The fundamentals of Chinese historical phonology

1. Old Mandarin (early modern Chinese; 14th c.)
   - Arrangement:
     o 19 rhyme categories, each named with two characters, e.g. 真文, 江阳, 先天, 鱼模.
     o Within each rhyme category, words are divided according to tone category:
       平声阴 平声阳 上声 去声 入声作 X 聲
     o Within each tone, words are divided into homophone groups separated by circles.
     o An appendix lists pairs of characters whose pronunciation is frequently confused, e.g. 死有史 米有美 因有英

The 19 Zhongyuan Yinyun rhyme categories:

1. 东鐘 dōngzhōng  2. 江陽 jiāngyáng  3. 支思 zhī sī  4. 齐微 qí wēi
5. 鱼模 yú mó  6. 皆来 jiē lái  7. 真文 zhēn wén  8. 寒山 hán shān
9. 恒欢 huáng huān  10. 先天 xiān tiān  11. 藁藁 xiǎo gǎo  12. 歌弋 gē yì
13. 家麻 jiā má  14. 車遞 chē dì  15. 凸青 gōng qīng  16. 归侯 yǐ hoú
17. 惨卒 qǐn xùn  18. 監戸 jiān xiàn  19. 廉纖 lián xiān

- “新” in 真文 zhēn wén was somehow different from “心” in 惨卒 qǐn xùn
- “千” in 寒山 hán shān was somehow different from “甘” in 監戸 jiān xiàn
- “連” in 先天 xiān tiān was somehow different from “廉” in 廉纖 lián xiān

Old Mandarin tones:
The tone categories were the same as for modern standard Mandarin, except:
- The former 入-tone words joined the other tone categories in a more regular fashion.

Ru-tone words (MC -p, -t, -k endings) from 齐微 qī wēi, pp. 33, 34, 36:

<table>
<thead>
<tr>
<th>入聲作平聲 (陽平)</th>
<th>Middle Chinese voiced initials</th>
<th>十 (MC z-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>入聲作上聲</td>
<td>Middle Chinese voiceless initials</td>
<td>七 (MC ts-)</td>
</tr>
<tr>
<td>入聲作去聲</td>
<td>Middle Chinese nasal &amp; lateral initials</td>
<td>日・力 (MC nj-, MC l-)</td>
</tr>
</tbody>
</table>

The vowels of the finals were different as well; one reconstruction (by Tung T‘ung-ho) is as follows:

1. 東鐘 -un, -iun
2. 江陽 -an, -ian, -uan
3. 支思 -i
4. 齐微 -i, -iei, -uei
5. 鱼模 -ui, -iu
6. 皆来 -ai, -ia, -uai
7. 真文 -en, -ian, -uan, -yan
8. 寒山 -an, -ian, -uan
9. 恒欢 -on
10. 先天 -ien, -yen
11. 藁藁 -ou, -ua, -iau, (æ uau)
12. 歌弋 -o, -io, -uo
13. 家麻 -a, (-ia), -ua
14. 車遞 -ie, -ye
15. 凸青 -æ, -iaq, -uan, -yan
16. 归侯 -ou, -iou
17. 惨卒 -em, -iam
18. 監戸 -am, -iam
19. 廉纖 -iem
2. The reconstruction of the Middle Chinese sound system

2.1. Main sources

2.1.1. Primary
- rhyme dictionaries, rhyme tables (Qieyun 切韵, Guangyun 广韵, ..., Jiyun 集韵, Yunjing 韵镜, Qiyinlüe 七音略)
- a comparison of modern Chinese dialects
- shape of Chinese loanwords in 'sinoxenic' languages (Japanese, Korean, Vietnamese)

2.1.2. Secondary
- use of poetic devices (rhyming words, metric (= tonal patterns))
- transcriptions:
  - contemporary alphabetic transcription of Chinese names/words, e.g. Brahmi, Tibetan, ...
  - contemporary Chinese transcription of foreign words/names of known origin
– the content problem of the Qieyun: Is it some ‘reconstructed’ pre-Tang variety, or the
language of the capital (Chang’an 长安), or a newly created norm, based on certain
‘compromises’?
– the classic problem of ‘time-span’: Qieyun: 601 … Yunjing: 1161
→ Pulleyblank: the Qieyun and the rhyme tables (等韵图) reflect different varieties (both
diachronically, and geographically) → Early vs. Late MC
– Karlgren 高本汉, Li Fang-Kuei 李方桂: (1) this is not a serious problem (discrepancies are
relatively minor), (2) if one tries to treat them separately, the task is a lot more difficult to
carry out, and the expected results are less reliable

2.2. Rhyme tables, rhyme dictionaries
– the oldest extant rhyme dictionary: Qieyun 切韵 (A.D. 601, Lu Fayan 陆法言) – 193
rhymes
– what most reconstructions used to be based on: Guangyun 广韵 (1007–1008, Chen
Pengnian 陈彭年, Qiu Yong 邱雍) – 26,000 字, 206 rhymes
  o fanqie 反切
    东 tuwng = 德红切 tok huwng tshet

2.2.1. Principal Versions of the Qieyun:

<table>
<thead>
<tr>
<th>DATE</th>
<th>PRINCIPAL AUTHOR(S)</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>601</td>
<td>Lu Fayan 陸法言</td>
<td>Qieyun 切韵</td>
</tr>
<tr>
<td>677</td>
<td>Zhangsun Neyan 長孫訥言</td>
<td>Qieyun 切韵</td>
</tr>
<tr>
<td>706</td>
<td>Wang Renxu 王仁煦</td>
<td>Kanmiu Buque Qieyun 刊謬補缺切韻</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[Corrected and supplemented Qieyun]</td>
</tr>
<tr>
<td>720</td>
<td>Sun Mian 孫愐</td>
<td>Tangyun 唐韻 (first version)</td>
</tr>
<tr>
<td>751</td>
<td>Sun Mian 孫愐</td>
<td>Tangyun (唐韻) (second version)</td>
</tr>
<tr>
<td>763-784</td>
<td>Li Zhou 李舟</td>
<td>Qieyun 切韻</td>
</tr>
<tr>
<td>1007-1008</td>
<td>Chen Pengnian 陳彭年, Qiu Yong 邱雍</td>
<td>Guangyun 廣韻 [Broad rhymes]</td>
</tr>
<tr>
<td>1038-1039</td>
<td>Ding Du 丁度</td>
<td>Jiyun 集韻 [Collected rhymes]</td>
</tr>
</tbody>
</table>

2.2.2. The structure of the Guangyun:
– initials: 35 (36)
– acc. to manner of articulation:
- 全清 unaspirated
- 全浊 (breathy?) voiced obstruent
- 次清 aspirated
- 次浊 sonorant

- acc. to place of articulation (Jacques 2006):

<table>
<thead>
<tr>
<th></th>
<th>全清</th>
<th>次清</th>
<th>全浊</th>
<th>次浊</th>
</tr>
</thead>
<tbody>
<tr>
<td>重唇音</td>
<td>quán qūng</td>
<td>ci qūng</td>
<td>quán zhuó</td>
<td>ci zhuó</td>
</tr>
<tr>
<td>zhòng chún yín</td>
<td>bāng</td>
<td>pāng</td>
<td>bīng</td>
<td>mínɡ</td>
</tr>
<tr>
<td>轻唇音</td>
<td>fēi</td>
<td>fēn</td>
<td>fēnɡ</td>
<td>wēi</td>
</tr>
<tr>
<td>qīng chún yín</td>
<td>pīj</td>
<td>phu</td>
<td>bjiowngX</td>
<td>mjǐj</td>
</tr>
<tr>
<td>舌头音</td>
<td>duàn</td>
<td>tou</td>
<td>dūn</td>
<td>nǐ</td>
</tr>
<tr>
<td>shé tòu yín</td>
<td>twan</td>
<td>thuwH</td>
<td>dengH</td>
<td>nej</td>
</tr>
<tr>
<td>舌上音</td>
<td>zhī</td>
<td>chè</td>
<td>chénɡ</td>
<td>niánɡ</td>
</tr>
<tr>
<td>shé shàng yín</td>
<td>trje</td>
<td>trhjет</td>
<td>drijeng</td>
<td>nrjang</td>
</tr>
<tr>
<td>齿头音</td>
<td>jīnɡ</td>
<td>qīnɡ</td>
<td>cōnɡ</td>
<td>xīn</td>
</tr>
<tr>
<td>chí tòu yín</td>
<td>tsjeng</td>
<td>tshjeng</td>
<td>dzjowng</td>
<td>sim</td>
</tr>
<tr>
<td>正齿音</td>
<td>zhāo</td>
<td>chuān</td>
<td>chuānɡ</td>
<td>shēn</td>
</tr>
<tr>
<td>zhèng chǐ yín</td>
<td>tsyewH</td>
<td>tshywen</td>
<td>dztjang</td>
<td>syīmX</td>
</tr>
<tr>
<td>牙音</td>
<td>jiàn</td>
<td>xī</td>
<td>qūn</td>
<td>yì</td>
</tr>
<tr>
<td>yá yín</td>
<td>khej</td>
<td>gjuń</td>
<td>ngi</td>
<td></td>
</tr>
<tr>
<td>喉音</td>
<td>yǐnɡ</td>
<td>yǔ</td>
<td>‘jengX</td>
<td>yuH</td>
</tr>
<tr>
<td>hòu yín</td>
<td>‘jengX</td>
<td>yuH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>半舌音</td>
<td>lái</td>
<td>loj</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bàn shé yín</td>
<td>ri</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>半齿音</td>
<td>nyit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- rhymes:
- acc. to medials: 四呼 sìhū are determined by the Medial: kaikou 开口 are
syllables without Medials, *hekou* 合口 have a -w- Medial (or vocalic u), *qichi* 齐齿 have -j- Medial (or vocalic i) and *cuokou* 撮口 have -ɥ- (or vocalic y). The last one is sometimes analyzed as a combination of -j- and -w-.

– of these, the *Guangyun*-system only shows the *kai ~ he* distinction: *he* = rounded V or Medial

– 16 *rhyme groups* (攝), with 61 labels (→ labels × tones = 206 rhymes)

<table>
<thead>
<tr>
<th>She 攝</th>
<th>Guangyun Rhymes</th>
<th>Ending Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 通</td>
<td>1. 東 2. 冬 3. 鍾</td>
<td>-ng, -k</td>
</tr>
<tr>
<td>2. 江</td>
<td>4. 江</td>
<td>-ng, -k</td>
</tr>
<tr>
<td>3. 止</td>
<td>5. 支 6. 脂 7. 之 8. 微</td>
<td>-i</td>
</tr>
<tr>
<td>4. 遇</td>
<td>9. 魚 10. 虞 11. 模</td>
<td>-Ø</td>
</tr>
<tr>
<td>7. 山</td>
<td>26. 元 29. 寒 30. 桓 31. 刪 32. 山 33. 先 34. 仙</td>
<td>-n, -t</td>
</tr>
<tr>
<td>8. 效</td>
<td>35. 蕭 36. 宵 37. 覷 38. 豪</td>
<td>-u</td>
</tr>
<tr>
<td>9. 果</td>
<td>39. 歌 40. 戈</td>
<td>Ø</td>
</tr>
<tr>
<td>10. 假</td>
<td>41. 麻</td>
<td>-Ø</td>
</tr>
<tr>
<td>11. 宕</td>
<td>42. 陽 43. 唐</td>
<td>-ng, -k</td>
</tr>
<tr>
<td>12. 梳</td>
<td>44. 庚 45. 耕 46. 清 47. 青</td>
<td>-ng, -k</td>
</tr>
<tr>
<td>13. 曾</td>
<td>48. 燕 49. 登</td>
<td>-ng, -k</td>
</tr>
<tr>
<td>14. 烏</td>
<td>50. 尤 51. 侯 52. 幽</td>
<td>-u</td>
</tr>
<tr>
<td>15. 湊</td>
<td>53. 侵</td>
<td>-m, -p</td>
</tr>
<tr>
<td>16. 咸</td>
<td>54. 賤 55. 談 56. 鹽 57. 添 58. 咸 59. 銜 60. 嚴 61. 凡</td>
<td>-m, -p</td>
</tr>
</tbody>
</table>
2.2.3. The structure of the rhyme tables

- Song period: tabular representations of the phonological system contained in the *fanqie*
- The two oldest: 韻鏡 *Yunjing* and the 七音略 *Qiyinlüe*. The *Yunjing* in its modern version was published by 張麟之 *Zhang Linzhi* in 1161.
- *Yunjing*: a series of tables (1 to 43), each table is a grid on which rhymes and characters from the *Guangyun* are systematically laid out

**Rows**
- Divided first by tone (平上去入), names of *Guangyun* rhymes are listed within each tone
- Each tone is divided into four rows (*deng* 等), these represent distinct rhymes

**Columns**
- Divided first by place of articulation of initial (labial, alveolar, velar, etc.)
- Within each place of articulation, divided by manner of articulation

**Characters**
- The characters laid out on the grid are mostly headwords from homophone groups in the listed *Guangyun* rhymes. Each is placed in the appropriate column for its initial and the appropriate row for its final. Pronunciations for which no character exists are marked with a circle.

- the 4 *deng* (division, grade): the rimes are all organized in tables of four rows; some rimes only appear on one division each, whereas other rimes take the four rows by themselves
- *Karlgren*: there is a difference in palatalisation (due to the [i] glide or medial) between the Divisions. It is thought that Deng I and II are the least palatalised, whilst III and IV are more palatalised. Of the latter, IV is most heavily palatalised, and the vowel there is reflected by being higher than that in Division III. Similarly, the vowel in Division II may be higher and more fronted than that of Division I:
### Division I
Low main vowel.

### Division II
Slightly fronted and/or higher main vowel than for Deng I.

### Division III
Palatalised low/central main vowels

### Division IV
Strongly palatalised with more fronted higher main vowel

#### 2.2.4. Procedures

**2.2.4.1. Karlgren (and followers, esp. Li Fang-Kuei, William Baxter):**
- basis: rhyme dictionaries + rhyme tables
- dialectal and sinoxenic language data are secondary (used as gap fillers)
- comparative method is hardly used

**2.2.4.2. J. Norman, W. S. Coblin:**
- basis: comparative method
- transcriptions: an auxiliary database

**2.2.4.3. Pulleyblank:**
- modern phonological theory + comparative method
  → a systemic view

- Karlgren’s reconstructed MC sound system is way too diffuse (full of non-phonemic distinctions)
- NB. Karlgren had no direct access to Qieyun: it was thought to be completely lost for long, until some fragments were discovered among the Dunhuang manuscripts and manuscripts discovered at Turfan; and finally in 1947, a nearly complete manuscript of the 706 edition was found in the Palace Museum (*Kanmiu Buque Qieyun* (刊謬補缺切韻))

Li's revision of Karlgren’s Middle Chinese reconstruction still enjoys widespread currency. For this reason I reproduce it here in its entirety from Li 1980:7-8.

**INITIALS**

```
| 撒 | 瀋 | ph- | 並 | b- | 明 | m- | 來 | l- |
| 端 | t- | 透 | th- | 定 | d- | 泥 | n- | |
| 知 | t- | 微 | th- | 澄 | d- | 娘 | n- | |
| 精 | ts- | 清 | tsh- | 從 | dz- | 心 | s- | 邪 | z- |
| 照 | ts- | 穿 | tsh- | 床 | dz- | 審 | s- | 審 | s- | 禪 | z- |
| 見 | k- | 渠 | kh- | 群 | g- | 疑 | ng- | 曉 | x- | 割 | y- |
```

Notes:

- The *zhi* 知 series (t-, etc.) are retroflex stops
- The *zha-er* 照系列 series (tʂ-, etc.) are retroflex sibilants
- The *zhao-san* 照系列 series (ts-, etc.) are palatal sibilants; ńź- is a palatal nasal
- ng- is a velar nasal
- *- is a glottal stop
The features of this Middle Chinese reconstruction which are most important for the reconstruction of Old Chinese medials are the following:

1) First-division vowels are back and second-division vowels are front.
2) Fourth-division rhymes are distinguished by the presence of medial -i-.
3) Third-division rhymes are distinguished by the presence of medial -j-. Chóngniǔ fourth-division rhymes (which are, broadly speaking, in the third division) are written with medial -jī-.
4) The labiovelar medial -w- (sometimes written -u-) occurs in all four divisions.
5) The retroflex initials (zhī 知 series and zhào-ól 照- series) occur only with second-division and third-division rhymes.
6) The palatal initials (zhá-ăn 照- series) occur only with third-division rhymes.
7) The dental stops (duán 端 series) occur only with first- and fourth-division rhymes.
8) The dental affricates and fricatives (jīng 精 series) do not occur in second-division rhymes.

3. Old Chinese

3.1. The main ingredients

– reconstruction of Middle Chinese
– phonological information concerning Old Chinese is chiefly gained from:
  • the rhymed texts written in the Zhou era, chiefly Shijing (詩經; 305 poems, cca. 2000 distinct characters in rhyming position)
  • the fact that xiesheng (諧聲字) characters sharing the same phonetic component were homophones or near-homophones when the characters were first created
  • Sino-Tibetan comparisons
  • any reliable reconstruction of Middle Chinese

“The Shijing data provides the phonological structure for Old Chinese rhymes (but says nothing about Old Chinese initials). The phonetic series allow almost every character in Chinese to be classified within this structure, and tells us about the relationships between Old Chinese initials. Finally, this reconstructed phonological structure can be filled in with phonetic values by comparison with the reconstruction of Middle Chinese, its descendent.”

3.2. The Shijing and the ‘phonetic series’

– Shijing: 305 poems, cca. 2000 distinct char. in rhymes → classified into rhyme groups (韻部)
phon. series: one basic char. + a series of compounds (諧聲字) sharing the same basic character as their phonetic marker, e.g.: 青 清 情 情 情 ...

– basic assumptions (← Duan Yucai 段玉裁 (18th c.)):
  - same phonetic series → they belong to the same rhyme group
  - same phon series → homorganic initials (same place of articulation)

– problem: lack of systemicness (irregular rhymes, varied rhyme schemes, dialectal traits, textual errors in the Shijing)

– a particular difficulty: some MC (Qieyun) rhymes correspond to two (or even more) different OC rhyme groups

– the role of ‘divisions’ (等) is certainly related to some unresolved points of MC ~ OC correspondences, but the exact role they play is still not satisfactorily uncovered to date

– much work on the OC ~ MC rhyme group correlations was done by Qing 清代 scholars such as Duan Yucai  etc.

– little work was done on initials, however, until Karlgren (except: Qian Daxin’s 錢大昕 discovery that OC lacked labiodentals (脣齒音) and laminals (舌上音))

3.3. The main reconstructions (for actual details see the source lit.)

3.3.1. Karlgren: Grammata Serica (1940)

– very hypothetical, based on his (rather unlikely) system of MC reconstructions
– was heavily criticized, but for a long time, most of the alternatives were actually revisions to Karlgren’s system, e.g.:
  - Wang Li 王力 (1957): Hanyu shi gao 漢語史稿

3.3.2. Li Fang-kuei 李方桂 (1971): Shanggu yin yanjiu (上古音研究)

– a completely new reconstruction, “on the ruins” of Karlgren’s
– very simple vowel system with just 4 vowels (i, u, a, a) BUT a rich set of initials (some of them complex) and finals
– the OC → MC rhyme changes must be derivable as sound laws (principle of regularity)

3.3.3. Pulleyblank (1962, 1984)

– the most daring hypothesis; based on advances of theoretical linguistics, and: drifts towards not very well established views on language genealogies (e.g., Nostratic hypothesis)
– OC: only two(!) vowels (a, a), but paired with (i) a complex accent system (iambic/trochaic) of bimoraic rhymes, and (ii) a complex system of secondary articulations on initial consonants → clear links to ST/TB common features
– “typologically bizarre”, though

3.3.4. Baxter (1992)

– based on a MC akin to F. K. Li’s
– uses statistical methods to improve on the Qing-scholarship on OC rhymes
– a balanced 6-vowel system (i, i, u, e, a, o), related to Li’s one, but with fewer medials/diphthongs posited
– a point of criticism: too many gaps in the paradigm of possible syllables
3.4. The tonogenesis issue

– when (and how) did tonality arise in Chinese?
– in particular: was OC tonal? Ting Pang-hsin 丁邦新 &co: yes vs. Pulleyblank, Mei Tsu-lin 梅祖麟 &co: no
– Haudricourt (1954): just like in Vietnamese, MC tones may have emerged by the loss of final consonants – in particular: 去聲 from a lost *-s coda, and 去聲 from a dropped *-ʔ one
– pl: 脸 *grjamʔ > liǎn 檢 *krjamʔ > jiǎn
    路 *g-raks > lù 驗 *Nırjams > yàn

– this neatly explains why there are so many cases of 去聲 or 去聲 characters rhyming with 入聲 ones in the Shijing, and several such xiesheng links, as well