 'tax'.

Here Baxter does not try to assign any morphological significance to this pre-initial, and hence does not insist that it be viewed as a process of prefixation. He mentions instead only the suggestion that the **N*- might be parallel in some way to the Tibetan pre-initial *'a-chung*, which is sometimes regarded as marking prenasalization.

(iii) Clusters with **s*-

Baxter divides *s*- clusters into two types: those with resonants and those with stops. The first of these types is more readily identified and better understood than the second; even Karlgren, who was unrelentingly conservative in his willingness to reconstruct initial consonant clusters, recognized this type. With few exceptions, the principal evidence that Baxter recognizes for both types of **s*- clusters is *hsieh-sheng* contact. Except before **n*- and **r*- all **s* + resonant clusters devolve to *s*-; i.e., the resonant is always lost. Examples:

**sm*- > *s*-, e.g., 喪 **smang* > *sang* 'lose', cf. 亡 **mjang* 'perish', both a likely cognate to, and phonetic in, 喪 *sang*. Baxter recognizes 亡 *wang* as a phonetic in 喪 *sang* only in an end-note to this discussion, and seems to consider the possibility of their cognate relation as the principle basis for reconstructing a cluster (p. 187). This is an exception, then, to Baxter's avowed practice of basing his reconstructions of clusters only on *hsieh-sheng* or morphological evidence.

**sng*- > *s*-, e.g., 穌 **snga* > *su*, cf. 魚 **ng(r)ja* phonetic. Baxter (p. 225) gives the meaning of 穌 *su* as 'to gather into sheaves', citing Karlgren, *Grammata Serica Recensa*, no. 67a. But Karlgren says that this meaning is from the *Shuo wen*, and is not attested in any text known to him. The word does occur in the *Shih chi* with the meaning 'to gather brush' (ch. 92), a meaning probably related to the *Shuo wen* sense, an explanation which in any event was likely phrased so as to account for the 禾 of the graph. But usually 穌 stands for a word *su* meaning 'come back to life', 'revive', often written 蘇 (hence its use in the transcription 耶蘇). In this sense the word **snga* is probably cognate with 朔 *shuo* <

**sngak* 'new moon' < 'revival' (of the lunar cycle), for which the initial cluster **sng-* is independently attested by the 尼 *ni* < **ngjak* phonetic.

Beyond this, it seems likely that the 魚 *yü* < **ng(r)ja* is also phonetic in 魯 *lu*, which, according to Baxter's scheme, we might reconstruct **g-ra?*. He does not have this particular word in his book, but he discusses MC *l-* as coming from OC combinations of stop consonant plus *-r-*, one possibility specifically illustrated being **g-r-* > *l-* (p. 199). The *g-*, because it is homorganic with the *ng-* of 魚 **ng(r)ja*, seems the likeliest choice for the consonant here, and is consistent with the general homorganicity constraint on *hsieh-sheng* series.

Baxter distinguishes **g-r-* from **gr-* (and *mutatis mutandis* other such pairs) notationally because the former gives MC *l-*, implying simply the loss of the preceding stop consonant, while the *-r-* in the latter is the OC marker of what become MC division II finals and shows its effect on the MC vowel rather than surviving as any kind of initial consonant. In effect he is treating the former as a kind of cluster and the latter as a simple initial.

Baxter acknowledges that the phonetic nature of what is represented by his **g-r-* eludes him, and that this is strictly a notational device to keep these initials distinct from those with medial *-r-* of the MC division II kind. He nevertheless speculates on several possible ways that **g-r-* might differ from **gr-*. One is that the distinction may have actually been **gl-* vs. **gr-*, another is that the order of the elements may have been reversed, i.e., **rg-* vs. **gr-*.

If the distinction was really **rg-* vs. **gr-*, this allows for something like **rga?* for 魯 *lu*, and by implication might allow for a form like **rngja* for 魚 *yü*. Coupled with the possibility that the *-r-* in these forms was actually *-l-*, we might then be justified in reconstructing 魚 and 魯 as **lngja* and **lga?* respectively. The character 魚 is well known from Warring States period texts to vary graphically with both 五 and 吾, which means the OC pronunciation of the words for which all of these characters typically stood must have been relatively similar. For purposes of graphic variation (i.e., 'loan characters', what are traditionally called *chia-chieh tzu* 假借字) we may assume that "relative similarity" has the same meaning, and imposes the same phonetic constraints, that it does for a *hsieh-sheng* series. Both 五 and 吾 are first division words, differing only in tone, and would be reconstructed in their simplest form as OC **nga?* and **nga* respectively. Given that they are both attested graphic variants of 魚 **lngja*, and assuming that the initial clusters were still intact at the time of the variation (an assumption that can be defended from a considerable amount of evidence), we are justified in reconstructing both 五 and 吾, with initial **lng-*. In the case of 五 *wu* 'five' an OC form **lnga?* matches very nicely Classical Tibetan *lnga* 'five', and this seems to me to lend some weight to the speculation that **lg-* and **lng-* are the correct choices for Baxter's **g-r-* in 魯 and **ng(r)-* in 魚. In the latter case, the picture is clouded slightly by the fact that Baxter intends **ng(r)-* to be a simple initial, not a cluster. This may suggest that ultimately, in a way not yet clear, the OC *-r-* of MC division II words is to be re-

lated to, or even equated with, the "cluster *-r-* (or *-l-*)" of complex initials like **g-r-*.

**sl-* > *s-*, e.g., 錫 **slek* > *hsi* 'tin' (p. 226) and 賜 **sljeks* > MC *sjeH* > *tz'u* (p. 228), cf. 易 **ljek* > *yi* 'exchange' as phonetic.

Baxter proposes three *s-* plus stop consonant clusters, **sp-*, **sk-*, and **st-*, but none of them is in my opinion as well founded as the **sng-*, **sm-*, **sl-*, and **sn-* clusters just discussed. Clearly *hsieh-sheng* contacts such as 必 *pi* < MC *pjit* / 瑟 *se* < MC *srit* suggest a cluster of some sort, and it is natural to consider **sp-* as one possibility. But one ought also to consider the possibility of **ps-*, and, for *hsieh-sheng* contacts between velars and *s-*, the possibility of **ks-*. Baxter gives very few examples of **sp-* and **sk-* clusters, and points out that there are even fewer good examples of **st-*, a form that ought by symmetry to exist along side of **sp-* and **sk-*. But if the bilabial and velar *hsieh-sheng* contacts could be accomodated by **ps-* and **ks-* clusters, then the expected dental counterpart would be simply the affricate **ts-*, already reconstructed and established within the inventory of simple initials, and there would be no "gap" in phonological symmetry. Those examples for which Baxter reconstructs **st-*, or variants of this with "metathesizing *s-*", which he writes *S*, thus **St-*, **Sth-*, **Sd-* (all possible with *-r-* medials), are all rather speculative, and Baxter presents them with a much deserved tentativeness.

(iv) Clusters with **-l-*

The last section of Baxter's discussion of initial consonant clusters deals with those that have *-l-* as the second element. He begins by listing the clusters that his teacher, Professor Nicholas Bodman, reconstructs for *Proto-Chinese*, a designation that Bodman uses for the period of the language between the Sino-Tibetan stage (the existence and validity of which Baxter and Bodman both take as a given) and Old Chinese, thus a kind of "Old" Old Chinese. Bodman reconstructs:

**k-l-* > *t-*
**kh-l-* > *th-*
**g-l-* > *d-*

and

**p-l-* > *t-*
**ph-l-* > *th-*
**b-l-* > *d-*

Here again the clusters with a hyphen between the elements are meant to be distinguished from clusters with the medial *-l-* or *-r-* that gives MC division II (or *ch'ung niu* division III) words.

Baxter "provisionally" accepts the velar set, and says that "possibly we also have" the bilabials (p. 232). He then proceeds to give a few examples of each. In my view these clusters, and the data on which they are postulated, even though they are not treated much at length, are more persuasive than the **St-* set discussed above. Most of the examples are from Bodman, and Baxter simply endorses their possibility, adding little to what Bodman already proposed in 1980.[12]

There are many aspects of initial consonant clusters that Baxter does not deal with in this work. These include *hsieh-sheng* contacts between words with initials that do not fall into any of the patterns or groups that Baxter explains. What is to be made of the following data, for example:

今 *chin*	< MC *k-*	貪 *t'an*	< MC t^h-
告 *kao*	< MC *k-*	造 *tsao*	< MC *dz-*
公 *kung*	< MC *k-*	松 *sung*	< MC *s-*
庚 *keng*	< MC *k-*	唐 *t'ang*	< MC *d-*
非 *fei*	< MC *p-*	罪 *tsui*	< MC *dz-*
		朏 *fei*	< MC *p-*
出 *ch'u*	< MC *tsyh-*		
		屈 *ch'ü*	< MC k^h-

The two, or in the last case, three, members of each set belong to the same *Shih ching* rhyme group, and it is therefore counter-intuitive to suggest that these are not *hsieh-sheng* sets. Yet it is not clear how the manipulation of "pre-initials" can account for the variety of non-homorganic initials in evidence in sets like these.

If we allow for the possibility that words within the same *hsieh-sheng* series may have non-homorganic initials, such as those listed just above, reflecting original clusters of some sort, then by the same token we should allow for the possibility that initial clusters might also account for a cognate relation between words that have the same degree of dissimilar initials, but that belong to the same *Shih ching* rhyme group and have relatable or identical meanings, irrespective of how they are written. Baxter implicitly adheres to this premise when he allows for an initial cluster **sm-* in *sang* 喪 on the basis of its probable cognate relation with *wang* < **m-* 亡, both *sang* and *wang* being in the same *Shih*

12 "Proto-Chinese and Sino-Tibetan: data towards establishing the nature of the relationship" (Frans van Coetsem and Linga R. Waugh, eds., *Contributions to Historical Linguistics: Issues and Materials*. Cornell Linguistic Contributions, vol. 3. Leiden: E.J. Brill, 1980), pp. 34–199, esp. pp. 108–113.

ching rhyme group (p. 175). Even though he recognizes in end-note 136 that there is likely a *hsieh-sheng* relation between them, still he treats the relation between *sang* 喪 and *wang* 亡 as semantic, not graphic, i.e., not a *hsieh-sheng* relation, and yet he imposes the same phonetic constraints that would apply to a *hsieh-sheng* relation on the relation between these two words. In other words, the same phonetic data can be interpreted as evidence of original clusters when there is either a graphic basis or a semantic basis for considering the words in question related. This is a premise that Baxter does not openly state, but that seems to me to be implied in his treatment of the *sang* 喪 / *wang* 亡 pair.

Baxter's ostensible basis, as we have said, for reconstructing clusters is either graphic or morphological evidence: While these are both valid criteria, they do not exhaust the possibilities, as the example of *sang* 喪 / *wang* 亡 is meant to show. Clusters may also be reconstructed where two or more words are seen to have a similar or identical meaning and to belong to the same *Shih ching* rhyme group. The supposition in such cases is that the words are cognate, but not that the words are necessarily related one to the other morphologically. Clusters may have existed in Old Chinese that were combinations of two consonants neither of which was a morphological formative, and therefore neither of which is "primary" relative to the other.

When words that are phonetically and semantically relatable all with one another are collected together, this is usually called a word family. Word families are a feature of the language, and do not depend on any aspect of the writing system. Words in a given word family may be written with characters in the same *hsieh-sheng* series, or they may not be so written; this does not bear on their word-family relation. Conversely, *hsieh-sheng* relations are by definition determined by the writing system, and are based on the pronunciation of the words in question without regard to semantic considerations. Sometimes word family relations and *hsieh-sheng* relations will overlap, but this is strictly fortuitous, and not a requirement for either the *hsieh-sheng* series or the word family.

Word family studies fall outside the purview that Baxter sets for himself in this book, but they do not fall outside the scope of the study of Old Chinese in general, particularly as this pertains to initial consonant clusters. Baxter's reluctance to take up the issue of word families, and the evidence for Old Chinese initial clusters that they might provide, seems to stem from the fact that he treats clusters, wittingly or unwittingly, with what seems to be a Tibeto-Burman bias. The terminology "pre-initial" and "initial", for example, reflects the structure of initials in Tibetan, where many of the clusters are the result of regular morphological processes that prefix a "pre-initial" consonant to a stable single initial consonant. But it has not been demonstrated that we must regard Old Chinese in the same way. The *s-* of the **sm-* initial cluster that Baxter reconstructs for 喪 is no less an intrinsic part of the phonetically complex initial segment of the syl-

lable **smang*, i.e., of the cluster, than is the *m-*, just as in English the *s-* is no less a part of the initial cluster *sm-* in the word *smile* than is the *-m-*.

Consider the pair of words *sun* < **sun* 孫 and *k'un* < **kun* 昆 both meaning 'descendants' (Baxter's Old Chinese; the aspiration in modern Chinese *k'un* is irregular relative to the unaspirated *k-* registered as its MC initial in the *Ch'ieh yün*, but this has nothing to do with the issue here). Both words belong to the *Shih ching* rhyme group *wen* 文, and both mean 'descendants', yet they have non-homorganic initials and have no apparent graphic relation to each other. Given that *hsieh-sheng* contacts between initial *k-* and initial *s-* are well attested (cf. *kung* 公 / *sung* 松, *ku* 谷 / *su* 俗), we already have good reason to reconstruct some Old Chinese form that will accomodate these two non-homorganic initials in some way. It seems to me, therefore, counter-intuitive and gratuitously obstinate to resist treating *k'un* 昆 and *sun* 孫 as cognates, and not to reconstruct them with whatever Old Chinese initial clusters were posited to accomodate words with *k-* and *s-* initials in the same *hsieh-sheng* series. In the absence of other data that might complicate the picture, the easiest solution might be to reconstruct **ks-* for *k'un* 昆 and **gs-* for *sun* 孫, allowing the implied sound change **ks-* > *k*(^{h})- and **gs-* > *s-*.

Two points need to be noticed about the **ksun*/**gsun* reconstructions for *k'un* 昆 and *sun* 孫:

(i) There is no question of a morphological relation between the two forms. The **ks-*/**gs-* pair consists simply of alternate reflexes of what I assume was a common "root" for the word 'descendants' in Old Chinese that had an initial cluster of a velar stop followed by an *s*. We might write ***GS-* as a notational device to represent both the voiced and voiceless velar consonants that appear as variants of this cluster.

(ii) I consider the alternation *ks-*/*gs-* preferable to either *ks-*/*s-* or *k-*/*gs-*, because it adheres better to the expected constraints on homorganicity than the two alternatives do. (This reasoning applies to clusters reconstructed on the basis of *hsieh-sheng* contacts with equal force.)

When this kind of evidence is taken into account the picture of the Old Chinese initial system, including clusters, expands considerably. Still other kinds of evidence can be added, e.g., the evidence of dimidiated binomes which Boodberg adumbrated more than half a century ago,[13] in spite of a premature and unwarranted skepticism in some quarters, often coincides in its implications regarding clusters with the evidence of word family associations. If our understanding of Old Chinese initial consonant clusters is going to be advanced measurably from where it is now these kinds of considerations will have to be taken into account.

13 "Some Proleptical Remarks on the Evolution of Archaic Chinese", *Harvard Journal of Asiatic Studies*, vol. 2, nos. 3–4 (1937), pp. 329–372, esp. pp. 353–360.

The work that Baxter has done, adhering to the more-or-less conventional procedures of historical linguistics, has brought us about as far as we can go within this framework. Baxter's great accomplishment is to have done this work with as much rigor and as much attention to detail as anyone so far, and to have as a result produced the most refined overall picture of the phonology of Old Chinese yet. Progress beyond this, now, especially with respect to the still largely intractable problem of initial consonant clusters, their nature and their devolution, not to mention the question of the ultimate genetic affinity of Chinese, which in spite of the apparent confidence of adherents to a Sino-Tibetan hypothesis, remains unsettled, will depend on a willingness to apply somewhat less tested and more experimental methods and to consider less conventional kinds of data.

In sum, given the scope of Baxter's presentation, the thoroughness of his explanations, and the extent of his treatment of all of the details of Old Chinese, I think it is fair to say that Baxter's study of Old Chinese is the most significant work of this kind to appear since the works of Karlgren. In some ways Baxter's reconstruction is still more conservative than might be necessary, but this is a safer and more desirable alternative than being overly speculative in ways that the evidence cannot yet support.