

Reconstituting Modern Mandarin: An Empirical Reassessment of Reconstruction by Philological Categories and Sinoxenic Correspondence*

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1. Introduction

- a. Evaluating reconstruction methodology
 - i. Reconstruction of modern Chinese language using materials similar to those used for historical work (categories and correspondences)
- b. Methods of traditional Chinese phonological reconstruction
 - i. Philological categories (initials, rimes, rime groups, grades)
 - ii. Sinoxenic correspondences (c.f. Rosetta Stone)
 - iii. Structuralism/descriptive linguistics (symmetry, distribution, naturalness, patterns of change)
 - iv. (Comparison with modern dialects)
- c. Sources of problems in Chinese historical phonology:
 - i. Language internal: structural complexity
 - ii. Language external: language variation and/or artificial conventions (*mixtum compositum* of earlier traditions)
 - iii. Byproduct of reconstruction method employed

2. Methodology and materials

- a. Syllable structure: (C)(G)V(X)
- b. Sinoxenic correspondences
 - i. English-Chinese tourist phrasebooks (see bibliography)
 - ii. Sample entries (from Wu & Brown 2003):
 - Do you speak English? (p.71) 度油 司必克 英格力序
 - Where are you going? (p.71) 惠兒 阿油 勾印
 - Anything to declare? (p.76) 宴尼幸 兔 地克淚兒

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iii. Correspondence source

- 吳哲夫、Dan F. Brown。2003。《用中文溜美國話》。台北：三思堂。
- Chapter 1: Basic vocabulary list (pp.6-52) -- 1,401 characters

iv. Source language: American English¹

c. Philological categories

i. Initials (list)

「太平歌」(anonymous)

子夜久難明，喜報東方亮；此日笙歌頌太平，眾口齊歡唱。[22 characters]

ii. Initials (categorization)

唇 labial				舌 lingual				齒 dental				牙 molar		喉 guttural							
								齒頭 "tooth tip"		正齒 "full tooth"											
								尖 sharp		團 blunt											
報	平	明	方	東	太	難	亮	子	此	頌	久	齊	喜	眾	唱	笙	日	歌	口	歡	夜

iii. Medials

- 四呼：開、齊、合、撮（潘耒《類音》——見竺家寧 1991：151）

iv. Rimes (張允和。1959。《詩歌新韻》。上海：上海教育出版社。)

	EXEMPLARS	開	齊	合	撮
1	啊				
2	喔				
3	婀				
4	諉				
5	日				
6	衣				
7	烏				
8	迂				
9	凹				
10	哀				
11	歐				
12	欸				
13	安				
14	煙				
15	恩				
16	因				
17	暈				
18	骯				
19	噙				
20	鞞				
21	英				
22	兒				

¹ Variant pronunciations in the form of [a] vs [ɔ], e.g., "wrong", "tomorrow", were few. [a] variant selected.

3. Reconstruction of initials

a. 唇 “labial” series

Initial	報	平	明	方
Reconstruction	[b] (83.9%)	[p] (100%)	[m] (97.8%)	[f] (73.1%) or [v] (26.9%)

i. Initial 方 is reconstructed as [f]

b. 舌 “lingual” series

Initial	東	太	難	亮
Reconstruction	[d] (88.4%)	[t] (100%)	[n] (100%)	[l] (43.9%) or [ɺ] (54.6%)

i. Initial 亮 is reconstructed as tap [r]

c. 牙 “molar” series

Initial	歌	口
Reconstruction	[g] (90.6%)	[k] (99.0%)

d. 喉 “guttural” series

Initial	歡	夜
Reconstruction	[h] (100%)	[ϕ] (100%)

e. 正齒 “full tooth” series

Initial	眾	唱	笙	日
Reconstruction	[dɺ] (75%)	[tɺ] (100%)	[s] (78.6%)	[ɺ] (87%)

i. Category-internal symmetry dictates initial 笙 should be [sɺ] instead of [s].

Possible explanations for discrepancy:

- Rarity of [sɺ] cluster in English, as opposed to [dɺ] and [tɺ]
- Possible merger of [sɺ] and [s]

ii. CGVX syllable structure dictates that initial must be a single consonant, rather than a cluster such as [dɺ], [tɺ] or [sɺ]. Thus the initials in this category are most likely not clusters, but rather consonants with rhotic properties, i.e., retroflex consonants.

iii. Series reconstructed as retroflex 眾 [dɺ]、唱 [tɺ]、笙 [sɺ]、日 [ɺ]

f. 齒頭 (尖) “tooth tip (sharp)” series

Initial	子	此	頌
Reconstruction	[z] (76%)	[tɺ] (100%) [single token]	[s] (87.9%)

i. English correspondents of initials 子 and 頌 suggest series is alveolar sibilant

ii. Value of initial 此 [tɺ] overlaps with that of initial 唱 in 正齒 “full tooth” series.

iii. Since [tɺ] is not an alveolar sibilant, and there is only once instance of this initial, we assume that it is in error, and reconstruct initial 此 as voiceless alveolar affricate [ts], in line with the alveolar sibilant properties of other initials in the series.

g. 齒頭 (團) “tooth tip (blunt)” series

Initial	久	齊	喜
Reconstruction	[dʒ] (53.6%) or [zi] (21.4%)	[tʃ] (89.5%)	[ʃ] (50%) or [si] (44.7%)

- i. Series reconstructed as palato-alveolar 久 [dʒ]、齊 [tʃ]、喜 [ʃ]
- ii. Data shows that alveolars 子 [z] and 頌 [s] may be palatalized before [i] and merge with 久 [dʒ] and 喜 [ʃ].
- iii. Merger of [zi] (fricative) and [dʒ] (affricate) suggests that phonetic value of 子 may actually be affricate [dʒ] rather than fricative [z] -- with makes more symmetrical in the 齒頭 (尖) “tooth tip (apical)” series.

h. Reconstructed initials

series \ features	-cont +voice	-cont -voice	+nasal	+cont -voice	+cont +voice
唇 labial	報 [b]	平 [p]	明 [m]	方 [f]	
舌 alveolar	東 [d]	太 [t]	難 [n]		亮 [l]
齒頭 (尖) alveolar sibilant	子 [dz]	此 [ts]		頌 [s]	
齒頭 (團) palato-alveolar sibilant	久 [dʒ]	齊 [tʃ]		喜 [ʃ]	
正齒 retroflex	眾 [dʒ]	唱 [tʃ]		笙 [ʃ]	日 [ʃ]
牙 velar	歌 [g]	口 [k]			
喉 pharyngeal				歡 [h]	夜 [ʰ]

4. Reconstruction of medials

a. Zero initial onsets

- i. 齊口 (j): 85.3% begin with [j], [i], [ɿ]
- ii. 合口 (w): 96%.9 begin with [w], [u], [ʊ]
- iii. 開口 (ɸ): 98.1% begin with other than the above vowels/approximants

b. 撮口 syllables

- i. Distribution:
 - Used with mid to high vowels [i], [ɿ], [u], [ə] or empty filler vowel
 - Only follows palato-alveolars [dʒ], [tʃ], [ʃ], [ʒ], [ʃ]
- ii. Phonetic detail
 - Adjacent consonants are [+palatal], [+round]
 - Adjacent vowels are [+high]
- iii. Reconstruction
 - Reconstructed as [+round, +high, +front] vowel [y]

c. Reconstructed medials:

	開	齊	合	撮
medial	[ɸ]	[i]	[w]	[y]

5. Reconstruction of finals

a. Monophthongal rimes (reconstructed)

- i. 衣 reconstructed as [i]
- ii. 烏 reconstructed as [u]
- iii. 迂 reconstructed as [y]
 - 撮口 label demands presence of vowel [y]
 - Used only for English syllables with rounded palatal consonants and high to mid-high vowels
- iv. 啊 reconstructed as [ɐ]
 - Compromise between [a] (25.6%), [æ] (24.8%) and [ʌ] (21.7%)
- v. 婀 reconstructed as [ə]
 - Compromise between [ə] and [əɪ]
 - Neutral vowel -- used often as filler vowel (71.3%)
- vi. 欸 reconstructed as [ɛ]*
- vii. 喔 reconstructed as [o]
- viii. 日 reconstructed as [ɯ]
 - Follows consonants [s] (74.6%), [z] (16.1%), and [θ] (7.7%) in absence of vowel

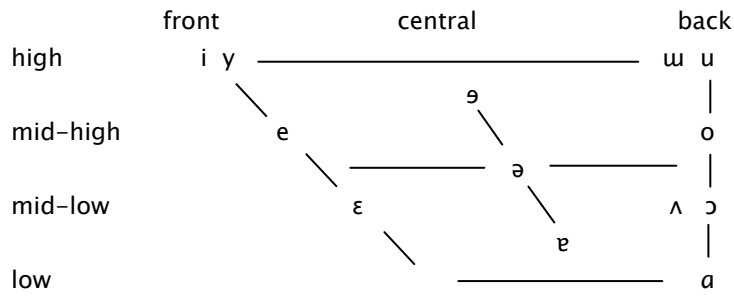
b. Diphthongal rimes (reconstructed)

- i. 哀 reconstructed as [ai]
- ii. 凹 reconstructed as [au]
- iii. 諛 reconstructed as [ei]*
- iv. 歐 reconstructed as [ou]
- v. 兒 reconstructed as [ər]
 - 51% used for English [ɪ]; 39.2% used for English [i]
 - Reconstructed as compromise between [ɪ] and [i]

c. Nasal endings (reconstructed)

- i. 英 reconstructed as [iŋ]
- ii. 因 reconstructed as [in]
- iii. 暈 reconstructed as [yn]
 - 撮口 label demands presence of vowel [y]
 - Used only for English syllables with rounded palatal consonants, followed by [ɪn], [un] or [ən]
- iv. 安 reconstructed as [ɛn]
- v. 煙 reconstructed as [ɛn]
- vi. 恩 reconstructed as [ən]
- vii. 骯 reconstructed as [aŋ]*
 - Compromise of [ʌŋ] (33.3%), [aun] (33.3%), [ʌm] (16.7%) and [oum] (16.7%)
- viii. 喻 reconstructed as [oŋ]*
 - Compromise of [ɔŋ] (25%), [ɔɪŋ] (25%), [oum] (25%) and [əŋ] (25%)
- ix. 鞞 reconstructed as [ʌŋ]*
 - 100% used for English [ən]
 - Reconstructed as [ʌŋ], with a slightly lower and more retracted vowel, to avoid overlap with initial 恩 [ən]

d. Vowel chart (13 vowels)



PAIRS: left (spread), right (round)

e. Reconstructed finals

	韻	開	齊	合	撮
1	啊	ɛ	je	wɛ	
2	喔	o		wo	
3	婀	ə			
4	諉		jei		
5	日	ʊ			
6	衣		i		
7	烏			u	
8	迂				y
9	凹	au	jau		
10	哀	ai		wai	
11	歐	ou	jou		
12	欸	ɛ		wɛ	
13	安	ən		wən	
14	煙		jɛn		ɥɛn
15	恩	ən		wən	
16	因		in		
17	暈				yn
18	骛	an	jan	wan	
19	噀		jon	won	
20	鞞	ʌn			
21	英		iŋ		
22	兒	ɛr			

6. Comparison with present-day Mandarin

a. Initials

	RECONSTRUCTION					MODERN STANDARD CHINESE				
唇	報	平	明	方		報	平	明	方	
	[b]	[p]	[m]	[f]		[p]	[p ^h]	[m]	[f]	
舌	東	太	難		亮	東	太	難		亮
	[d]	[t]	[n]		[r]	[t]	[t ^h]	[n]		[l]
齒頭(尖)	子	此		頌		子	此		頌	
	[dz]	[ts]		[s]		[ts]	[ts ^h]		[s]	
齒頭(團)	久	齊		喜		久	齊		喜	
	[dʒ]	[tʃ]		[ʃ]		[tʃ]	[tʃ ^h]		[ʃ]	
正齒	眾	唱		笙	日	眾	唱		笙	日
	[dʒ]	[tʃ]		[ʃ]	[ɹ]	[tʃ]	[tʃ ^h]		[ʃ]	[ɹ]
牙	歌	口				歌	口			
	[g]	[k]				[k]	[k ^h]			
喉				歡	夜				歡	夜
				[h]	[ɸ]				[x]	[ɸ]

b. Medials: reconstruction successful due to small inventory, but requires insight into

	開	齊	合	撮
reconstructed	[ɸ]	[i]	[w]	[y]
actual	[ɸ]	[i]	[w]	[y]

c. Rimes

	韻	RECONSTRUCTION				MODERN STANDARD CHINESE				
		開	齊	合	撮		開	齊	合	撮
1	啊	a	ja	wa		啊	a	ja	wa	
2	喔	o		wo		喔	o		wo	
3	婀	ə				婀	ɤ			
4	諛		jei			諛		je		
5	日	ɿ				日	ɿ			
6	衣		i			衣		i		
7	烏			u		烏			u	
8	迂				y	迂				y
9	凹	au	jau			凹	au	jau		
10	哀	ai		wai		哀	ai		wai	
11	歐	ou	jou			歐	ou	jou		
12	欸	ɛ		wɛ		欸	ei		wei	
13	安	ən		wən		安	an		wan	
14	煙		jən		ɥən	煙		jən		ɥən
15	恩	ən		wən		恩	ən		wən	
16	因		in			因		in		
17	暈				yn	暈				yn
18	骯	aŋ	jaŋ	waŋ		骯	aŋ	jaŋ	waŋ	
19	噙		joŋ	woŋ		噙		joŋ	oŋ	

20	鞞	ʌn				鞞	ʌŋ			
21	英		iŋ			英		iŋ		
22	兒	ɛr				兒	ɛɹ			

- 52.9% accurately reconstructed; 26.5% with crucial inaccuracies
- Rimes with ending [ŋ] reconstructed as rimes with ending [n], but vowel quality preserved.
 - a. Scarcity of [ŋ] ending plus back vowel combinations in English
 - b. Non-closure of Mandarin ending [ŋ] (Halliday 1992: 108; Wang 1993: 164)
- Rimes 諗 [ɛ] and 歛 [ei] flip-flopped
- Vowel quality differences
 - a. [a] reconstructed as [ɛ] in rimes 啊 and 安
 - b. [ɤ] reconstructed as [ɛ] in rime 婀
 - c. [i] reconstructed as [u] in rime 日

7. Methodological implications

- a. Phoneme to phoneme mappings -- difficult to reconstruct phonemes and distinction absent or rare in language of comparison
 - i. Alvepalatals [tɕ], [tɕʰ], [ɕʰ]
 - ii. Velar fricative [x]
 - iii. Rimes [aŋ], [oŋ] and [ʌŋ]
- b. Phonetic detail -- reconstruction of key distinctions require access to phonetic detail (redundant features):
 - i. Lip rounding in English [dʒ], [tʃ], [ʃ], [ʒ], [ʒ] → reconstruction of medial [y] and finals [y], [yn]
- c. Distributional symmetry leads to more accurate reconstruction
 - i. Initial 筌 reconstructed as retroflex [ʂ] due to consideration of within-category symmetry and syllable structure
- d. Imperfect learning (L2 transfer) on the part of the glossator may leads to inaccurate reconstructions (Lass 1997: 83)
 - i. English word-initial voicing contrast re-interpreted as Mandarin aspiration contrast → Mandarin aspiration contrast reconstructed as voicing contrast
 - ii. Inaccurate rendition of initial [l] because [l] used to transcribe English [ʃ]
 - iii. How much more perfect are the foreign language abilities of historical authors compared with present-day glossators (who have access to the foreign language on a daily basis thanks to globalization and mass media)?
- e. Rime as single unit (reference to vowel quality and endings scarce) -- cause of reconstruction of finals with [ŋ] as [n]

8. Application to Chinese historical phonology

- a. Proliferation of rhyme dictionaries
 - i. Yan Zhitui (531–590) on rhyme dictionaries of his day:
自茲厥後，音韻鋒出，各有土風，遞向非笑，“指馬”之喻，未知孰是。
(inconsistent descriptions attributed to regional variation)

- ii. Contemporary rhyme classifications: 13 rhymes (十三韻); 18 rhymes (中華新韻); 20 rhymes (中華韻典); 22 rhymes (張允和); 22 rhymes (張鼎盛)

		13	18	20	22	22			
1	a	1 發花	1 麻	1 佳	1 啊	1 啊			
2	o	2 梭坡	2 波	2 波	2 喔	2 喔			
3	ə		3 歌	3 歌	3 婀	3 婀			
4	ɛ	3 也斜	4 皆	4 皆	4 諛	4 諛			
5	z	4 一七	5 支	5 支	5 雌	5 日			
6	ɿ				6 日				
7	əɿ				6 兒		6 兒	7 而	6 兒
8	y				7 魚		7 魚	8 迂	7 迂
9	i				8 齊		8 齊	9 衣	8 衣
10	u				5 姑蘇		9 姑	9 無	10 烏
11	ai	6 懷來	10 開	10 開	11 哀	10 哀			
12	ei	7 灰堆	11 微	11 微	12 欸	11 欸			
13	au	8 遙條	12 豪	12 蕭	13 凹	12 凹			
14	ou	9 油求	13 侯	13 尤	14 歐	13 歐			
15	an	10 言前	14 寒	14 先	15 安	14 安			
16	ɛn					15 煙			
17	ən	11 人辰	15 痕	15 真	16 恩	16 恩			
18	in			16 侵	17 因	17 因			
19	yn			18 暈	18 暈				
20	aŋ	12 江陽	16 唐	17 江	19 骯	19 骯			
21	ʌŋ	13 中東	17 庚	18 庚	20 鞞	20 鞞			
22	iŋ			19 青	21 英	21 英			
23	oŋ			18 東	20 東	22 噲	22 噲		

Areas of contention (inclusion of lip-rounding; common historical source)

- Rimes 喔 [o] vs 婀 [ə] (inclusion of lip-rounding)
- Rimes 雌 [z] vs 日 [ɿ] (common historical source)
- Rimes 安 [an] vs 煙 [ɛn] (common historical source)
- Rimes 因 [in] vs 暈 [yn] (inclusion of lip-rounding)
- Rimes 鞞 [ʌŋ] vs 英 [iŋ] (common historical source)

b. Interpreting philological records (e.g., *Qieyun*, *Guangyun*)

i. Linguistic complexity:

- “the Middle Chinese sound system that Karlgren reconstructed is too complex to be true” (Ao 1991: 338)

ii. Language-external factors giving rise to complexity:

- Sources represent not a real, living homogeneous language, but “a maximally differentiated compromise between the reading traditions of [cultural centers of east central China], further complicated by the

inclusion of distinctions attested in various earlier rhyme dictionaries”.
(Norman & Coblin 1995: 578)

- Philological categories may not be phonetically unique
- iii. Complexity as byproduct of reconstruction method?
 - Variant rhyme classifications for MSC
 - Excessive number of [n]-ending rimes (8): [in], [yn], [ɤn], [ɛn], [ɛn], [an], [ʌn], [on]

9. Future research

- a. Reconstructions based on classificatory schemes in additional rhyme books
- b. Reconstructions based on English–Chinese correspondences in different tourist guides (look for regional variation)
- c. Reconstructions based on correspondences with languages other than English (e.g., Japanese, Korean, German, French)

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