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Reconstruction Methodologies for Old and Middle Chinese before Bernhard Karlgren (1889–1978)

ABSTRACT:
This article provides a short though comprehensive overview of the methodologies for reconstructing Old and Middle Chinese that existed before the pioneering works of Bernhard Karlgren (1889–1978), with an eye towards different approaches used for other language families. Special emphasis is also put on a series of pre-Karlgrenian Japanese treatises that have not received sufficient attention in the West.

KEYWORDS:
reconstruction methodologies; Old Chinese; Middle Chinese; Chinese historical phonology; language reconstruction

INTRODUCTION

Chinese historical phonology, known in Chinese as *shengyunxue* 聲韻學 or *yinyunxue* 音韻學 (literally, "the study of initials and rimes"), is the area of linguistics that deals with the phonological history of the Chinese language. Although the reconstruction of earlier forms of Sinitic, such as Old and Middle Chinese, is not what historical Chinese phonology is all about, it is beyond doubt that Old and Middle Chinese reconstructions are now enjoying a prominent role within the field of Chinese historical phonology. Old and Middle Chinese are known in Chinese, respectively, as *shanggu Hanyu* 上古漢語 ("the Han language of the upper antiquities," or "Archaic Chinese") and *zhonggu Hanyu* 中古漢語 ("the Han language of the middle antiquities," or "Ancient Chinese"). The great Swedish Sinologist Bernhard Karlgren (1889–1978) and his peers used to refer to these two languages as Archaic Chinese (*chinois archaïque*) and Ancient Chinese (*ancient chinois*, or *chinois médiéval*). Other authors prefer terms that do not carry scholarly freight, such as "early Chinese" and "medieval Chinese."[1] Thus, in the present article

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[1] David Prager Branner, *The Chinese Rime Tables: Linguistic Philosophy and Historical-Comparative Phonology* (Amsterdam: John Benjamins Publishing, 2006); Georg Orlandi, "Joseph Edkins and the 'Discovery' of Early Chinese: The Linguistic Ideas behind the First (Partial) Reconstruction of the Sound System of Early Chinese," *JRAS* (2019), pp. 519–20.

the in fact more popular forms "Old Chinese" and "Middle Chinese" are utilized. Nevertheless, the reader must be alerted to the possible historical discontinuity which occurs between Old and Middle Chinese, as these two terms do not represent real languages but are mostly intended as a *Spracheinheit*, and thus as an idealized abstraction of linguistic (in this case mainly phonemic) features that may have been common to a given group of speakers, at some time or other.

While linguistic reconstructions in Asia have generally followed the same patterns and lines of development as done in other parts of the world, including Indo-European and Semitic, *cum bona pace* towards a few conservative scholars who by principle claim otherwise,[2] linguistic reconstruction in China is somewhat different, as it is not based on the "comparative method," but on a *sui generis* native tradition of identification and assessment of certain phonological classes,[3] with the comparative method being mostly employed to "fill in" the abstract edifice of traditional rime tables or to find the phonetic value of a sound class, when it is not otherwise knowable. Of course, the present writer does not wish to neglect the long tradition of text-based reconstruction of the pronunciation of ancient languages, which has been applied to many languages with ancient written traditions. In fact, the reconstruction of Middle Chinese and earlier stages can be identified with these methods, seen for example in the reconstruction of Sumerian, Egyptian, Tangut, and so on. Yet one might rightly object to the comparison since Egyptian and Sumerian are extinct languages, while Sinitic is still spoken. In the end, we should not imply that the quality of Middle and Old Chinese reconstructions via their traditional method is necessarily inferior to that of languages reconstructed by means of the comparative method. That method is the technique that performs a feature-by-feature comparison between two or more related languages to explore their diachronic developments.

Before analyzing the various attempts at reconstructing earlier stages of Sinitic, it is extremely important to make another premise: in the following paragraphs the concept of "reconstruction" is intended

2 See for instance Nortbert Boretzky, "Das indogermanische Sprachwandelmodell und Wandel in exotischen Sprachen," *Zeitschrift für vergleichende Sprachforschung* (1982), pp. 49–80; and idem, "The Indo-Europeanist Model of Sound Change and Genetic Affinity and Its Application in Exotic Language," *Diachronica* (1984), pp. 1–51.

3 See also the recent debate in an issue of *Cahier de linguistique–Asie Orientale* 48.2 (2019), regarding the proposal by Hannes A. Fellner and Nathan W. Hill, "Word Families, Allofams, and the Comparative Method" (pp. 91–124, 159–72); critiqued by Zev Handel, pp. 125–41, and Axel Schuessler, pp. 142–153. For a comparison between the traditional *kaoju xilian* 考據系聯 and the comparative method, see Li Baojia 李保嘉 "Lun Qingdai shanggu shengniu yanjiu" 論清代上古聲紐研究," *Yuyan yanjiu* 語言研究 2 (1992), pp. 137–49.

in a quite broad way. Classical Chinese (and Japanese) scholars did not reconstruct sound classes, as Western scholars did, but they simply stipulated that some sound classes were derived from other older classes. While it seems to the present writer that some distinguished members of the traditions of classical Chinese and Japanese scholarships were apparently aware of the notion of "sound change,"[4] they certainly ignored the systematic aspects of it.

Furthermore, Middle Chinese "reconstructions," which some authors refer to as "transcriptions,"[5] should be distinguished from Old Chinese "reconstructions." For, although it is true that Middle Chinese reconstructions are still far more theoretical than many authors contend, and while it is certainly possible to criticize Karlgren for being overconfident in the accuracy of his reconstructing methods, it would also be useful to consider different kinds of reconstruction and the different notational conventions appropriate to them. Hence, though some authors use asterisks even for Middle Chinese reconstructions, and although their hypothetical nature is acknowledged, in the present article Middle Chinese forms are cited without preceding asterisks, in order to notationally distinguish them from Old Chinese forms. In this respect it would be useful to introduce the concept of *sonus grammae* (or, "sounds of writing") developed by Nishida Tatsuo 西田龍雄 (1928–2012),[6] and translated from *jionshitsu* 字音質 by Yabu Shirō 藪司郎. Nishida introduced *sonus grammae* in his 1955 treatise on Burmese, but it may apply to the writing system of several other East-Asian languages including Sinitic (for example, the *xiesheng* 諧聲 principle). By *sonus grammae* Nishida implied the sound as expressed by the orthographic prototypes, as well as by the current written forms of the same origin. In other words it might be interpreted as the "phonology" of a script implied by the structure of the graph/script itself. Yet, although *sonus grammae* may effectively be related to the sounds of a given language at some time, Nishida insisted that the two concepts should be separated from each other, as *sonus grammae* merely indicated the phonology that

[4] On this aspect, see Wolfgang Behr, "Language Change in Premodern China: Notes on Its Perception and Impact on the Idea of a 'Constant Way,'" in A. Mittag and H. Schmidt-Glintzer, eds., *Ideology and Historical Criticism*; *Special Issue of Historiography East and West* (Leiden: E.J. Brill, 2004), pp. 13–51.

[5] A representative example is William H. Baxter, *A Handbook of Old Chinese Phonology* (Berlin: Walter de Gruyter, 1992), p. 27.

[6] See Nishida Tatsuo, "Myazedi hibun ni okeru chūko Birumago no kenkyū" Myazedi 碑文における中古ビルマ語の研究, *Kodaigaku* 古代学 (1955) 4, pp. 17–32, 22–40; Nishida Tatsuo, *Seika moji: Sono kaidoku no purosesu* 西夏文字, その解読のプロセス (Tokyo: Kinokuniya shoten, 1967; rpt. Tokyo: Kinokuniya shoten, 1995).

is implied by a script system and not the phonology of a language that uses the particular script system at a certain time and place.

SOME JAPANESE WORKS ON HISTORICAL PHONOLOGY

It is rather surprising that several Japanese works have passed unobserved or have received only little attention in the West. As such, this section is an attempt to provide at least some basic and useful information on the results of Japanese scholarship, which the English-speaking reader would do well to acknowledge or to take note of. Of course, this is only a preliminary analysis, as a comprehensive review would rather deserve the writing of an independent piece of research or, perhaps, a different researcher.

It should be premised that, in spite of the fact that they were mostly working in isolation, Japanese scholars had independently arrived at reconstructions of OC (Old Chinese) finals that were fairly close to those of the Qing dynasty's (1644–1912) *xiaoxue* 小學 (philology) scholars. The most original scholar was probably Nakai Riken 中井履軒 (1732–1817). Nakai was a distinguished exponent of a neo-Confucian school called Kaitokudō 懐徳堂 (Hall of Deeply Held Virtues), an academy founded in 1726 by Nakai Shūan 中井甃庵 (1693–1758) and Miyake Sekian 三宅石庵 (1665–1730). Although the school began as a small meeting group of Ōsaka merchants promoting an *Ōsaka-ryū chōnin gakumon* (namely, Ōsaka-type merchant learning), it later affirmed itself as one of the most prestigious neo-Confucian school of the country. Nakai Riken wrote two works on Chinese historical phonology, *Kai'in Koren* 諧韻瑚璉 (1769) and *Riken Ko'in* 履軒古韻 (1770). In the latter, he reconstructed nine OC proto-rime categories.[7] Among Nakai's most remarkable achievements in the study of OC finals, we can list the following, where the word *bu* in the first four points means "a rime category"–the sort of category that began to be used in analyses in China as far back as in the third century AD:

1. Identification of the *zhibu* 質部 (*-it, *-it(s)). This rime category was independently discovered also by Wang Niansun 王念孫 (1744–1832), who originally called it *zhibu* 至部. Today, most scholars are accustomed to refer to this rime category with the name originally given by Nakai, though very few of them seem to be aware of this fact.
2. Treatment of the *wubu* 屋部 (*-ok) as an independent group. A near-identical conclusion was also reached by Dai Zhen 戴震 (1724–1777).

[7] Nakai Riken, *Riken ko'in* 履軒古韻 (1770; ms. kept at Kansai Daigaku).

3. Identification of the *jibu* 緝部 (*-ip, *-əp). This rime category was also independently discovered by Dai Zhen, who originally called it *yibu*. However, *yi* is not a rime entry (*yunmu* 韻目). Therefore, scholars call this rime category *jibu*, in Nakai's fashion.
4. Separation of *youbu* 幽部 (*-u). Gu Yanwu 顧炎武 (1613–1682) placed this rime category in his fifth class, together with other rimes. While Nakai's reconstruction of this *you* rime category is also problematic, he was at least able to identify it as an independent group (as seen in appendix 2). Another scholar who identified this rime category is Jiang Yong 江永 (1681–1762), who originally called it *youbu* 尤部. However, it is now accepted that *you* 尤 does not belong to the same rime group of *youbu* 幽 (at least in the time of MC), so most scholars now refer to this rime entry as *you* 幽, as Nakai did.
5. Identification, shared with Gu Yanwu, of the *yangbu* 陽部 (*-aŋ).

As we can see, three of the five contributions of Nakai's work are related to rime categories in the entering tone. Although Nakai's treatment of OC rimes is not perfect,[8] it nonetheless represents a fairly original endeavor.

Another early, Japanese treatise on Chinese historical phonology was written by Yamanashi Tōsen 山梨稲川 (1771–1826). However, this work constitutes more of a recapitulation of Gu Yanwu's work on historical phonology, than an independent analysis of historical phonology. For instance, a summary of Gu Yanwu's *Guyin biao* 古音表 is attached at the beginning of Yamanashi's work *Ko-onfu* 古聲譜.[9]

Although the above-mentioned Japanese scholars' reconstructions were not immune from difficulties, they were still quite accurate, so much so that modern scholarship has only improved them in a few ways, as we shall see later. Skeptics might point out that it is not really clear whether both Ming-Qing philologists and Japanese *kokugaku-sha* (literally, "national scholars) were really aware of sound change or were more concerned with proper orthography, and only dimly conscious of the relationship between "sound change" and "orthographic conservatism," as they rarely and only vaguely discussed how they reached their conclusions. However, in the works of *xiaoxue* scholars, as well as in those of Nakai Riken and Yamanashi Tōsen, there might be a hint of awareness about sound change, as they practically realized that certain sound classes were older than others, and that it was from those

[8] For instance, quite surprisingly, Nakai was not able to identify the *juebu* 覺部 (*-uk), but placed it under the *wubu* 屋部 (*-ok). The rime category in question was later recognized by the Chinese scholar Yao Wentian 姚文田 (1758–1827).

[9] Yamanashi Tōsen, "Ko koefu" 古声府, in idem, *Yamanashi Tōsen shū* 山梨稲川集 (Tokyo: Takita shiki kabushiki kaisha, 1929), pp. 9–30.

older proto-categories that the new sound classes of their times were derived.

Other results obtained in Qing and pre-Qing scholarship were equally impressive, and, up to a certain point, they parallel–if not predate–many aspects of European linguistics. In his *Zixue yuanyuan* 字學元元 (*Fundamentals of the Study of Characters*; 1603) Yuan Zirang 袁子讓 accurately described articulatory phonetics and tones, while also, scholars such as Pan Lei 潘耒 (1646–1708) and Liu Xianting 劉獻庭 (1649–1695) attempted to develop notation schemes for Sinitic dialects.[10] Moreover, according to W. S. Y. Wang (1989), the discovery of systematic sound change by Qing *kaozheng* 考證 scholars, such as "*zhuo shang gui qu* 濁上歸去" ("rising murky [tones] become departing [tones]"),[11] actually preceded the formulation of sound laws by the Neogrammarians in their *annus mirabilis* of 1878 in Europe, when the Neogrammarian Manifesto radically changed the history of linguistics. Yet it is not clear whether Chinese philologists shared the Neogrammarians' notion of *Ausnahmlosigkeit der Lautgesetze*, which meant that sound laws, as with certain scientific laws, brooked no exceptions, but were so-called exceptionless.

Furthermore, while traditional Chinese scholars were not part of that shared European-Near Eastern Babylonic myth, which inevitably gave rise to the notion of *Ursprache* in the first place,[12] some scholars like Dai Tong 戴侗 (fl. 1241–1275) and Ruan Yuan 阮元 (1764–1894) had a clear interest in language origins, and stressed the primacy of the spoken language over the written, whereas other scholars such as Chen Li 陳澧 (1810–1882) wrote on the gestural origins of language, and Huang Chengji 黃承吉 (1771–1842) on innateness.[13]

In Japan, a relatively "Westernized" approach appeared in the late-twenties, with the works of Ōya Tōru 大矢透 (1851–1928), Ōshima Masatake 大島正健 (1859–1938), Mitsuta Shinzō 滿田新造 (1875–1927), Iida Rigyō 飯田利行 (1911–2004), Tōdō Akiyasu 藤堂明保 (1915–1985), Tōru Mineya 三根谷徹 (1920–2000), Rai Tsutomu 賴惟勤 (1922–1999), and so on. A clear proof of this Westernization of

[10] I wish to thank an anonymous reviewer for having brought this whole body of knowledge to my attention.

[11] It indicates a well-known phenomenon of tone change in Middle Chinese according to which the rising tone (*shangsheng* 上聲) of a word with a "full murky initial" (*quan zhuoyin* 全濁音, voiced initials) changes into a departing tone (*qusheng* 去聲), which gives Mandarin fourth tone: e.g., *dao* 道 ("way," a full-murky initial) > tau (departing, fourth tone).

[12] See, for instance, Arno Borst, *Der Turmbau von Babel* (Stuttgart: Hiersemann, 1960).

[13] For more information, the reader is invited to consult Cecily Hurst, "The Origin of Language in Chinese Thought," *Anthropoetics* 6.2 (2000).

Chinese historical phonology is given in *Shina gengo-gaku gairon* 支那言語学概論 (1936), which is not just the result of the collaboration of the two early linguists Shinobu Iwamura 忍岩村 (1905–1988) and Yoshio Ogaeri 魚返善雄 (1910–1966), but mostly a translation of Karglren's 1915 work, with some addenda by the two translators. A worthy review of Karlgren was written by Mitsuta Shinzō in two volumes.[14] There, he offers a detailed presentation of Karlgren's work, to which he attaches some specific points where he openly disagrees. Some of these critical remarks are extremely enlightening, for he anticipates what both Western and Chinese scholars will say about the flaws of Karlgren's system a few years later, such as, the spurious *yod* system and his excessive reliance on second-hand sources.[15]

Another scholar worth mentioning is Takahata Hikojirō 高畑彦次郎, who between 1928 and 1930 published no less than twenty-three separate studies aimed at presenting the results of Karlgren's studies during that same time. However, the endeavor of Takahata did not stop there, as he also made several corrections of Karlgren's mistakes. In fact, Takahata's understanding of Chinese rime tables was far more refined than Karlgren's, in the following way. Instead of relying mostly on the dictionary *Guangyun* 廣韻, Takahata paid more attention to *fanqie* 反切 (a lexicographic technique had been used to indicate the pronunciation of a given sinogram by using two other sinograms, one containing an identical onset and one an identical final including the tone) spellings per se, and also incorporated the *kana* 仮名 phonetic interpretations of traditional Japanese philologists. He also relied on several traditional Japanese analyses of the Chinese work *Yunjing* 韻鏡 that made acute observations ignored by Karlgren, especially regarding the distinction of MC initials and finals.

A Japanese scholar who also predated Karlgren is Ōya Tōru 大矢透 (1851–1928). In his work *Shūdai ko'onkō* 周代古音考 he was able to make two great contributions to the study of both OC initials and finals.[16] Starting from the latter, he was the first to discover the distinction between the *zhi bu* 脂部 (*-i/*-əi) and the *weibu* 微部 (*-ui, *-wəi) rimes.[17] While his ancient rimes only contain 21 rime categories (much

[14] Mitsuta Shinzō, *Shina on'in dan* 支那音韻断 (Okayama: Mitsuta Shinzō Press, 1915); idem, *Chūgoku on'inshi ronkō* 中国音韻史論考 (Tokyo: Musashinoshoin, 1964).

[15] Karlgren originally proposed at least five forms of palatalization, which he referred to as yodization, or simply yod; this idea was later proved mistaken. He reconstructed many words in Grade III and IV rimes with palatal glides, such as, e.g., [-ij-] that don't make sense phonologically.

[16] See Ōya Tōru, *Shūdai ko'on kō* 周代古音考 (Tokyo: Monbushō 1914), pp. 211–12.

[17] He referred to these rime groups as *erbu* 爾部 and *leibu* 類部, respectively.

fewer than the 30 and more recognized by other scholars of his time), this distinction had never been acknowledged before him. He reached this conclusion by analyzing Sanskrit transcriptions, as well as Go-on and Kan-on readings, where the two words are read *rui* (>*ruwi* るゐ) and *ji*.

Table 1. Ōya's Reconstructed OC Finals
Redesigned from Ōya, Shū dai ko'on kō *(cited n. 16, above), pp. 211–12, 313–14.*

阿 a	區 u	固 uɔ	州 uu	少 aeu
台 oi	解 æi	大 ay	類 uy	爾 iy
相 ang	曾 ong	公 uông	官 ung	成 ing
山 an	雲 un	真 in	談 am	今 um
葉 ap				

Even more interesting, however, is Ōya's treatment of initials. Although some of them are probably mistaken, it should be observed that certain of his reconstructed initial phonemes were quite similar to those of Karlgren's system, or even anticipated some of Karlgren's intuitions. Like Edkins and Schaank (and Karlgren), Ōya independently treated the *zhi* 知 row of initials as palatalized consonants. He also reconstructed at least two uvular-like initials, namely *lai* 來母 and *xia* 匣母 initials, now commonly reconstructed as *l- and *ɦ-. Because in Sino-Japanese readings both *xia* 匣 and *ying* 影 initials are used to transcribe the *a-gyō* (ア行; the column giving syllables beginning with vowel *a*), he distinguished them by postulating that the former was more "guttural" than the other (see table 2, opposite).

Despite being not very popular in the West, Ōya's views on OC phonology remained quite influential within Japanese scholarship. Some years later, Ōshima Masatake 大島正健 (1859–1938) and Mineya Tōru 三根谷徹 (1929–2000) reproduced OC initials and finals that were fairly close to the ones outlined by Ōya.[18]

In addition, it is worth mentioning that Rai Tsutomu's treatment of OC vowels was fairly close to the four-vowel systems outlined by Li Fang-Kuei 李方桂 (1902–1987) and Paul Jen-kuei Li 李壬癸.[19] Even Li Fang-Kuei's interpretation of the rather obscure *nei/waizhuan* 內外轉

[18] See Ōshima Masatake 大島正健, "Shina koin shi" 支那古韻史, unpub. Ph.D. diss., Tōkyō Bunrika Daigaku 東京文理科大学 (Kumamoto: Fuzanbō, 1929); Tōru Mineya 三根谷徹, "An Attempt to Interpret the Ts'ie-Yün Finals," *Gengo kenkyū* 言語研究 31 (1957), pp. 8–21.

[19] It must be clarified, however, that both systems contain diphthongs, unlike the six-vowel systems of Starostin, Baxter, Baxter and Sagart, Pan 潘, Zhengzhang 整張, and unlike the

Table 2. Ōya's Reconstructed OC finals
Redesigned from Ōya, Shū dai ko'on kō*, pp. 251–62, 321.*

精 ts	清 ts'	從 dz	心 s	邪 z
照 ch	穿 ch'	狀 j	審 sh	禪 dj
幫 p	滂 p'	並 b	明 m	
端 t	透 t'	定 d	泥 n	
知 ti	徹 ti'	澄 di	孃 ni	
見 k	溪 k'	群 g	疑 ng	
影 a	曉 h	匣 G	喻 y	于 w
來 L	日 djɦ			

(inner/outer turn) dichotomy was quite close to the one given by Rai.[20] According to Rai,[21] the 14 terminations of Middle Chinese could have been divided into two classes, those whose main vowel was -a-, and those with other vowels:

Table 3. Rai's Division of MC Terminations

CODA	zero	i	u	m	n	iŋ	ŋ
OTHER VOWELS	遇	止	流	深	臻	曾	通
A-VOWEL	果	蟹	咸	咸	山	梗	宕

As can be seen from the above table, the distinction primarily involved vowel quality. As Rai himself explained:[22]

> This is consistent with the division between inner and outer turns which was favored by later compilers. In other words, the inner and outer terminations were divided according to whether or not the main vowel is "wide, low, and within the *a*-system." Which is to imply that, if the vowel was "wide, low and -a-" it was marked

two-vowel system of Edwin Pulleyblank, which shifts all the distinction to the surrounding consonants.

[20] See Rai Tsutomu 賴惟勤, *Chūgokugo on'in ronshū* 中国語音韻論集 (Tokyo: Kyūkoshoin, 1957); idem, "Chūko no naigai" 中古の内外, *Chūgokugo gaku* 中国語学 30 (1958), pp. 72–111; and idem, "'Setsuin' ni tsuite" 切韻について, in his *Rai Tsutomu chosaku shū* 賴惟勤集 (Tokyo: Kyūkoshoin, 1974), pp. 207–21. For a more recent interpretation that mentions Rai Tsutomu's view, see also Endo Mitsuaki, "Three Interpretations of the Term nei-wai-zhuan," *Bulletin of the Sinological Society of Japan* 40 (1988), pp. 247–61.

[21] Rai, *Chūgokugo on'in ronshū*, p. 12ff.

[22] Ibid., p. 12.

> as “outer,” if it was “strict, high and not -a-” it was marked as “inner.” これが後世、内外転校訂家によって好んで取られる内、外の別と一致する.つまり内、外は、主母音の「大、低、a系」であるか否かによってわけられる. つまり「大、低、a系」外であり,「小、高、非a系」が内であり.

He also agreed on the fact that the distinction between inner and outer terminations pertained to vowel gemination as well as to the features of “tenseness 強” and “laxness 弱.” More precisely, he said that the inner versus outer distinction was reflected in the long versus short distinction of certain Chinese dialects, such as Yue. When there was no such long–short distinction, he believed that traces of the older inner–outer dichotomy was reflected by the tense–lax distinction of the main vowel.

Moreover, uvular consonants in final position (*-qw, *-gw, *-nw) were proposed long ago by Rai,[23] who adduced the following pieces of evidence: first, he believed that the so-called “mouth-gathered guttural codas 合口喉音韻尾” (final consonants or even vocoid approximants) of OC were referred to as uvulars; second, he mentioned that uvular consonants contrasting with velars exist in Kam-Sui languages, and that this type of opposition resembled the MC velar versus palatal distinction (Rai did not reconstruct retroflexes). He also assumed that *-gw > *-u, and *-g > *-i *-u *-o, during the transition between Old and Middle Chinese (Rai’s Law).

Furthermore, Japanese scholars have been quite active in surveying and studying Sino-Japanese readings, such as *go’on* 吳音, *kan’on* 漢音 and *tō/sō’on* 唐宋音 readings. Painstaking studies on Sino-Japanese readings include those of Tōdō Akiyasu 藤堂明保 (1915–1985), Numoto Katsuaki 沼本克明 (1943–2014), and especially Ogura Hajime 小倉肇 (b. 1947),[24] whose monumental work, in six volumes, is regretfully largely unknown to Western scholarship.

23 See Rai Tsutomu, “Jōko Chūgokugo no kō’on inbi” 上古中国语的喉音韻尾, *Ocha no mizu joshi daigaku jinbun gakka kiyō* 御茶之水女子大学人文学科紀要 (1953); idem, “Chūko Chūgokugo no nodo on’in” 中古中國語の喉音韻尾, *Tōdai chū bungaku kaihō* 東大中文學會報 32 (1956), pp. 146–66.

24 Tōdō Akiyasu 藤堂明保, “Kan’on to Go’on” 漢音と呉音, *Nihon Chūgokugo gaku kaihō* 日本中国語学会報 16 (1959), pp. 113–29; Numoto Katsuaki 沼本克明, *Nihon kanji’on no rekishi* 日本漢字音の歴史 (Tokyo: Tōkyō-do shuppan, 1986); Ogura Hajime 小倉肇, *Nihon go’on no kenkyū: kenkyū hen, shiryō-hen, sakuinhen, gaihen* 日本呉音の研究-研究篇、資料篇、索引篇、外編 (Tokyo: Izumi Shoin-kan, 2014).

WESTERN APPROACHES BEFORE KARLGREN

Although some early workers, for example, Abel-Rémusat (1788–1832) and Julius Klaproth (1783–1835), had touched upon aspects of Chinese historical phonology, the first Western to pioneer this field of study per se was the British missionary Joshua Marshman (1768–1837). Marshman wrote two studies on Chinese that touched upon aspects of Chinese historical phonology.[25] As it has been pointed out elsewhere,[26] Marshman must be credited with being the first scholar to identify that both Mandarin and Cantonese belonged to a common metasystem, which he identified as the second set of rime tables given in the *Imperial Dictionary* (or *Kangxi zidian* 康熙字典). Marshman did not compare Sanskrit, Siamese and other "Indo-Chinese" languages with the variety of Cantonese that he knew and spoke, as others before him did,[27] but with the initials found in the rime tables attached to the *Imperial Dictionary* that he had transcribed in a phonographic notation (that is, a system of shorthand writing based on sound). In particular, Marshman's treatment of MC initials is worth mentioning.

In the traditional terminology, "initials" were called *shengmu* 聲母, or *zimu* 字母, or *shengniu* 聲紐. *Zimu* 字母 (literally, "graph-mother") is the most archaic of them, and it is probably derived from Sanskrit *mātṛkā* (mother). This term was probably coined by a Buddhist monk named Shouwen 守溫 (fl. 9th c.), although a set of thirty initials had been arranged before him by an anonymous Tang (618–907) scholar. The number of initials was later corrected to thirty-six. However, in 1842 the Cantonese scholar Chen Li (1810–1882) who used the quite popular evidential research method, developed a study of initials that, by correcting the mistakes made by Shouwen and other philologists, stretched the number of initials even further. This method is known as *xilian fa* 系聯法 (or, the rime "linking-method"), and it is an extension of the well-known *fanqie* method, mentioned earlier. Chen carefully compared all the upper characters (or *shang zi* 上字) of the *fanqie* spellings

[25] See Joshua Marshman, *Dissertation on the Characters and Sounds of the Chinese Language: Including Tables of the Elementary Characters, and of the Chinese Monosyllables* (Serampore: Missionary Press, 1809); idem, *Clavis Sinica, or Elements of Chinese Grammar, with an Appendix Containing the Ta-Hyoh of Confucius, with a Translation* (Serampore: Missionary Press, 1814).

[26] Branner, *Chinese Rime Tables*; Orlandi, "Joseph Edkins and the Discovery of Early Chinese."

[27] See, e.g,, John Barrow, *A Voyage to Cochinchina, in the Years 1792 and 1793: To Which is Annexed an Account of a Journey Made in the Years 1801 and 1802, to the Residence of the Chief of the Booshuana Nation* (London: T. Cadell and W. Davies, 1806); John Leyden, *On the Languages and Literature of the Indo-Chinese Nations* (London: T. Hubbard at the Hindoostanee Press, 1808).

(namely, those dealing with the initials) and grouped them into different groups or *ruogan lei* 若干類 (but here called *shenglei* 聲類, "[initial]-sound types"). In this way he observed that the widely accepted thirty-six initials did not match the system of initials that emerged from the study of the upper sinograms of the *fanqie* spellings contained in early dictionary *Guangyun*, which exhibited, instead, a three-way distinction of coronal obstruents (*chiyin* 齒音, in traditional terminology) between denti-alveolar (the so-called *jing zu* 精組), retroflex (*zhuang zu* 莊組), and palatal (*zhang zu* 章組) among fricatives and affricates, as well as a two-way distinction between dental and retroflex among consonantal plosives. This all was discovered several years after Marshman's works, which, as such, do not show these distinctions (see appendix 1).

Although at first glance one might think that Marshman overlooked many MC initials, upon a more attentive scrutiny it is easy to recognize that he was aware of many of the phonetic distinctions among MC initials not fully portrayed in his notational system. For instance, in spite of the fact that Marshman transcribed initial *ni* 泥 (/n/), traditionally assigned to "lingual sounds" (*sheyin* 舌音),[28] as *ng*, he did not consider this latter sound as a velar-nasal [ŋ], but remarked that it was pronounced "with the tip of the tongue placed between the teeth."[29] It is self-evident that Marshman could rightly identify this consonant for what it is, a laminal sound, namely consonants produced by obstructing the air passage with the blade of the tongue.

Nevertheless, although he also transcribed *niang* 娘 initials as *n*, Marshman clarified that the latter should be pronounced with "the tongue raised," which clearly proves that he correctly recognized the retroflexion. As such, the sound law *ɳ- > *n*- could be implicitly ascribed to Marshman (yielding Marshman's Law). This is extremely important, because even Karlgren, together with many others, put this sound within the class of "palatals." Furthermore, Marshman transcribed *xia* 匣 initials (/x/) as *hh*, but he also remarked that this sound was pronounced with the "back part of the mouth," which probably indicates that its place of articulation was in the velum, where it correctly belongs. Moreover, by comparing MC initials with Sanskrit, Marshman suspected that some initials, in particular stops, might once have been pronounced as voiced consonants:

[28] In traditional Chinese phonology, the class of "lingual sounds" is further divided into *shetouyin* 舌頭音 (described as *shejianyin* 舌尖音, "laminal sounds"); and *sheshangyin* 舌上音 (described as *shemian qianyin* 舌面前音, or *sheguanyin* 舌冠音, "coronal sounds").

[29] Marshman, *Dissertation on the Characters and Sounds*, p. xxxv.

> Any one acquainted with the Sungskrit [Sanskrit] and the other Indian alphabets, will, however, by comparing the former with the Chinese system, feel pretty strongly convinced that the third sound of the first series would have been g-u (g hard;) the third sound of the second series, d-u; that of the third, j-u, and that of the fourth, b-u, had the Chinese thus far improved their powers pronunciation... I suspect, therefore, that... something of the sound of g, and j, and d, and b, was once actually attached to the third characters in these four respective series; and that a further investigation of the Chinese pronunciation will discover some vestige of this existing at the present time.[30]

Three further aspects of Marshman's work must be highlighted. First, Marshman showed familiarity with the concept of "cognatehood," as it clearly emerges in his comparison of basic numerals between Sinitic, Tibetan, and Siamese.[31] Second, Marshman was the first scholar to point out in phonetic terms a sound law in Sinitic, viz. *p* < *b, *t* < *d, *k* < *g, *ts* < *j (dz).[32] For although he transcribed both *jian* 見 and *qun* 羣 initials as *k*; *duan* 端 and *ding* 定 initials as *t*, *zhi* 知; *deng* 登 initials as *ch*; and *bang* 幫 and *bing* 並 initials as *p*, he indicated that only *qun* 羣, *ding* 定, *deng* 登, and *bing* 並 initials could have been voiced at some earlier time. Marshman knew that only certain precise sound classes were pronounced in a way which resembled the voiced initials of English. The only reason why he could not formulate this sound change in a more rigorous way is because, working in his mission in Serampore, Marshman had access only to Mandarin and Cantonese, where these originally voiced initials had already lost sonority. Third, Marshman was the first to foreshadow the later scholarly conclusion that the *zhi*-row set of initials was not palatals. Although his proposal was later obscured by Edkins's reconstruction of palatal initials, post-Karlgrenian scholars such as Pulleyblank have reconstructed retroflexes in Marshman fashion.

Another pioneer was Rev. Joseph Edkins (1823–1905). It seems that few scholars are aware of the breadth and depth of Edkins's mastery of both the traditional sources and of the varieties of Sinitic spoken dur-

[30] Ibid, p. xxxvi.

[31] Ibid., pp. xlii, xlv.

[32] As noted above, some Chinese scholars had already individuated similar laws. For instance, if we consider a rule such as the already mentioned *zhuo shang gui qu* 濁上歸去 to be a sound law, then a sound law in Sinitic had been formulated at least in 1324, with the publication of *Zhongyuan yinyun* 中原音韻. On this, see William S.Y. Wang, "Language in China: A Chapter in the History of Linguistics / 漢語語言學發展的歷史回顧," *Journal of Chinese*

ing his times. Edkins was not merely interested in the correspondences between Mandarin and other varieties of Chinese, but also between two or more dialects besides Mandarin,[33] and in so doing he became the first scholar to systematically demonstrate the independent existence of Sinitic as a linguistically definable group.[34] For instance, he proved that someone working on a problem about, say, final consonants in the Shanghai dialect might find the solution to it by looking at the finals of Xiamen dialect, as both Shanghaiese (Wu) and the dialect of Xiamen (Southern Min) are branches of the same linguistic family (Sinitic). The second lesson is that the various correspondences among Chinese dialects must be regarded as a proof of the existence of an early language (namely, OC and MC) which might explain the sound systems of the various Sinitic languages.

Like many other Westerners, Edkins was also interested in the way sinograms were read. This plainly explains why so-called Sino-Xenic materials played a primary role in his dissertations on Chinese historical phonology: after all, they represented the clearest example of a system of readings which was mostly unmatched by any vernacular language of his time. However, Edkins also recognized the importance of Chinese dialects, and by studying attentively Shanghaiese, he was even able to recognize a relationship between voiced initials and low register:

> From the table it will be seen, that the division into an upper and lower series of initial consonants, the one embracing thin and clear sounds, with strong aspirates, the other including the broader consonants with the liquids and nasals, meets us not only in the study of the tones of a dialect as shewn in the former section, but in the accredited Dictionaries of the general language.[35]

For what concerns Edkins's reconstructive methodology, he made use of a wide-range of evidence to reconstruct OC:

Linguistics (1989), pp. 183–222. However, Chinese scholars generally reasoned in terms of "sound categories" rather than single phonemes. Although it should be premised that it is not clear whether Marshman could distinguish between "letters" and "phonemes," it takes nothing away from Chinese scholars to claim that Marshman was the first to point out a Sinitic sound law in in *phonetic* terms.

33 Joseph Edkins, *A Grammar of Colloquial Chinese: As Exhibited in the Shanghai Dialect* (Shanghai: Presbyterian Mission Press, 1853), p. 56; idem, "Early Form of Chinese," *The Chinese Recorder* 16 (1885), p. 251.

34 A reviewer has pointed out to me that he may have been preceded in this by Heyman Steinthal, whose second *Prix Volney* essay of 1854, "On the Comparative Study of the Chinese Language," already used sound laws between the dialects and their origins in medieval Chinese rime books to demonstrate the unity of the family.

35 Joseph Edkins, *Colloquial Chinese as Exhibited in the Shanghai Dialect* (Shanghai: Presbyterian Mission Press, 1853), p. 47.

> My sources of proof are ten. (1) The dialects ... (2) The Japanese, Annamese and Corean transcriptions. (3) Kanghi's tables, and the syllabic spelling. (4) Discoveries of native authors, who have studied the classics in order to find out the ancient sounds. (5) The dictionaries mentioned by Kanghi, as also the mandarin and dialect dictionaries. (6) The characters bear their own witness to the old sounds. (7) The Buddhist Classics and Sanscrit alphabet. (8) The surrounding languages, Tibetan, Mongol, Japanese, Corean, and Manchu. (9) The Semitic languages. (10) The Aryan languages.[36]

Some of these sources of information are still used today by specialists to reconstruct the phonological system of OC, especially rime tables, Sino-Xenic materials and palaeographic evidence.[37]

Edkins's reconstructive technique suffered, however, from a shortcoming, which may still impede our placing him on the same level as August Schleicher (1821–1868), who first reconstructed proto-Indo-European. Edkins was strongly influenced by the Biblical account of the differentiation of languages, and in many cases he tried to force all the data to fit within this account of language dispersal.[38] Moreover, Edkins's reconstructive technique was heavily grounded on his own theory of "language evolution," which regarded sound change as an inevitable ascent through a preordained hierarchy of developmental stages: nasals > labials > dentals > gutturals, and so on.

[36] Joseph Edkins, "Recent Researches upon the Ancient Chinese Sounds," *China Review* 22 (1896), p. 568.

[37] For instance, Baxter and Sagart base their reconstruction of OC on the following sources of information: 1. rime tables and the general phonological structure of MC; 2. palaeographic evidence and phonetic loanwords; 3. rimes in ancient poetry, especially *Shijing* 詩經; 4. comparisons with related languages; 5. Sino-Xenic materials; 6. transcriptions of foreign words; 7. loanwords from unrelated languages; and 8. analysis of modern Sinitic languages. See William H. Baxter and Laurent Sagart, *Old Chinese: A New Reconstruction* (Oxford: Oxford U.P., 2014), pp. 9–40. With the exception of transcriptions of foreign words, all the other sources of information were also used by Edkins (who, nonetheless, occasionally used Buddhist transcriptions or the Sanskrit alphabet–but only superficially). Of course, Edkins's use of these materials can no longer satisfy the scientific requirements of our times. For more detail on Edkins's reconstructions, see Orlandi, "Joseph Edkins and the Discovery of Early Chinese."

[38] For more information, see Chen Zhe 陳喆, "Cong dongfangxue dao Hanxue: Ai Yuese de bijiao yuyanxue yu Hanyu yanjiu" 從東方學到漢學, 艾約瑟的比較語言學與漢語研究, *Guangdong shehui kexue* 廣東社會科學 5 (2011), pp. 148–60; Norman Girardot, *The Victorian Translation of China: James Legge's Oriental Pilgrimage* (Berkeley, Los Angeles, London: U. California P., 2002); Benjamin Penny, "More than one Adam? Revelation and Philology in Nineteenth-Century China," in *Humanities Research* 14.1 (2007), pp. 31–50; Zhang Haiying 張海英, "Yingguo lai Hua chuanjiaoshi Ai Yuese de Hanyu Yanjiu" 英國來華傳教士艾約瑟的漢語研究, unpub. Ph.diss. (Beijing Waiguoyu Daxue 北京外國語大學, 2015); Orlandi, "Joseph Edkins and the Discovery of Early Chinese"; Orlandi, "The Linguistic Ideas of Joseph Edkins (1823–1905)," *JAOS* 140.1 (2020), pp. 95–113.

Another scholar worth mentioning was a rather original one whose ideas went mostly unnoticed–Zenone Volpicelli (1856–1932). Volpicelli was an Italian consul at Hong Kong and Macao who also worked as accountant and translator. He wrote a long monograph on Chinese historical phonology in 1896, and a conference paper (that remained barely noticed) in 1898.[39] Volpicelli is of particular interest because he was the first to break with the rime-table emphasis started by the Scottish missionary John Chalmers (1825–1899). The latter mostly regarded rime tables as a mere starting point to investigate the varieties of Chinese spoken in his time. He did not completely abolish philology in favor of "dialect comparison," because he was also strongly influenced by the work of Stanislas Julien (1797–1873), who had investigated several Indic materials to proffer a tentative reconstruction of MC initials.[40] For instance, Volpicelli rejected the palatalization, postulated by Edkins, for the *zhi*-row of initials in favor of retroflexes, as Julien's Sanskrit transcriptions seemed to prove. (Curiously, Karlgren reversed this position and reconstructed palatal consonants as per the fashion of Edkins.) While it is true that this was foreshadowed by Julien, Julien mostly worked within the framework of Mandarin, whereas Volpicelli was conscious of the fact that both Sanskrit transcriptions and rime books reflected the phonological system of MC, and not of Mandarin. As such, we might refer to this sound law (*tr > t͡ʂ) –though somewhat anachronistically–as Volpicelli's Law and Julien's Rule, respectively.

Volpicelli focused mostly on MC rimes and openly rejected the palatal *Leitmotiv* of Chalmers and Franz Kühnert (1852–1918) who interpreted the four grades of rime tables as indicators of the quality of the vowel and of the presence of a palatal glide /-j-/.[41] Yet, finding abstractions based on rime tables unpersuasive, Volpicelli collected and investigated an impressive number of dialectal forms, and proposed a reconstruction based on the comparative method, which at that point was still in an embryonic form. He interpreted the phonetic value of the four grades in terms of vowel height alone, suggesting that each

[39] Zenone Volpicelli [Eugenio Zanoni Volpicelli], *Chinese Phonology: An Attempt to Discover the Sounds of the Ancient Language and to Recover the Lost Rhymes of China* (Shanghai: Printed at the China Gazette Office, 1896); idem, "Prononciation ancienne du chinois," *Acte du onzième Congres international des Orientalistes, 2 Sections, Langue et archeologie de l'extrême Orient* (Paris: E. Leroux, 1898), pp. 115–190.

[40] See Stanislas Julien, *Méthode pour déchiffrer et transcrire les noms sanscrits qui se rencontrent dans les livres chinois: à l'aide de règles, d'exercices et d'un répertoire de onze cents caractères chinois idéographiques, employés alphabétiquement* (Paris: Imprimerie impériale, 1860).

[41] See John Chalmers, "Kanghi's Dictionaries," *China Review* 2 (1873), p. 338. See also Franz Kühnert, "Zur Kenntniss der alteren Lautwerthe des Chinesischen," *Stzungsberichte der Kaiserl. Ak. d. Wissenschaften* (Wien: Verlag der Kaiserlichen Akademie der Wissenschaften, 1880).

grade corresponded to a different vowel, with the result that his reconstruction was very similar to Cantonese, except for the fact that in Cantonese /i/ and /e/ (Volpicelli's Grades III and IV) have merged. Of course this theory was quite speculative, but he also tried to offer a plausible explanation for its anomalies. In fact, he used a simplified version of the Bernoullian *lois des grands nombres* to explain all oddities and irregularities which emerged in his reconstructive attempt: when in a given grade the primary vowel was not the expected one, Volpicelli observed that the second most frequent vowel was exactly the one he had hypothesized. For instance, according to his theory, the dominant vowel of Grade IV rimes in the first *she* 攝 (rime group) should have been *e*, but he realized that *i* was found in the majority of cases. Volpicelli explained that *-ia*, *-iau* and *-ie* were derived respectively from *-a, *-au and *-e, with *e being the vowel represented in the majority of cases, as he had suspected.[42]

Of course, Volpicelli's reconstruction of MC was certainly imperfect, due to the fact that it was based mostly on secondary material, especially on the dialectal forms gathered by Edkins in Giles' dictionary. Yet he was the first to challenge the rime-table approach, and to use a sort of comparative method to reconstruct MC finals.[43] Unfortunately, Volpicelli's ideas remained quite unpopular and were soon obscured by the works of Simon H. Schaank (1861–1935) and especially Bernhard Karlgren (albeit Karlgren praised certain ideas of Volpicelli). Later, Luo Changpei 羅常培 further demolished what was left of Volpicelli's–already weak–legacy,[44] and several Japanese scholars also expressed negative criticism regarding his methods. For instance, Mitsuta wrote:

> According to Volpicelli's study of ancient Chinese sounds, Grade I [rimes] are defined as o, Grade II as a, Grade III as e, Grade IV as i. The way according to which the value of e for Grade III rimes is assigned a priori, like the sounds of each rime are, is extremely jumbled.[45] ウォルピセリ氏支那古音考では一等はo、二等はa、三等

[42] Volpicelli, *Chinese Phonology*, p. 24.

[43] For a more comprehensive understanding of the comparative method, see Henry M. Hoenigswald, "The Comparative Method," in idem, ed., *Diachronic, Areal, and Typological Linguistics* (Berlin, Boston: De Gruyter Mouton, 2019), pp. 51–62; Mark Durie and Malcolm Ross, eds., *The Comparative Method Reviewed: Regularity and Irregularity in Language Change* (Oxford U.P., 1996); Robert L. Rankin, "The Comparative Method," in Brian Joseph and Richard Janda, eds., *The Handbook of Historical Linguistics* (Amsterdam: John Benjamins, 2017), pp. 181–212.

[44] See Luo Changpei 羅常培, *Luo Changpei wenji* 羅常培文集 (Jinan: Shandong Educational Publishing House, 2001), pp. 451–64.

[45] Mitsuta, *Shina on'in dan*, p. 115.

> はe、四等はiと定めて居る、此說は三等のe外餘り間違つては居らく氏は四等の發音を先に定めな各韻の發音が極めて杜撰であり.
>
> …
>
> Volpicelli's achievements are to be acknowledged. He has investigated 12 dialects for the study of ancient sounds without hesitation, and the use of *les dialectes en masse* is certainly correct. Only the reliance on mathematical methods is incorrect, and [as such] the results are also wrong.[46] ウォルピセリの功績は特に認めらるべきものである、彼は古音研究に際し輕率に十二の方音を選ぶてとなく、全方音(*les dialectes en masse*)を利用した、言ふ迄もなく是は絕對に正しい、唯算數的方法に據つた點が正しくない、隨て其結果は誤つて居る.

Frank Hsüeh tried to accommodate some of Volpicelli's ideas within the framework of palatalization in Grade III rimes (which Volpicelli had rejected),[47] and more recently Ang Ui-jin in Taiwan and China, and Orlandi in the West have tried to rescue Volpicelli's ideas from historical misfortune by pointing out also some of his merits.[48] Of course, Volpicelli's comparativist approach was also seriously plagued by the absence of a model for handling (and explaining) sound change, whereas he simply relied on a "majority principle," that is, the most diffused form should have been regarded as the oldest. However, he was the first to analyze and discuss many aspects of Chinese historical phonology from a fresh and novel perspective.

Simon Hartwich Schaank worked more than thirty years in the Dutch East Indies but never reached China. Rather, he came into contact with an oversea Lufeng Hakka-speaking community in West Borneo. As rightly pointed out by Davud Branner,[49] a major improvement brought by Schaank (1897) is that, in analyzing rime tables, he did not begin with sinogram readings but with a rigorous observation of the rime tables per se. Up to a certain degree, Schaank revitalized some features originally proposed by Franz Kühnert, who introduced a

46 Ibid., p. 545.

47 See [Frank Hsüeh] Xue Fengsheng 薛鳳生, "Shilun dengyunxue zhi yuanli neiwai zhuan zhi hanyi" 試論等韻學之原理內外轉之含義, *Yuyan yanjiu* 語言研究 1 (1985), p. 42; idem, "Cong dengyun dao *Zhongyuan yinyun*" 從等韻學到中原音韻 *Yuyanxue luncong* 語言學論叢 5 (1990), p. 20.

48 See Uijin Ang [Hong Weiren] 洪惟仁, "Xiaochuan shangyi yu Gao Benhan Hanyu yuyin yanjiu zhi bijiao" 小川尙義與高本漢漢語語音研究之比較, *Taiwan Historical Research* 1.2 (1994), pp. 25–84; Georg Orlandi, "Zenone Volpicelli, an Unsung Scholar of Chinese Phonology: An Evaluation of Volpicelli's Ideas and Contributions to Chinese Phonology," *Hanxue yanjiu* (2018), pp. 285–306.

49 Branner, *Chinese Rime Tables*, p. 153.

distinction between "*mouilliren*" ("to soften") and "*jotieren*" ("to palatalize") to characterize certain classes of MC initials. Schaank also used the term "*moullieren*," albeit to refer to palatals, and in doing so he posited that the *zhi*-row initials were palatalized, as Kühnert and Edkins believed.[50] Schaank envisioned two forms of palatalization, mostly as they were found in the Lufeng dialect known to him, one in the initial and one in the final (for Grades III and IV). He also rejected Volpicelli's theory that the four grades corresponded to four different vowels, and argued that they indicated, instead, different forms of medial glides before the same vowel.

Later, Karlgren, during the years ranging from 1915 to 1926, favored a theory that lay between Volpicelli's and Schaank's proposals, namely that the four grades represented both a quality in the front-back dimension of different vowels and the presence of at least two (but originally no less than five) different forms of palatalization. Karlgren's theory was of course revised and corrected, especially by structuralists such as Chao Yuen Ren 趙元任 (1892–1982) and Arisaka Hideyo 有坂秀世 (1908–1952),[51] but it still continues to enjoy a widespread acceptance among specialists, albeit in modified and altered forms. Henri Maspéro (1883–1945) believed that Karlgren's *yod* in Grade III syllables was a later development, as comparisons with Tai somehow convinced him that the prevocalic element was not properly a glide, and that the sequence of medial + vowel reflected in fact an early vocalic nucleus that had diphthongized: e.g., 天 *th n > *thien > thien "sky."[52]

Another early European current within the field of Western sinological linguistics that, up to a certain degree, also exerted a significant influence on Karlgren's work is represented by the German school. Among its most notable exponents we may cite Hans Georg Conon von der Gabelentz (1840–1893), August Conrady (1864–1925) and later Walter Simon (1893–1981), who were building on the insights of *Indochinesisch* linguistics along the lines of Indo-Germanic studies. Partly in continuation of a philological tradition which had started at least since the times of Theophilus Siegfried Bayer (1694–1738), who incidentally was one of the first to reject the monosyllabic dogma later championed

[50] Kühnert, "Zur Kenntniss der alteren Lautwerthe des Chinesischen," p. 6; Joseph Edkins, *China's Place in Philology: An Attempt to Show That the Languages of Europe and Asia Have a Common Origin* (London: Luzac, 1871), pp. 196–98.

[51] See Chao Yuen Ren [Zhao Yuanren] 趙元任, "Distinctions within Ancient Chinese," *HJAS* 5.3-4 (1941), pp. 203–33; Arisaka Hideyo 有坂秀世, *Kokugo on'inshi no kenkyū* 国語音韻史の研究 (Tokyo: Akiyo-do Shoten, 1994).

[52] See Henri Maspéro, "Le dialecte de Tch'ang-ngan sous les T'ang," *BEFEO* 20.2 (1920), pp. 1–124.

by the likes of Ernest Renan (1823–1892), Arthur de Gobineau (1816–1882),[53] John Beames (1837–1902), and James Byrne (1822–1872),[54] and that had flourished with the works of Karl Richard Lepsius (1810–1884), Wilhelm Grube (1855–1908) and perhaps even with those of the Austrian numismatist Stephan Ladislaus Endlicher (1804–1849),[55] the German school of Gabelentz and Conrady made several significant contributions to the study of Trans-Himalayan linguistics, as well as to that of syntax, typology and historical phonology.

First of all, these German scholars since Grube had reconstructed consonant clusters for OC, which had been foreshadowed for the first time by Lepsius.[56] In a relatively recent article, Gong Xun and Yunfan Lai state that "[c]onsonant stacking" (i.e., reconstruction of clusters using *xiesheng* connections) was the first "systematic method in the reconstruction of OC initial clusters."[57] This does not seem to be histori-

[53] See, e.d., Ernest Renan, *De l'origine du langage* (Paris: Michel Lévy, Frères, 1858); Joseph Arthur de Gobineau, *Essai sur l'inégalité des races humaines* (Paris: Firmin-Didiot et Compagnie, 1854).

[54] This dogma contends that every variety of Sinitic spoken from the times of the first written documents until now has always been monosyllabic, with some scholars going as far as to believe that monosyllabism reflected an imperfect stage of language evolution or civilization (or both). Bayer dismissed this argument in his *Museum Sinicum* (St. Petersburg, 1730), p. 106. Regarding the history of monosyllabism and its role in shaping the near all-encompassing Indo-Chinese language, Emanuel Forchhammer wrote: "Monosyllabism has hitherto been almost the sole ground upon which Burmese, Tai, Talaing, Tibetan, and Chinese languages have been pronounced consanguineous. The linguistic history of these numerous tongues is still unwritten, and the records of the Western Indo-Chinese nations begins with preserving the memory of the advance, upon their borders, of foreign civilization and culture, of rulers and events inextricably interwoven with the dateless monarchs and episodes of Hindu legendary lore. We cannot, therefore, begin our inquiry by settling upon a primeval language – upon a parent from which the innumerable languages and dialects, comprised within the term Indo-Chinese, have sprung and entered upon an individual career of linguistic growth and decay. Nor is it admissible to deduce from such principles as govern the phonetic changes in other language-groups, those which obtain in monosyllabic tongues. Agglutination, integration, and accent, which have wrought such changes in Indo-European words, but little affect monosyllables, in the present stage of language struggling for grammatical and syntactical independence"; Forchhammer, "Indo-Chinese Languages," *Indian Antiquary* 11 (1882), p. 177. See also G. Ineichen, "Historisches zum Begriff des Monosyllabismus im Chinesischen," Historiographia Linguistica 14.3 (1987), pp. 265–82, and Wolfgang Behr, "'Monosyllabism' and Some Other Perennial Clichés about the Nature, Origins and Contacts of the Chinese Language in Europe," in Angelika Malinar and Simone Müller, eds., *Asia and Europe–Interconnected: Agents, Concepts, and Things* (Wiesbaden: Harrassowitz, 2018), pp. 155–209.

[55] See Carl Richard Lepsius, *Über die Umschrift und Lautverhältnisse einiger hinterasiatischer Sprachen, namentlich der Chinesischen und der Tibetischen. Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin, aus dem Jahre* (1861), pp. 449–96; Wilhelm Grube, *Die sprachgeschichtliche stellung des chinesischen* (Leipzig: TO Weigel, 1881); Stephan Ladislaus Endlicher, *Anfangsgründe der chinesischen Grammatik* (Berlin: Carl Gerold 1845).

[56] Lepsius, *Über die Umschrift*, pp. 457–58, 496.

[57] Gong Xun and Yunfan Lai, "Consonant Clusters," in R. P. E. Sybesma, C.-T. James Huang, Wolfgang Behr, Yueguo Gu, James Myers, Zev Joseph Handel, eds., *Encyclopedia of Chinese Language and Linguistic*s (Leiden: Brill, 2017), p. 667.

cally accurate, as reconstructions of consonant clusters based on dialect comparisons had already appeared in the works of nineteenth-century scholars. For instance, Grube noted systematic correspondences between labialized velar stops /kw/~/gw/ in the Amoy dialect and the palatal initials /j/ in Mandarin or Cantonese.[58] That the former were relics of an older consonantism was shown by comparisons with a number of languages of the same area (not necessarily related to Sinitic) which exhibited similarities with the Amoy dialect.[59]

As regards Gabelentz, the wealth of recent publications that have been dedicated to his work in a sense proves his *ante litteram* wisdom, which featured much devotion to typology and grammaticalization,[60] as well as his conceptualization of language that somehow prefigured certain important aspects of early-twentieth-century structuralism.[61] Gabelentz's ideas remained influential within the circle of German-speaking academics,[62] as testified by Conrady's work. Conrady, another scholar who has been recently "re-discovered,"[63] made significant

[58] Grube, *Die sprachgeschichtliche stellung*, pp. 16–17.

[59] Maspéro postulated the existence of sequences such as C + *-l-, albeit according to him medial *-l- should not be regarded as part of the initial. See Maspéro, "Préfixes et dérivation en chinois archaïque," *Mémoires de la Société de Linguistique de Paris* (1935), pp. 316–19. On the basis of Sino-Tai cognates, Maspéro even stipulated that the first element of a *C-l type clusters, normally a *s-, *p- or *k-, was a morphological marker which indicated volitionality or specialization. Other derivational mechanisms involved "dérivation par changement de ton," "dérivation par alternance de l'initiale sourde/sonore," and "dérivation par alternance vocalique" (ibid., pp. 324–25). Later, Sergei E. Yaxontov also moved in that direction. He studied at some length the *xiesheng* 諧聲 sinograms with initial *l-*, and observed that 1. they rarely occurred in Middle Chinese Grade II syllables; 2. several words with a *xiesheng* relationship with initial *l-* belong to Grade II (especially words beginning with MC *k-* and ʂ-); 3. some of these sinograms with initial *l-* have also another reading belonging to Grade II. Hence, he concluded that all Grade II syllables had an *-l-* affix after the initial. See Yaxontov, "Consonantal Combinations in Archaic Chinese," in *Papers Presented by the U.S.S.R. Delegation at the 25th International Congress of Orientalists* (Moscow: Oriental Literature Publishing House, 1960), pp. 102–15. Yaxontov's ideas, however, remained popular only among Soviet scholars. The *-r-* hypothesis actually goes back to Li Fang-Kuei, who observed that, as Middle Chinese *zhi* 知 and *zhao* 照 initial series were retroflexes, there must have been a medial in Grade II syllables which caused retroflexion, with *-r-* being the best candidate. See Li Fang-kuei 李方桂, *Shangguyin yanjiu* 上古音研究 (Beijing: Shangwu yinshuguan, 1982).

[60] Some ideas on the typology of Chinese, such as, e.g., those who rejected monosyllabism and "root structure" as a veritable criterion for language subgrouping were also envisaged by Endlicher, *Anfangsgründe der chinesischen Grammatik*, pp. 103–13.

[61] See James McElvenny, "Georg von der Gabelentz," *Oxford Research Encyclopedia of Linguistics: Historical Linguistics, History of Linguistics* (Oxford: Oxford U.P., 2017), retrieved Oct. 6, 2022, from <https://oxfordre.com/linguistics/view/10.1093/acrefore/9780199384655.001.0001/acrefore-9780199384655-e-379.>

[62] Influential works include Georg von der Gabelentz, "Sur la possibilité de prouver l'existence d'une affinité génealogique entre les langues dites Indochinoises," *Atti del IV Congresso Internazionale degli Orientalisti Tenutosi in Firenze 1878* (Firenze, 1881), pp. 283–93; idem, *Chinesische Grammatik* (Leipzig: T. O. Weigel, 1881); idem, "Hypologie der Sprachen, eine neue Aufgabe der Linguistik," *Indogermanische Forschungen* 4 (1894), pp. 1–7.

[63] See Mei Tsu-lin [Mei Zulin] 梅祖麟, "Kangladi yu Gao Benhan, Cai Yuanpei, Lin Yu-

contributions to the study of derivation by tone change. In particular, in his 1896 work, he mentioned several interesting facts on the relationship between the prefix and tones in several Trans-Himalayan languages, such as the connection between voicing and pitch. This fact was independently discovered also by the Danish linguist Otto Jespersen (1860–1943). For instance, it is well known that Sinitic languages show a marked predilection for verbs with transitive or causative meaning in the upper range of tones, or with consonants which are traditionally associated with them.[64] Jespersen attributed this fact to the presence of a now-lost prefix of which the voiced initials (and their associated upper tones) are the only remaining trace.[65] Karlgren, who also noted this voicing alternation between transitive and intransitive verbs, did not reconstruct any prefix.[66]

However, unlike Jespersen, who theorized the presence of a now-lost prefix in OC from a purely theoretical basis, Conrady listed an impressive amount of voiced-voiceless alternations in Chinese,[67] mostly with velar, labial, and dental initials. Some of these alternations remain largely accepted, and served as a basis for further research on this aspect. Gong Hwang-cherng (1934–2010) and Mei Tsu-lin (b. 1933) are a clear example of two recent scholars who have followed Conrady's path.[68] It should be added that many German scholars made significant contributions to Trans-Himalayan linguistics. In other words, the German school has produced a wealth of stimulating, insightful and *avant la lettre* analyses of OC phonology, especially concerning OC affixation and the reconstruction of initial consonant clusters.

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tang de Hanxue yinyun" 康拉蒂與高本漢，蔡元培，林語堂的漢學音韻 *Yuyanxue luncong* 語言學論叢 51 (2015), pp. 377–91.

64 For more details, see Robert A.D. Forrest, *The Chinese Language* (London: Faber & Faber, 1965 [1948]), p. 123.

65 See Otto Jespersen, *Progress in Language, with Special Reference to English* (London: Routledge, 2013 [1894]), pp. 87–88. See also August Conrady, *Der altchinesische Fragesatz und der steigende Ton* (Berlin: Reichsdruckerei, 1915).

66 See Bernhard Karlgren, "Word Families in Chinese," *BMFEA* 5 (1933), pp. 5–120.

67 See August Conrady, *Eine indochinesische Causativ-Denominativ-Bildung und ihr Zusammenhang mit den Tonaccenten: Ein Beitrag zur vergleichen-den Grammatik der indochinesischen Sprachen, Insonderheit des Tibetischen, Barmanischen, Siamesischen und Chinesischen…* (Leipzig: O. Harrassowitz, 1896), pp. 163–65.

68 See Gong Hwang-cherng 龔煌城, "Cong Han-Zangyu de bijiao kan shanggu Hanyu de citou wenti" 從漢藏語的比較看上古漢語的詞頭問題, *Language and Linguistics* 1.2 (2000), pp. 39–62; Mei Tsu-lin, "The Causative *s- and Nominalizing *-s in Old Chinese and Related Matters in Proto-Sino-Tibetan," *Language and Linguistics* 13.1 (2012), pp. 1–28.

DEFICIENCIES OF PRE-KARLGRENIAN SYSTEMS

In this section, I briefly highlight what perhaps were the two gravest shortcomings of the reconstructive systems that predate that of Bernhard Karlgren. For honesty's sake, it must be specified that these shortcomings occasionally plague both Karlgren's and some post-Karlgrenian systems.

Tones

Most of the pre-Karlgrenian approaches tell few, if anything, about the origin of tones. Joseph Edkins mentioned them in a very short remark published in *The China Review*,[69] but he did not venture beyond a mere recapitalization of the various opinions held by traditional Chinese philologists. For what regards tonogenesis, one of the first serious workers to make important contributions on this topic was Maspéro: he believed that Old Chinese had two "*hauteurs*" and four "*flexions*." Tenues and aspirated consonants were confined in the upper series, and voiced consonants in the lower.[70] This was clearly influenced by his knowledge of Vietnamese tones, as he had already categorized Vietnamese tones into two different groups: *ngang*, *hỏi* and *sắc* tones and their respective tenues and aspirated voiceless initials from one side, and *huyền*, *ngã*, *nặng* and their related voiced initials from the other.[71]

However, the greatest contribution to the study of tones (and the reconstruction of their associated consonantal codas) probably came from another French scholar, André-Georges Haudricourt (1911–1996). By virtue of his solid understanding of many Asian languages, especially Vietnamese, and, as well, of ascertained facts about phonation-type registers, Haudricourt provided a general model for tonogenesis (and also registrogenesis) in South and East Asian languages.[72] He believed that Vietnamese *hỏi-ngã* tones (and by reflex Chinese departing tone) had emerged from a laryngeal consonant like /-h/, which was perhaps derived from an earlier <*-s, whereas the *sắc-nặng* tones had emerged from a glottal stop (/-ʔ/).

69 Edkins, "Recent Researches upon the Ancient Chinese Sounds."

70 Maspéro had long ago rejected Karlgren's reconstruction of a series of aspirated voiced consonants, since he believed that transcriptional materials, especially Sanskrit transcriptions, did not point toward the existence of such consonants. See Maspéro "Le dialecte de Tch'ang-ngan," p. 27.

71 See Henri Maspero, "Etudes sur la phonétique historique de la langue annamite. Les initiales," *BEFEO* 12 (1912), pp. 95–96.

72 See André-Georges Haudricourt, *De l'origine des tons en vietnamien* (Paris: Imprimerie Nationale, 1954).

Haudricourt also proposed a remarkable solution to one of the most serious flaws of Karlgren's system. Karlgren had noted that words in the entering tone, which he reconstructed as having codas like *-b, *-d, *-g, rhymed with words in the departing tone. This puzzled him to the point that his only solution was to generalize that the entire set of syllables which rhymed with *-g must have had the same coda. For this motive, his system has almost no open syllables, and he even reconstructed items like the Chinese word for cat, namely, **mi̯og*, which is clearly onomatopoeic. Haudricourt clarified this rhyming pattern by reconstructing final clusters such as *-ps, *-ts, *-ks.[73]

Limited Use of Min Material

It has become more evident, since at least the "Princeton hypothesis" of the 1960s and 1970s, that to have incorporated Min data in the reconstruction of OC would have proved effective.[74] However, very few scholars before Karlgren were able to include Min data in their dissertations. In fact, even Karlgren himself was apparently puzzled by Min data. For instance, when he proposed his complete reconstruction of "Ancient and Archaic Chinese," he declared indirectly that the phonetic categories of Chinese dialects could be accounted for by the same reconstruction categories of his Ancient Chinese. Unfortunately, as soon as he discovered that this was not true for Min dialects, he decided to ignore Min data. Before Karlgren, Joseph Edkins stated that

> ...[t]he existing dialects which agree in final letters most closely with the old classical pronunciation are those of Canton, Swa tow, Tiechiu, Amoy and some in Kiang si. The locality of old classical pronunciation as used in this poem, was the banks of the Yel-

[73] It is unfortunate that some scholars are not familiar with Haudricourt's solution. E.g., Li Baojia 李保嘉 attributed tonogenesis to Mei Tsu-lin and Edwin Pulleyblank in their respective researches; Li, "Zhongguo dangdai de Hanyu yinyunxue yanjiu" 國當代的漢語音韻學研究, *Xueshu yanjiu* 學術研究 3 (1996), pp. 70–73.

The well-regarded scholar Song Chenqing seems not to understand fully the principles of linguistic reconstruction in general, nor OC reconstruction in particular; he tried to resolve the problem of stop codas in Old Chinese from a "lexical diffusion" (his term) perspective, much as a *deus ex machina*; see Song, "Stop Codas in Old Chinese and Proto Sino-Tibetan: A Lexical Diffusion Analysis," *International Journal of Chinese Linguistics* 1.1 (2014), pp. 96–135. See the criticism by Nathan W. Hill, "A Refutation of Song's (2014) Explanation of the "Stop Coda Problem" in Old Chinese," *International Journal of Chinese Linguistics* 3.2 (2016), pp. 270–81.

[74] The Princeton Hypothesis argues that it is more important to stick to modern Sinitic languages than rime charts, rime tables, and other written sources to reconstruct earlier forms of Chinese, such as, e.g., MC. For rime tables are not based on real languages but on artificial phonological classes which occasionally incorporate anachronistic elements without distinguishing both temporal and spatial variation (e.g., dialectal words or words from different epochs are put together within the same category).

> low River to the south and west of the great bend of the T'ung kwan.[75]

However, Edkins realized that in many instances where other dialects exhibited some agreement with rime dictionaries, the dialect of Amoy (Southern Min) showed a wide range of different features:

> The dialects of Amoy and Chau-cheu, in the provinces of Fuhkien and Canton, contain some anomalies on which light is thrown by the hypothesis of progressive changes in tones. At Amoy the words 老 lau, old; 有 you, have; 五 ng, five; 兩 liang, two ; 瓦 wa, tiles; 雨 u, rain; 耳 ri, the ear; 網 wang, a net; are all read as book words in the second tone-class, but in colloquial use they are in the seventh. These words all belong to the sixth tone-class in dialects where that subdivision exists.[76]

We can see from the above remarks that already in Edkins' publications, Western scholars remarked the many discrepancies on some levels of phonemic structure between Min dialects and any other Sinitic language. It is well known that Min generally lacks labiodental fricatives; palatalized occlusives appear as plain denti-alveolar occlusives in Min, and they agree in that the lower entering-tone is higher in pitch than the upper. Baxter demonstrated that Old Chinese rimes *-jAk and *-jek merged already in times of Early Middle Chinese but are still kept separated in colloquial words of the Min dialects.[77]

KARLGREN'S REVOLUTION

Up to a certain degree, Karlgren might be regarded more as a synthesizer than a real "revolutionary" of the field. For instance, he partly adopted Schaank's view on palatal glides, while, on the other hand, he was also influenced by the works of Gabelentz and especially Conrady, as well as by those of French scholars such as Maspéro and Paul Pelliot (1878–1945): this was in part because Karlgren had been a student of Édouard Chavannes (1865–1918). Nevertheless, for reasons that are illustrated below, Karlgren should be regarded as the real pioneer of both Chinese phonetics and Chinese historical phonology.

Chinese phonetics per se came into its own no earlier than 1920, when three epoch-making works were published,[78] with Karlgren being

[75] Edkins, *China's Place in Philology*, p. 275.

[76] Edkins, *Colloquial Chinese*, p. 32.

[77] For more information, see Baxter, *Handbook*, p. 815, n. 16.

[78] The three works were by Chao Yuan-ren, *Xiandai Wuyu yanjiu* 現代吳語研究 (Peking: Tsing Hua College Research Institute, Monograph 4, 1928); Liu Fu 劉復, *Sisheng shiyan lu*

the first Western contributor to this field. One may point out, however, that before Karlgren's work, Western scholars had already conducted fieldwork in various areas of China, gathered information about Chinese dialects, and devoted studies to the phonology of Chinese. For instance, Joseph Edkins had already produced the first reconstruction of OC, and had also analysed the vocalic inventory of Chinese. He divided it into two categories, a primary and a wide, in Melville Bell fashion (1819–1905).[79] Nevertheless, the present writer is inclined to regard Karlgren's work as the first real Western account of Chinese phonetics. The reason is that Karlgren's work represents the first *experimental* approach to Chinese phonetics. As Karlgren himself remarked, he followed many methods that had been previously utilized by Rousselot (1846–1924), who had said:

> Les instruments d'expérimentation dont je me suis servi dans certains cas sont le tambour en registreuret le faux palais. Le premier des deux, connu le plus souvent dans la littérature phonétique sous le nom d'«appareil Lioret», a été décrit dans divers ouvrages par M. l'abbé Rousselot. Pour les recherches sur la quantité, l'intensité et la tonalité, il est indispensable. Je n'ai employé cet appareil que pour donner un seul exemple de l'accent musical, celui du dialecte pékinois. Avec la bienveillante permission de M. l'abbé Rousselot, les expériences se sont effectuées au laboratoire du Collège de France et ont été surveillées par M. J. Hlumsky, professeur adjoint à l'Université de Prague. C'est donc à l'obligeance de ces deux messieurs que je dois les matériaux de cette recherche.[80]

Rousselot notoriously utilized the kymograph, a clockwork device invented by the German physiologist Carl Ludwig (1816–1895) to monitor blood pressure which was later used as an instrument for obtaining information about the variations in air pressure during speech, to study the Gallo-Roman dialects which he analyzed in his famous work *Principes de phonétique expérimentale*.[81]

四聲實驗錄 (Shanghai: Yadong shuju, 1926); and Karlgren, *Études sur la phonologie chinoise* (Upsala: Archives d'Etudes Orientales, 1915–1926).

79 Bell proposed a consonantal scheme based on five different places of articulation, viz. glottal (throat), velar (back), palatal (front: hard palate), denti-alveolar (point), and labial (lip). For what regards manner of articulation, he divided consonants into primary (central), divided (lateral), nasal and shut (stop or plosive). Rev. Joseph Edkins (1888: 20) was later to use Bell's views on manner of articulation to reconstruct early Chinese vowels. See Joseph Edkins, *The Evolution of the Chinese Language: As Exemplifying the Origin and Growth of Human Speech* (London: Trübner, 1888), p. 20. For more information about Bell's influence over the linguistic ideas of Edkins, see Orlandi "The Linguistic Ideas of Joseph Edkins," p. 99.

80 Karlgren, *Études sur la phonologie chinoise*, p. 232.

81 Paris: Welter, 1897–1908.

Furthermore, although some authors still contend erroneously that he was the first scholar to have applied the comparative method to reconstruct OC,[82] Karlgren himself rejected the idea that the comparative method would have allowed the complete reconstruction of all the *phonetic* contrasts of Middle and Old Chinese:

> Je crois que «the comparative method permettrait très difficilement d'obtenir un résultat positif à l'égard des phonèmes 知 etc. et 照 etc. Tandis que beaucoup de dialectes présentent des initiales bien compatibles avec yod, p. ex. le dialecte de Foochow, d'autres en ont qui sont directements hostiles à yod (le tch et le ch pékinois changent i en ï). Et même si, parmi ces indications contradictoires, on choisit celle qui fait supposer des sons compatibles avec yod–je ferai voir plus bas que certaines raisons autorisent un tel choix–il n'en résulte pas que ces sons doivent être précisément les d, t dentals, yodisés.[83]

In fact, Karlgren, like all others before him, took the Chinese writing system not only as the sole real form of Chinese, but also as the only form of Chinese amenable to linguistic investigation. He believed that the phonetics of Chinese dialects could be accounted for by the reconstructed categories of the rime tables, and dismissed quite imperiously further survey on Chinese dialects when they did not fit in within his *Chinois ancien* (ancient Chinese), which Karlgren believed was the *koinē* of the Tang capital Chang'an. He was convinced of the fact that the *Chinois archaique* could be reconstructed as well, but since Chinese dialects could not be pushed back in times of Old Chinese, he took his reconstructed Middle Chinese as the starting point of this reconstructive work, and compared it with old rhyming conventions and sinogram structure.

Although, seen from this perspective, it may appear that the Karlgrenian method was in fact more a culmination of nineteenth-century historical Chinese phonology than the foundation of "modern historical Chinese phonology," there is one thing that distinguishes Karlgren from all other his predecessors, namely the fact that he was interested in reconstructing the language per se, and not its tabular artifice (that being phonological classes contained in rime tables, which however do not reflect a real language but are a *mixtum compositum* of several pro-

[82] This erroneous view is expressed in two authoritative sources such as Xue, *Hanyu yinyunshi shi jiang* 漢語音韻史十講 (Beijing: Huayu jiaoxue, 1999), pp. 8, 22–23, and Xu Tongqiang 徐通鏘 and Ye Feisheng 叶蜚聲, "Lishi bijiaofa he qieyun yinxi de yanjiu" 歷史比較法和切韻音系的研究, *Yuwen yanjiu* 語文研究 1 (1980), p. 29.

[83] Karlgren, *Études sur la phonologie chinoise*, p. 45.

nunciations that differ in time and space). In contrast, even two predecessors who up to a certain degree had some influence on Karlgren's views, such as Schaank and Volpicelli, were explicitly concerned with the reconstruction of rime-table phonology, and not with MC per se. On the other hand, Edkins, like Karlgren, was also interested in recovering not the language of the rime tables but the variety of Chinese that predated them. However, as we have seen, Edkins was influenced by the Biblical account of the diversification of languages, whereas Karlgren showed no interest in such glottogonic, that is, prehistoric language-formation speculations. In other words, a revolution in this branch of learning was effected only when Karlgren used the received knowledge to pose and solve new problems concerning OC per se.

CONCLUSIONS

We can draw the following conclusions. First, studies and "reconstructions" of the sound system of MC and OC have a quite long history, going back as far as the *dengyunxue* 等韻學 tradition of Sui-dynasty times (generally, sixth century ad), when fascinating advances were made in phonetics, phonology, and musicology (the earliest descriptions of tones were based on concepts extrapolated from traditional musicology). This tradition developed independently of the Western tradition, although, up to a certain degree, it was influenced by the phonetic science of India. It was replaced several centuries later by the rigorous and proto-scientific *xiaoxue* 小學 tradition of the Ming-Qing transition (early-seventeenth century). Scholars from this period were utterly concerned with the "reconstruction" of sound classes, especially finals. The rigorousness of their approach was such that modern scholarship could only advance the argument (concerning finals) in only a few ways.

Second, although they mostly worked in near isolation, some Japanese scholars from Edo times (1603–1868) made several significant contributions to the study of Old and Middle Chinese, anticipating many of the discoveries and contributions made by Chinese philologists. Furthermore, starting from the twentieth century, Japanese scholars were the first to seek a balance between the traditional and more "Westernized" approaches, masterfully integrating (pre-)Karlgrenian methods with acute philological analyses on more traditional sources, such as *fanqie* spellings, Sino-Japanese transcriptions, and *kana* readings.

Third, the first Western worker of this field was Marshman. Marshman reconstructed the initials and finals of the sound classes of the rime tables contained in the *Kangxi zidian*. He was the first to propose a sys-

tematic sound change concerning MC initials. Unlike Chinese scholars who preceded him, Marshman formulated this sound change in quasi-exact phonetic terms. Other Western scholars followed his transcriptionist approach, especially Edkins, who was the first to reconstruct, albeit in a fragmented way, the sound system of Old Chinese. Later, Volpicelli and Schaank made several contributions to the field of Chinese historical phonology, before the Karlgrenian "revolution." While many of Karlgren's methods have been surpassed, most reconstruction systems still remain heavily anchored to the Karlgrenian method of identification, assessment, and reconstruction of MC sound classes.

Appendix 1: Comparative Table of Reconstructed MC Initials

30 INIT	36 INIT	MARSH. 1809	EDKINS 1864	GAB. 1881	VOL. 1896	SCHAANK 1897	IGARI 1898	OGAWA 1907	ŌYA 1914	KARL. 1915-26
見	見	*k	*k	*k	*k	*k	*k	*k	*k	*k
溪	溪 (谿)	*kh	*k′	*k′	*k′	*k′	*k′	*k′	*k′	*k^{h}
群	群 (羣)	*k < *g	*g	*g	*g	*g	*g	*g	*g	*g^{ɦ}
疑	疑	*gn	*ng	*ng	*ng	*ng	*ng	*ng	*ng	*ŋ
端	端	*t	*t	*t	*t	*t	*t	*t	*t	*t
透	透	*t′h	*t′	*t′	*t′	*t′	*t′	*t′	*t′	*t^{h}
定	定	*t < *d	*d	*d	*d	*d	*d	*d	*d	*d^{ɦ}
泥	泥	*ng	*n	*n	*n	*n	*n	*n	*n	*n
知	知	*ch	*ch	*č	*t(r)	*ty	*ch	ṭ	*ti (/ʧ/)	*ʈ
徹	徹	*chh	*c′h	*č	*t(r)′	*ty′	*ch′	ṭ′	*ti′	*ʈ^{h}
澄	登	*ch < *j	*dj	*ǧ	*d(r)	*dy	*dj	ḍ	*di	*ɖ^{ɦ}
	娘	*n	*ni	*ñ	*n(i)	*ny	*ñ	ṇ	*ni	*nʲ
不	幫	*p	*p	*p	*p	*p	*p	*p	*p	*p
芳	滂	*ph	*p′	*p′	*p′	*p′	*p′	*p′	*p′	*p^{h}
並	並	*p < *b	*b	*b	*b	*b	*b	*b	*b	*b^{ɦ}
明	明	*m	*m	*m	*m	*m	*m	*m	*m	*m
	非	*f	*f	*f	*f	*f	*f	*f	*f	*f
	敷	*fh	*f′	*f′	*f′	*f′	*f′	*f′	*f′	*f^{h}
	奉	*f	*v	*v	*v	*v	*v	*v	*v	*v
	微	*m	*m	*w	*w	*vr	*m	*v^{n}	*m	*m
精	精	*ts	*ts	*ts	*ts	*ts	*ts	*ts	*ts	*ts
清	清	*tsh	*t′s	*ts′	*ts′	*ts′	*ts′	*ts′	*ts′	*ts^{h}
從	從	*ts	*dz	*dz	*dz	*dz	*dz	*dz	*dz	*dz^{ɦ}
心	心	*s	*s	*s	*s	*sr	*s	*s	*s	*s
邪	邪	*s	*z	*z	*z	*zr	*z	*z	*z	*z
照	照二(莊)	*tch	*ch	*tš	*ts(r)	*tsy	*ch	*ts	*ch	*ʦ
	照三(章)							*ch		*ʨ
穿	穿二(初)	*tchh	*c′h	*tš′	*ts(r)′	*ts′y	*ch′	*ʦ	*ch′	*ʦ^{h}
	穿三(昌)							*ch′		*ʨ^{h}
	床二(崇)	*tch	*dj	*dź	*dz(r)	*dzy	*dj	*ʣ	*j	*ʣ^{ɦ}
	床三(船)							*j		*ʥ^{ɦ}
審	審二(生)	*sh	*sh	*š	*s(r)	*sry	*sh	*ʂ	*sh	*ʂ
	審三(書)							*sh		*ɕ
禪	禪 (常)	*sh	*zh	*ž	*z(r)	*zry	*zh	*zh	*ʤ	*ʑ
曉	曉	*h	*hh	*h	*Hh	*h′	*hh	*h	*h	*x
匣	匣	*hh	*h	*ẖ	*h	*h	*h	*h	*G	*ɣ
影	影	*y	*yy	*y	*ʔ	*ʔ	*yy	*ʔ	*a	*ʔ
喻	喻 二三(云)	*y	*y	*j	*y	*y	*y	*w	*w	Ø
	喻 四(以)							*y	*y	Ø
來	來	*l	*l	*l	*l	*l	*l	*l	*L	*l
日	日	*y	*j	*r	*j(r)	*lr	*j	*zh^{n}	*dj^{ɦ}	*ȵʑ

EXPLANATION OF DEVICES USED

- Head row: Init= Initials; Marsh.=Marshman; Gab.=Gabelentz; Vol.=Volpicelli; Karl.=Karlgren
- In first two cols., use of small Chinese numbers (一, 二, so forth) is a rule much followed by specialists of HCP. It indicates distinctions within the same initial groups that were not recognized until Chen Li's work. Prior, there was no proper distinction among MC initials. Chen showed that, e.g., 喻三 (j-) initials should be distinguished from 喻四 (y-) initials.
- Alternative sinograms between parentheses are initials occasionally written as such.

Appendix 2: Reconstructed Early-Chinese Finals (Traditional Method/Four Vowel Hypothesis)

鄭庠	吳棫	顧炎武	中井履軒	江永	段玉裁	戴震	孔廣森	王念孫	江有誥	章太炎	黃侃	錢玄同	曾運乾	王力	羅常培	大矢徹	大島正健	陳新雄
東	東	東	東	東	之	阿	原	東	東	東	東	鐘	邕	東	東	阿	意應	東
支	支	陽	支	陽	蕭	烏	丁	陽	中	冬	冬	冬	宮	陽	冬	區	奧融	冬
魚	魚	耕	魚	庚	尤	堊	辰	庚	陽	陽	唐	陽	央	耕	陽	固	區翁	陽
眞	眞	蒸	眞	蒸	候	膺	陽	蒸	庚	青	青	耕	嬰	耕	耕	州	於央	耕
蕭	先	支	陽	支	魚	噫	東	支	蒸	蒸	登	登	應	蒸	蒸	少	娃嬰	蒸
侵	蕭	魚	幽	魚	蒸	億	冬	脂	支	支	齊	佳	益	支	支	台	乙因	支
	歌	歌	屋	歌	侵	翁	綅	至	脂	脂	錫	錫	益入	錫	錫	解	衣陰	錫
	陽	眞	質	眞	覃	讌	蒸	祭	祭	隊	灰	微	衣	脂	脂	大	阿藹安	脂
	尤	蕭	緝	元	東	屋	談	之	之	至	沒	物	威	微	微	類	邑音	微
		侵		蕭	陽	央	歌	魚	魚	泰	脂	質	威入	物	術	尒	烯奄	沒
				尤	庚	夭	支	歌	歌	之	曷末	月	衣入	質	質	相		質
				侵	眞	約	脂	眞	眞	魚	哈	哈	阿入	月	祭	曾		月
				覃	諄	嬰	魚	諄	文	歌	德	德	噫	之	月	公		之
					元	娃	候	元	元	眞	模	魚	噫入	職	之	官		職
					脂	戾安	幽	宵	宵	諄	鐸	鐸	烏	魚	職	成		魚
					支	殷	宵	幽	幽	寒	歌戈	歌	烏入	鐸	魚	山		鐸
					歌	衣	之	候	候	宵	先	眞	阿	歌	鐸	雲		歌
						乙	合	侵	侵	幽	魂痕	文	因	眞	歌	眞		眞
						靄		緝	緝	候	寒桓	元	昷	文	眞	談		諄
						遏		談	談	侵	豪	宵	安	元	諄	今		元
						音邑		盍	葉	緝	沃	幽	夭	宵	元	葉		宵
						乙				談	蕭	覺	夭入	藥	宵			藥
						醃				盍	候	候	幽	幽	藥			幽
						韘					屋	燭	幽入	覺	幽			覺
											覃	侵	諶	候	沃			候
											合	緝	諶入	屋	候			屋
											添	談	音	侵	屋			侵
											談	盍	音入	緝	侵			緝
											怗		奄	談	緝			添
											盍		奄入	葉	談			談
															盍			怗
																		盍