(How have you got this / that book ?)

Kinoo ∅ katte kita n' desu.

(10) This claim does not come into conflict with the theory of communicative dynamism (DC) offered and defended by Prague School linguists since the scope concerned is different.

(11) Sentence (15′) is grammatical if the ZP refers to an antecedent in the preceding discourse.

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Middle Chinese kāi : hé contrast and Old Japanese o-colored vowels

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1. Introduction

Lange's (1973) reconstruction of Old Japanese phonology rests on two foundations: (i) his unique, stringent criteria for selecting and grouping *ongana*, or Chinese characters used phonetically to spell Old Japanese syllables, and (ii) the scholarship in Chinese historical phonology, particularly Karlgren's reconstructions of Middle Chinese sounds and their revisions and refinements proposed by other scholars. The former foundation has been reviewed favorably by several linguists (such as Mathias 1974 and Sato 1978) and even advocated enthusiastically by some (e.g., Unger 1974 and 1976-77). What the present work attempts is scrutiny of the second foundation. In particular, I will reexamine the prevailing interpretation of the terms *kāikŏu* (開口 "open mouth") and *hékŏu* (合口 "pursed mouth") used in Middle Chinese sound tables, which will help settle the recurring debates on the phonological values of the so-called *kō*-type *o* and *otsu*-type *o* in Old Japanese.

While many improvements upon details of Karlgren's (1915-26) reconstruction of "Ancient Chinese" (=Middle Chinese) and its revised version (Karlgren 1954) have been proposed and widely accepted, few have challenged his assumption that all Middle Chinese *hékŏu* finals had either a labial medial or a nucleus vowel u.[1] In other words, if a Middle Chinese final was classified as *hékŏu* and if its nucleus vowel was not u, it is generally assumed that there was a labial medial (-u- or -w-) in that final. The data presented in the present work challenge this assumption and call for a redefinition of Middle Chinese *kāikŏu : hékŏu* contrast, which renders Karlgren's reconstructions 116 -*uong*. 117 -*uok*. 120 -*i̯wong*. 121 -*i̯wok*. 131 -*uo*, and 132 -*i̯wo* impossible, and deprives Lange of his basis for reconstructing /wo/ : /o/ as the *kō* : *otsu* contrast of Old Japanese precursors of Middle Japanese *o*. Concomitantly, the same data provide conclusive evidence showing that the Old

Japanese contrast mentioned above was / o / : / ə /.

2. Distribution of *kāikŏu : hékŏu* contrast

As a point of departure, see list (1), which contains all the Middle Chinese finals reconstructed by Karlgren (I have added 88′ and 91′, which he left out). The list is slightly rearranged in order to facilitate our discussion. However, the names of tables (A—Y), the Roman numerals indicating the divisions in each table, and the reference numbers of finals in Arabic figures are those used in Karlgren 1954. No modification of Karlgren's reconstruction has been made in this list, but I have added the mark "√" to indicate that the finals marked thus are classified as *hékŏu* in the oldest available sources.

(1) Karlgren's reconstruction of Middle Chinese finals

		A				B	
I	1	(寒)	$-\hat{a}n$	I	13	(桓) √	$-u\hat{a}n$
	2	(曷)	$-\hat{a}t$		14	(末) √	$-u\hat{a}t$
II	3	(删)	$-an$	II	15	(删) √	$-wan$
	4	(鎋)	$-at$		16	(鎋) √	$-wat$
	5	(山)	$-ăn$		17	(山) √	$-wăn$
	6	(黠)	$-ăt$		18	(黠) √	$-wăt$
III	7	(仙)	$-i\underset{\sim}{ă}n$	III	19	(仙) √	$-iw\underset{\sim}{ä}n$
	8	(薛)	$-i\underset{\sim}{ä}t$		20	(薛) √	$-iw\underset{\sim}{ä}t$
	9	(元)	$-i\underset{\sim}{v}n$		21	(元) √	$-iw\underset{\sim}{v}n$
	10	(月)	$-i\underset{\sim}{v}t$		22	(月) √	$-iw\underset{\sim}{v}t$
IV	11	(先)	$-ien$	IV	23	(先) √	$-iwen$
	12	(屑)	$-iet$		24	(屑) √	$-iwet$

		C	
I	25	(甘)	$-\hat{a}m$
	26	(盍)	$-\hat{a}p$
	27	(覃)	$-\hat{ə}m$
	28	(合)	$-\hat{ə}p$
II	29	(銜)	$-am$
	30	(狎)	$-ap$
	31	(咸)	$-ăm$
	32	(洽)	$-ăp$
III	33	(塩)	$-i\underset{\sim}{ä}m$
	34	(葉)	$-i\underset{\sim}{ä}p$

35	(厳)	$-i\underset{\sim}{v}m$		39	(凡)	$-iw\underset{\sim}{v}m$

IV	36	(業)	$-i\underset{\sim}{v}p$	40	(乏)	$-iw\underset{\sim}{v}p$
	37	(添)	$-iem$			
	38	(怗)	$-iep$			

		D	
I	41	(豪)	$-\hat{a}u$
II	42	(肴)	$-au$
III	43	(宵)	$-i\underset{\sim}{ä}u$
IV	44	(蕭)	$-ieu$

		E				F	
I	45	(泰)	$-\hat{a}i$	I	53	(泰) √	$-w\hat{a}i$
	46	(咍)	$-\hat{ə}i$		54	(灰) √	$-u\hat{ə}i$
II	47	(佳)	$-ai$	II	55	(佳) √	$-wai$
	48	(皆)	$-ăi$		56	(皆) √	$-wăi$
	49	(夬)	$-ăi$ (?)		57	(夬) √	$-wăi$ (?)
III	50	(祭)	$-i\underset{\sim}{ä}i$	III	58	(祭) √	$-iw\underset{\sim}{ä}i$
	51	(廃)	$-i\underset{\sim}{v}i$		59	(廃) √	$-iw\underset{\sim}{v}i$
IV	52	(斉)	$-iei$	IV	60	(斉) √	$-iwei$

		G				H	
I	61	(歌)	$-\hat{a}$	I	64	(戈) √	$-u\hat{a}$
II	62	(麻)	$-a$	II	65	(麻) √	$-wa$
III	63	(麻)	$-ia$				

		J				K	
I	66	(唐)	$-\hat{a}ng$	I	70	(唐) √	$-w\hat{a}ng$
	67	(鐸)	$-\hat{a}k$		71	(鐸) √	$-w\hat{a}k$
III	68	(陽)	$-i\underset{\sim}{a}ng$	III	72	(陽) √	$-iwang$
	69	(薬)	$-i\underset{\sim}{a}k$		73	(薬) √	$-iwak$

		L				M	
II	74	(耕)	$-\varepsilon ng$	II	84	(耕) √	$-w\varepsilon ng$
	75	(麦)	$-\varepsilon k$		85	(麦) √	$-w\varepsilon k$
	76	(庚)	$-vng$		86	(庚) √	$-wvng$
	77	(陌)	$-vk$		87	(陌) √	$-wvk$
III	78	(清)	$-i\underset{\sim}{ä}ng$	III	88	(清) √	$-iw\underset{\sim}{ä}ng$
	79	(昔)	$-i\underset{\sim}{ä}k$		[88′	(昔) √	$-iw\underset{\sim}{ä}k$]
	80	(庚)	$-i\underset{\sim}{v}ng$		89	(庚) √	$-iw\underset{\sim}{v}ng$
	81	(陌)	$-i\underset{\sim}{v}k$				
IV	82	(青)	$-ieng$	IV	90	(青) √	$-iweng$
	83	(錫)	$-iek$		90a	(錫) √	$-iwek$

		N				O	
I	91	(痕)	$-ən$	I	98	(魂) √	$-uən$

[91´(没) -ət]

III   92 (真) -ịĕn

93 (質) -ịĕt

94 (欣) -ịən

95 (迄) -ịət

96 (臻) -iɛn

97 (櫛) -iɛt

III   99 (没) ✓ -uət

100 (諄) ✓ -ịuĕn

104 (真) ✓ -iwĕn

101 (術) ✓ -iuĕt

102 (文) ✓ -ịuən

103 (物) ✓ -ịuət

P

III   105 (侵) -ịəm

106 (緝) -ịəp

Q

I   107 (登) -əng

108 (德) -ək

III   109 (蒸) -ịəng

110 (職) -ịək

R

I   111 (登) ✓ -wəng

112 (德) ✓ -wək

III

113 (職) ✓ -iwək

S

I   114 (東) -ung

115 (屋) -uk

116 (冬) ✓ -uong

117 (沃) ✓ -uok

III   118 (東) -ịung

119 (屋) -ịuk

120 (鍾) -ịwong

121 (燭) -ịwok

T

II   122 (江) -ång

123 (覺) -åk

U

III   124 (脂) -(j)i

125 (之) -(j)i

126 (支) -(j)iẹ

127 (微) -(j)ẹi

V

III   128 (脂) ✓ -(j)wi

129 (支) ✓ -(j)wiẹ

130 (微) ✓ -(j)wẹi

X

I   131 (模) ✓ -uo

III   132 (魚) -ịwo

III   133 (虞) ✓ -ịu

Y

I   134 (侯) -əu

III   135 (尤) -ịəu

136 (幽) -iĕu

This list shows that there are two groups of classes : those which regularly show the *kāikŏu* : *hékŏu* contrast (A : B, E : F, G : H, J : K, L : M, N : O, Q : R, and U : V) and those which regularly lack this contrast (D, P, S, T, X, and Y). The only exception is class C, but it is merely in appearance. All words that have final 39 or 40 have a labial initial. Moreover, as noted by Karlgren himself (p. 251), these finals are classified in sound tables not as *hékŏu* but as *kāikŏu*. *Kāikŏu* finals are supposed to have no labial medial. Evidently, the -*w*- which Karlgren reconstructed for 39 and 40 was not a phonematic segment that distinguished them from 35 and 36, but was merely a concomitance of the labial feature of the initial consonant. See also Karlgren's following observation (p. 268) which suggests the nonphonematic nature of the labial glide after labial initials :

In general, the fan-ts'ie very clearly and consistently indicate which words have k'a i k'o u [= *kāikŏu*] and which have h o k'o u [= *hékŏu*]. But after labial initials there is a certain amount of uncertainty and inconsistency.

The data presented by Karlgren (p. 269), Chao (pp. 219-23), and Lǐ (p. 134) also show that the existence or nonexistence of a labial glide after a labial initial was not phonologically significant. In order to dichotomize all Middle Chinese finals into *kāikŏu* and *hékŏu*, Chao treated all finals with labials as *kāikŏu*. Lange (p. 83) objected to this treatment and put -*w*- after all labial initials "as a feature of the initial." However, Chao's solution does not contradict Lange's because *kāikŏu* and *hékŏu* are features of finals and not of initials. We, therefore, remove 39 and 40 from list (1) and postulate the following theorem :

Theorem 1.   There was no *kāikŏu* : *hékŏu* contrast in Middle Chinese finals whose nucleus or postnucleus was rounded or labial.

By comparing classes C, D, P, and Y, on the one hand, and S, T, and X, on the other, we can further postulate the following structual characteristic of Middle Chinese finals :

Theorem 2.   The labial postuncles and the rounded nucleus vowel were mutually exclusive.

Evidently, this constraint was responsible for the pre-Middle-Chinese dissimilation (OC -*og* >) -*ou* > MC -*âu* (see Karlgren, pp. 342-4). As we shall see in section 4.1.2, similar dissimilation also occurred in 43: (OC -*iog* >) -*iou* > MC -*iäu*.

首

Viewed as a phonological system, (1) contains many peculiarities. See, especially, the strange distribution of the rounded vowels, *å*, *o*, and *u*. Neither *å* nor *u* can be preceded by a labial medial, while *o* must always be proceded by -*u*- or -*w*- (Karlgren's -*u*- and -*w*- are in complementary distribution, and they never contrast with each other). In other words, the reconstructed labial glide before *o* is always redundant.[2] This fact suggests that the labial glide reconstructed by Karlgren before *o* represents nothing but the strong labiality of MC *o* which contrasted with the less rounded *å* (= / ɔ /); i.e., Karlgren's *uo* and *i̯wo* were phonologically / o / and / yo /, respectively. Our theorem 1 can, therefore, be rephrased as follows:

Theorem 3. No phonologically significant labial medial occurred in Middle Chinese finals whose nucleus or postnucleus was rounded or labial.

And, combining theorems 2 and 3, we get the following:

Theorem 4. No Middle Chinese final contained more than one phonologically significant labial segment.

As a corollary of these theorems, I propose the following revised definition of the Middle Chinese *kāikǒu* : *hékǒu* contrast :

Theorem 5. A Middle Chinese final was *hékǒu* if its medial of nucleus was rounded ; otherwise, the final was *kāikǒu*.

Evidently, the *hékǒu* finals classified as division Ⅲ or Ⅳ with an unrounded nucleus vowel had a single labio-palatal glide rather than two separate glides, one labial and one palatal (hence such transcription variations as Karlgren's -*i̯wak* = Lange's -*wiak*, which was evidently -*ẅak*).[3] I suspect that the palatal glide before a rounded vowel was also (phonetically) labialized by assimilation. On the PHONETIC level, therefore, theorem 5 may be phrased as follows:

Theorem 5ʹ. A Middle Chinese final was *hékǒu* if it began with a rounded vowel or a rounded semivowel; otherwise, it was *kāikǒu*.

According to our definition, all finals in classes C, D, P, and Y were *kāikǒu* and all finals belonging to classes S, T, and X (except 132, which was not -*i̯wo* or -*i̯o* but -*i̯ə*, as we shall see below) were *hékǒu*. Designation of these finals as *kāikǒu* or *hékǒu* was redundant; therefore, many such finals lack this designation.

3. Comparative and historical evidence

Our discussion in the previous chapter was heavily system-oriented, whereas what Karlgren attempted was reconstruction of PHONETIC values of Middle Chinese initials and finals which was supposed to "do more justice to

the infinite richness of ... living language" (p. 367). Our next task is, therefore, to ascertain whether or not Karlgren's reconstruction of "phonetic" medial -*u*- / -*w*- in 116, 117, 120, 121, 131, and 132 can be justified if we use the same kind of data and the same kind of methodology as Karlgren and his followers have used.

3.1. Class S (finals 114 -121)

Of this class, Karlgren (p. 259) first reconstructs the phonetic values of the Division-Ⅲ finals 118-121 on the basis of the comparative data presented in (2)-(5).[4]

(2) Final 118 (Karlgren's reconstruction: -*i̯ung*)

	弓	中	風
Korean	*kung*	*tśung*	*pʼung*
Kan-on	*kiu*	*tiu*	*puu*
Wēnzhōu	*tśiung*	*tśiung*	(*fung*)

(3) Final 119 (Karlgren's reconstruction: -*i̯uk*)

	菊	叔	福
Korean	*kuk*	*suk*	(*pok*)
Kan-on	*kiku*	*siuku*	*puku*
Wēnzhōu	*tśiu*	*śiu*	*fu*

(4) Final 120 (Karlgren's reconstruction: -*i̯wong*)

	恭	鍾	封
Korean	*kong*	*tśong*	*pong*
Kan-on	*kiyou*	*siyou*	*pou*
Wēnzhōu	*tśüå*	*tśüå*	(*fung*)

(5) Final 121 (Karlgren's reconstruction: -*i̯wok*)

	曲	燭	足
Korean	*kok*	*tśʼok*	*tśok*[5]
Kan-on	*kiyoku*	*siyoku*	*siyoku*
Wēnzhōu	*tśüo*	*tśüo*	*tśüo*

These data do suggest that "the Finals 118, 119 had Anc. [= Middle Chinese] *u* as principal vowel and Finals 120, 121 had *o*" (Karlgren, p. 259), but they do not positively indicate that there was a labial medial -*w*- in front of *o* in finals 120 and 121. The Wēnzhōu -*ü*- can be interpreted as a result of the assimilation of medial glide -*i*- to the rounded vowel that follows.

Karlgren (loc. cit.) also admits that 120 -*i̯ong* and 121 -*i̯ok* seem to tally with his comparative data better than his 120 -*i̯wong* and 121 -*i̯wok*. However, before he presented those data, he had already concluded that class S "has h o k ʼ o u in the Sound tables and therefore had *u* and *w* throughout"

(p. 259). He, therefore, reasoned (pp. 259-60):

> It might be tempting to conclude from the forms in Kor. and Kan-on that Final 120 was simply *-iong* and not [-]*i̯wong* [and that 121 was *-i̯ok* and not *-i̯wok*], but ... the Sound tables, which register all these rimes [i.e., 114 through 121] as h o k ' o u are exceedingly strict in distinguishing k' a i k' o u without and h o k' o u with u, w, and the Sung philologists would never have placed a *-ịong* as h o k' o u.

Hence his reconstruction of 120 as *-i̯wong* and 121 as *-i̯wok* (cf. his 114 *-ung*, 115 *-uk*, 118 *-i̯ung*, and 119 *-i̯uk*, for which Karlgren did not reconstruct any labial medial).

However, as Lúo (p. 19) has confirmed, the set of sound tables which Karlgren followed was the *Děngyùn Qièyīn Zhǐnán*, which was not compiled during the Sòng dynasty (A.D. 960-1279) but sometime between 1612 and 1711, i.e., more than 1,000 years after the publication of the *Qièyùn* (A.D. 601), whose language Karlgren was trying to reconstruct. Note that the *Yùnjìng*, which was compiled at least 500 years before the *Děngyùn Qièyīn Zhǐnán*,[6] does not designate these finals either as *kāikǒu* or as *hékǒu*. (As I remarked in the last paragraph of chapter 2, sound tables oftem omitted the *kāikǒu/hékǒu* designation when such designation was redundant.) Should Karlgren have known this fact, he would have reconstructed 120 and 121 as *-ịong* and *-ịok*, respectively, as he was "tempted" to do on the basis of (4) and (5).

As for the Division-I counterparts of these finals, Karlgren deduced his reconstructions (114 *-ung*, 115 *-uk*, 116 *-uong*, 117 *-uok*) from the reconstructed values of their Division-Ⅲ counterparts (118, 119, 120, 121), using the formula: [Division Ⅰ] = [Division Ⅲ] − [palatal medial]. Therefore, if 120 and 121 are *-ịong* and *-ịok*, respectively, 116 and 117 must be *-ong* and *-ok*, respectively.

Correspondence sets (6) and (7), given by Karlgren (p. 260), also corroborate these reconstructions.

(6) Final 116 (Karlgren's reconstruction: *-uong*, my revision: *-ong*)

	農	冬	宋
Korean	nong	tong	tsŏng
Vietnamese[7]	ṇong	đong	tong
Kan-on	nou	tou	sou

(7) Final 117 (Karlgren's reconstruction: *-uok*, my revision: *-ok*)

	沃	酷	篤
Korean	ok	hok	tok
Vietnamese	ok	kok	ḍok

Kan-on	*oku*	*koku*	*toku*

Note especially the Vietnamese forms in (6) and (7). As shown in (8), /o/ and /uo/ contrast in Vietnamese.

(8) Vietnamese minimal pairs including /o/ vs. /uo/[8]

ốmg "tube"	uống "to drink"
bộc "to declare"	buộc "to tie"
bổi "rice waste"	buổi "period"
bôn "to wander painfully about"	buôn "to trade"
bổng "paradise"	buổng "room"
bột "flour"	buột "to slip"
mỗi "each"	muỗi "mosquito"
tôn "to respect"	tuôn "to flow into"
tốt "good"	tuốt "to draw out the sword"
đốc "head master"	đuốc "torch"
đôi "pair"	đuôi "tail"
nôi "cracle"	nuôi "to nourish"
nổng "agriculture"	nuống "to spoil"
cộc "short"	cuộc "match"
cỗi "mill"	cuỗi "end"
cồn "alcohol"	cuồn "whirling"
cổng "drain"	cuổng "stem"
gốc "foot of a tree"	guốc "wooden clog"
gồng "to carry"	guồng "reel"
ngôi "to part the hair"	nguôi "to calm down the anger"

If Karlgren's reconstruction were correct, the words with finals 116 and 117 cited in (6) and (7) would have been attested with a diphthong /uo/ rather than with a monophthong /o/. Therefore, lacking stronger evidence to justify the reconstruction of *-u-* / *-w-* in these finals, we must conclude that 116, 117, 120, and 121 did not have the labial glide: i.e., 116 *-ong*, 117 *-ok*, 120 *-ịong*, and 121 *-ịok*.

3.2. Class X (finals 131-133)

Tables (9), (10), and (11) contain the data Karlgren (pp. 266-7) used to reconstruct 131 *-uo*, 132 *-i̯wo*, and 133 *-i̯u*.[9]

(9) Final 131 (Karlgren's reconstruction: *-uo*)

	古	烏	都	補
Korean	ko	o	to	po
Kan-on	ko	wo[10]	to	po
Go-on	ku	u	tu	pu

Vietnamese	ko	o	ɖo	bo

(10) Final 132 (Karlgren's reconstruction: -$\underset{\frown}{i}$wo)

	居	猪	初	胥
Korean	kə	tśə	tś o	sə
Kan-on	kiyo	tiyo	siyo	siyo
Go-on	ko	tio	so	so
Vietnamese	ki	ʈi	sə	ti

(11) Final 133 (Karlgren's reconstruction: -$\underset{\frown}{i}$u)

	拘	誅	芻	須
Korean	ku	tśu	tś u	su
Kan-on	ku	tiyu	siyu	siyu
Go-on	ko	tiyu	su	su
Vietnamese	ku	ʈu	so	tu

The reconstruction -$\underset{\frown}{i}$u for 133 on the basis of (11) seems feasible, although the o-vocalism of Go-on ko and Viet. so is not yet accounted for (this vocalism will be discussed in section 4.1.3 below). The main problem is the reconstruction of 131 and 132, about which Karlgren (p. 267) admits that 131 -o and 132 -$\underset{\frown}{i}$o (rather than his 131 -uo and -$\underset{\frown}{i}$wo) "would seem to tally better with the Kor., Kan-on, Go-on and Ann. [= Vietnamese] forms adduced above."

However, both 131 and 132 are found in the same sound table Karlgren used, the former in Division I and the latter in Division Ⅲ. The sound table in question lacks the kāikŏu / hékŏu designation. Therefore, Karlgren reasoned (loc. cit.):

... we must first emphasize that these two finals are correlated: Final 132 is the final with $\underset{\frown}{i}$ corresponding to 131, the final without $\underset{\frown}{i}$ (though there must have been a difference of *nuance* in the principal vowel o, motivating different Ts'ie yün rimes) ... Thus either both had k ' a i k ' o u: 131 ko, 132 kio; or both had h o k ' o u: 131 kuo, 132 kiwo.

This being established, we are fortunately able to prove that the latter alternative is correct. The proof is furnished by Kan-on. It is true that after guttuals Kan-on has simply 131 ko and 132 kio without medial u (just as it skips the medial elements in many other cases ...), but when there is no oral initial, the final standing bare, the medial u in 131 appears quite clearly and regularly. Ancient Japanese distinguishes very strictly between the syllables wo and o (giving them different Kana characters), and here, in Final 131, we find 烏朽污惡 etc. all Kan-on wo (spelled wo not o).

His conclusion was 131 -uo and 132 -$\underset{\frown}{i}$wo, in spite of other evidence in (9) and (10). He does not discuss what is the "difference of *nuance* in the principal vowel o" which motivated different Qièyùn rhymes.

However, as Luó (pp. 18-21) has observed, both the Yùnjìng (10th century?) and the Qīyīnlüè (1102-1160), which are much older than the set of tables Karlgren used (17th or the early 18th century), explicitly designate 132 as kāikŏu, and 131 and 133 as hékŏu. The kāikŏu final 132 could not have a labial medial. Moreover, Zhōu (p. 121) discovered that there are hundreds of cases in which finals 131 and 133 were used to transcribe Sanskrit rounded vowels in open syllables, while only four examples of characters with final 132 were used in this way. As Zhōu (loc. cit.) noted, this fact suggests that the nucleus vowel of 131 was closer to that of 133 than that of 132; i.e., the vowels of 131 and 133 were more rounded than that of 132. On the basis of these data, Lange (p. 86) concluded that the phonetic values of 131, 132, and 133 were -uo, -$\underset{\frown}{i}$o ("with close o"), and -$\underset{\frown}{i}$u, respectively.

However, a flaw of Karlgren's resconstruction, which Luó, Zhōu, and Lange overlooked, was to choose the o-vocalism found in the Middle Japanese reading of Kan-on and Go-on as the closest reflex of the Middle Chinese vocalism of 132, emphasizing the Kan-on's "close adherence to the Ts'ie yün sound system" (Karlgren, p. 266). Kan-on is the Japanese reading ' Chinese characters based on the seventh- to eighth-century Cháng-ān dialect. o-on was introduced to Japan still earlier. In the seventh and the eighth centuries, as is well-known, there were two contrasting vowels in Japanese (which I tentatively transcribe here as o_1 and o_2) which later converged and became Middle Japanese o. Karlgren's transliteration of the Middle Japanese hiragana/katakana spelling of Kan-on /Go-on cannot tell us much about the original Kan-on / Go-on value of the vowel in question, let alone its Middle Chinese counterpart.

The real clue is, in fact, the unrounded vowels attested in Korean and Vietnamese (see table (10)), which Karlgren (loc. cit.) dismissed as "the foreign rendering." This is an unlikely assumption, because syllables like ko, čo, so, kyo, čyo, syo, as well as kə, čə, sə, are attested in the native vocabulary of Korean.[11] In Vietnamese, also, o contrasts with ɨ and ə. I postulate, therefore, that Middle Chinese final 132 was -$\underset{\frown}{i}$ə. This reconstruction is more compatible with its classification in old sound tables as kāikŏu (open-mouthed), and it explains better the abovementioned finding of Zhōu, which suggests that while 131 and 133 had a rounded vowel, the nucleus vowel of 132 was not rounded. Japanese evidence also supports this reconstruction, as we shall see in section 4.2.

Now we proceed to 131, for which Karlgren and Lange reconstructed -*uo*. In fact, Lange (p. 85) started his argument "in favor of close -*o* or -*uo* final." He eventually settled on -*uo* evidently because he had already used -*o* for 132 and because the abovementioned data presented by Zhōu indicated that the nucleus vowel of 131 was more rounded than that of 132 but more open than that of 133. As we have seen, however, the nucleus vowel of 132 was not *o* but *ə*. In order to place the vocalism of 131 between *ə* and *u*, it is not necessary to make it a diphthong: hence my reconstruction, 131 -*o*, 132 -*iə*, and 133 -*iu*. These revisions remove the last exception to the theorems presented in chapter 2.

Indeed, the Kan-on reflex of words with final 131 without initial consonant is spelled as *wo* in Middle Japanese *kana* transcription. However, as mentioned above, the Middle Japanese *kana* transcription does not necessarily provide precise information about the phonological value of original Kan-on. Indeed, Old Japanese syllable *wo* (which contrasted with OJ *ə*, the precursor of Middle Japanese syllable *o*) was often spelled by *ongana* with final 131. However, this does not warrant, either, that the Middle Chinese final 131 had a labial medial. OJ *wo* was spelled not only by characters with 131 but also by those with 21 and 14 / 22. See table (12), which includes all characters used for spelling this Old Japanese syllable (the raised point in Karlgren's reconstruction is a glottal stop, i.e., • = ?).

(12)

Ongana used for OJ *wo*	MC final number	Karlgren's MC reconstruction
烏	131	• *uo*
塢	131	"
嗚	131	"
乎	131	*r uo*
呼	131	"
袁	21	*iwɐn*
遠	21	"
怨	21	"
越	14 / 22	*r uât / iwɐt*

Evidently, all of these characters were used to spell the same Old Japanese syllable because many of them were used interchangeably, as, e.g., 乎加 and 袁加 for *woka* "hill," 乎知, 遠知, and 越知 for *woti* "far away," and 安乎爾興 and 阿遠爾興之 for the pillow word for Nara, *awoniyəsi*.

If the Middle Chinese value of 131 were -*uo* (Karlgren / Lange) or -*wo* (Zhōu), it would have been ideal for spelling OJ *wo*; then why did scribes also use characters which had different vocalism to spell the same Old

Japanese syllable? But if the Middle Chinese value of 131 was -*o*, as other evidence shows, then the situation can be easily explained, i.e. (Sato 1977 : 180):

> ... the variety of characters used as ongana for <*wo*> was a result of compromise. The value of OJ <*wo*> was / wo /. The characters whose Middle Chinese value was *ʔo* or *ro* [i.e., characters with final 131] could spell the / o / of this syllable closely enough at the cost of losing the initial / w /, while *ywɐn / ywɐt / r uât* [i.e., those with finals 21 and 14 / 22] could spell the initial / w / closely enough, although the vocalism was different. Because there was no *wo* in Middle Chinese, one had to choose either the vocalism or the initial glide as the distinctive feature of the Old Japanese syllable / wo / when spelling it with a Chinese character.

The Japanese evidence does not contradict, but corroborates, my reconstruction of Middle Chinese final 131 as -*o*.

As mentioned above, Karlgren's reconstruction of 131 as -*uo* is based solely on the Middle Japanese Kan-on reading *wo* of 烏, 枵, 汚, 悪, etc., which I have shown to be not reliable enough. Note, on the other hand, the Vietnamese reflex of this final. As we saw in (8) in section 3.1, Vietnamese has numerous minimal pairs with / o / vs. / uo /. If 131 were -*uo*, therefore, the Vietnamese reflexs of the words listed in (9) would have been *kuo, uo, duo,* and *buo,* respectively (according to Karlgren's spelling; see note 8). The attested forms *ko, o, do,* and *bo* indicate conclusively that 131 was -*o*. (The Go-on reflex of 131, i.e., -*u,* will be discussed in section 4.1.3.)

4. Implication to Old Japanese o_1 and o_2

We saw in the previous chapter that comparative and historical evidence also supports my theory propounded in chapter 2 that no phonologically significant labial medial occurred before rounded nucleus vowels in Middle Chinese. This characteristic of Middle Chinese has substantial bearing on the reconstruction of the Old Japanese contrast $o_1 : o_2$, which in turn (but without falling into a vicious circle) further corroborates my theory just mentioned.

4.1. OJ o_1

Lange (pp. 119-21) concluded that Old Japanese *kō*-type *o* (i.e., o_1) was / wo / because in his stringently restricted corpus all *ongana* used to spell o_1-ending syllables had final 131, for which Karlgren had (incorrectly) reconstructed -*uo*. However, if we expand the scope of corpus and include the

Kojiki (A.D. 712) and the *Nihonshoki* (A.D. 720) as well as the *Man-yōshū*, we find that finals 41, 43, 116, 120, 121, 133, and 134 were also occasionally used to spell Old Japanese o_1, although 131 was still the overwhelming majority. Of these less frequently used finals, 116, 120, and 121 had the o-vocalism without the labial medial in Middle Chinese, as we saw in section 3.1; for the others, Karlgsen reconstructed 41 -$\hat{a}u$, 43 -$i\ddot{a}u$, 133 -iu, and 134 -$ɔu$.

Characters with these seemingly disparate finals were used interchangeably with those with final 131. See (13), for example, which lists three variant spellings of OJ $minato_1$ "bay, mouth of a river, harbor."

(13)
                                     Middle Chinese finals[12]
  a. 瀰難度 (*Nihonshoki*, song 120)   126A - 1 - 131
  b. 彌難斗 (*Nihonshoki*, song 87)   126A - 1 - 134
  c. 美奈刀 (*Man'yōshū*, 4018)   124B - 45 - 41

If Karlgren's reconstructions were correct, the Middle Chinese values of (13) would be (a) $mi\varepsilon$-$n\hat{a}n$-tuo, (b) $mi\varepsilon$-$n\hat{a}n$-$tɔu$, and (c) $mı$-$n\hat{a}i$-tau.[13] The data in (14) and (15) also indicate that 度, 斗, and 刀 were used interchangeably to spell OJ to_1.

(14) ato_1 "foot(step), leg"
  a. 阿度 (*Nihonshoki*: "Kamiyo I")
  b. 安刀 (*Man'yōshū* 3625)
(15) $sato_1$ "village"
  a. 佐刀 (*Man'yōshū* 859 and 3463)
  b. 佐斗 (*Kojiki*, song 83; and *Man'yōshū* 4108)

The use of 116, 120, 121, and 131 (i.e., -ong, -$iong$, -iok, and -o, according to my reconstruction) suggests that OJ o_1 was /o/. Note, especially, that 131 was the overwhelming majority. However, if we assume (as Lange did) that the Old Japanese spelling system was based on the Chinese pronunciation of the characters in a certain dialect at a certain period (i.e., the language codified in the *Qièyùn*), the fact that 41 (-$\hat{a}u$), 43 (-$i\ddot{a}u$), 133 (-iu), and 134 (-$ɔu$) were also used to transcribe the same Old Japanese vowel poses an inscrutable problem. In order to solve this problem, we must consider the Old Japanese spelling system to be a product of accumulated tradition which reflected phonological changes that occurred over a considerably long period of time. As we shall see in the following subsections, all of these finals had the o-vocalism immediately before the Middle Chinese period. This fact indicates that OJ o_1 was /o/ and explains why these finals were used interchangeably with 116, 120, 121, and 131, and it concomitantly corroborates my theory that 116, 117, 120, 121, and 131 had no labial on-glide in

Middle Chinese.

4.1.1. Final 41. The Old Chinese precursor of final 41 was -og, which became -ou and then MC -$\hat{a}u$ by dissimilation, as Karlgren (pp. 342-4) has demonstrated. Evidently, the tradition of using this final to transcribe OJ o_1 was established when -ou > -$\hat{a}u$ had not yet occurred in China. The fact that this final was more frequently used to transcribe o_1 in older texts (i.e., writing and inscriptions of the Suiko era and theretofore) and that its use tapered off after the census records of A.D. 702 also supports this view.

4.1.2. Final 43. Only one character with this final was used as *ongana* in Old Japanese. The character is 遙, and it appears only once in the word 阿遙比 ($ayo_1 pi$) "pair of strings to tie the wide-legged trousers below the knees" in the *Nihonshoki*, song 74. For this final, Karlgren (p. 342) postulates a sound change, OC -iog > MC -$i\ddot{a}u$. However, it is evident that 43 also underwent a development similar to that of 41 just mentioned: i.e., -iog > -iou > -$i\hat{a}u$ > -$i\ddot{a}u$ (of which -iou > -$i\hat{a}u$ involves the same dissimilation, o > $\hat{a}$ before a labial postnucleus, which also occurred in 41, and -$i\hat{a}u$ > -$i\ddot{a}u$ was the result of a regular change, $\hat{a}$ > $\ddot{a}$//i—).

Altough dismissed by Karlgren (p. 239) for "lack of interest" when he reconstructed MC -$i\ddot{a}u$ for this final, the regular Korean reflex of 43 is -yo. The majority of scribes in the early Old Japanese period was Korean immigrants; therefore, it is even possible that the reading of 遙 as yo_1 in the *Nihonshoki* was based on its Korean pronunciation.

4.1.3. Final 133. Only one character with this final was used to spell Old Japanese o_1-ending syllable: i.e., 虞 which was used to spell go_1 in the *Man'yōshū*. On the other hand, 133 was one of the three finals that were most commonly used to spell Old Japanese u-ending syllables (for example, 虞 was also used to spell OJ gu in the *Nihonshoki*). This latter fact is in accord with Karlgren's Middle Chinese reconstruction of 133 as -iu. Final 133 is attested regularly as -u and -yu in Sino-Korean and Kan-on, and predominantly as -u/-yu in Go-on and Vietnamese, as we saw in list (11) in section 3.2. However, Karlgren's -iu does not explain why 133 is sometimes attested as -o in Go-on (e.g., 拘 ko) and Vietnamese (e.g., 芻 so), nor why characters with this final was used to spell Sanskrit syllables with o as well as u "hundreds of times" as Zhōu (p. 121) has observed. (Zhōu's reconstruction, -iuo, seems to be a result of an ad hoc attempt to reconcile the -iu and -io suggested by these data.)

There are several clues to this problem. First of all, 131 (for which we reconstructed -*o*) and 133 (which is under discussion) are respectively classified as divisions I and Ⅲ of the same rhyme class, and both of them were offsprings of the Old Chinese 魚 class, which had the *a*-vocalism (i.e., OC -*ag* and OC -*iag*, respectively). In category 131, this *a* became *o* by the Middle Chinese period, and then *u* soon afterwards.[14] The vocalism of 133 also followed the same cousre, although the pace of the change may have been a little different. The data presented by Tōdō (1957) indicate that this final was -*io* during the period of Six Dynasties (A.D. 220-581), which became -*iu* by the end of the Táng dynasty (681-907). It is evident, therefore, that the use of 虞 which had final 133 for spelling the Old Japanese syllable *go₁* in the *Man'yōshū* reflects the period in which the matrix vowel of 133 was still *o* in Chinese.

4.1.4. Final 134. Karlgren (p. 268) first suggested MC -*əu* (/əw/) for this final on the basis of Kan-on (Middle Japanese) -*ou*, Vietnamese and Cantonese -*ɐu*, Wēnzhōu -*au*, Hakka -*eu*, etc., but concluded that "the *u* has been the predominant vowel and *ə* a very short and subordinated element," i.e., -*əu*, in order to explain the Korean and Go-on reflex -*u* which he also cited (loc. cit.).

However, Karlgren's own data (pp. 328-32, 355-6, and 362-3) indicate that there were three different sources of this Middle Chinese final, of which two had -*u* before it was diphthongized, i.e.:

(16) a . OC -*ug* } > -*u* > MC -*əu*
      b . OC -*u*

Karlgren did not refer to any Chinese character or word when he cited his correspondence set of 134, but he was evidently talking about words with the final which developed like (16a) or (16b), because the Korean and Go-on reflex of final 134 which was derived from the other source (to be discussed presently) is not -*u*. It is evident, therefore, that the -*u* in Korean and Go-on in Karlgren's data represents the stage of (16) where the final was still -*u*, i.e., before it was diphthongized. The final which developed like (16) was also used to transcribe OJ *u* as well as OJ *o₁*, of which the former also reflects the same stage. Our problem is, therefore, what stage of the development (-*ug* >) -*u* > -*əu* is represented by the OJ *o₁* spelled by the final of this category.

Ōno (1953:198) has speculated that the characters with Middle Chinese final -*əu* were used to spell Old Japanese syllables ending with [o] (i.e., *o₁*) because "Japanese people probably heard this diphthong as a monophthong *o*"

(my translation). This is unlikely because the *Kojiki* uses 母 to spell OJ *mo₂*, while the same text uses 斗 for *to₁*, and 樓 and 漏 for *ro₁*. All these four characters had Middle Chinese final 134, hence MC *məu*, *təu*, *ləu*, and *ləu*, respectively. It is unlikely that the same final -*əu* (or -*ɐu*, according to Ōno and Karlgren) could have been heard by Japanese as *o₁* as well as *o₂*, because these were two contrasting phonemes in their own language.

The clue to this riddle is found in the fact that Middle Chinese final 134 had another source than (16), i.e., the development discussed by Karlgren (pp. 328-32), which can be summarized as (17):

(17) a . OC -*əg* > MC -*əu* (final 134) // after a labial consonant
      b .   > MC -*ɐi* (final 46) // elsewhere

Compare, for example, the Korean reflexes of (16a) 戊 *mu* and (17a) 母 *mo*. Characters 斗 (which was used to spell OJ *to₁*), 樓, 漏 (both spelled OJ *ro₁*) as well as 侯 and 後 (these two were used to spell OJ *go₁* in the *Man'yōshū*), belonged to the former class (i.e., (16)), and 母 (used to spell OJ *mo₂*) belonged to the latter (17a). Moreover, as Zhōu's data (p. 145) show, the former class (i.e., (16a) and (16b)) was used during the later Han dynastry to transcribe Sanskrit syllables ending with *o*. In other words, this class underwent a series of sound changes (-*ug* >) -*u* > -*o* befor it became -*əu*. It is evident, therefore, that the use of this class to spell Old Japanese *o₁*-ending syllables reflects the stage where this class still possessed the *o*-vocalism, rather than a mishearing or forced hearing of -*əu* (or -*ɐu*) as -*o* as Ōno postulated. The phonological development of 母 was *məg* > *məu*. It never had the *o*-vocalism but had *ə* throughout, which was the phonological value of OJ *o₂* , as we shall see in section 4.2.

4.1.5. Summary on OJ *o₁*. I have examined all of the rhyme classes used to spell Old Japanese *o₁*-ending syllables. Table (18) is a summary of this examination.

(18)

MC category		Karlgren's MC reconstruction
41	OC -*og* > -*ou* > -*ɑu*	-*ɑu*
43A	OC -*iog* > -*iou* > -*iɑu*	-*iɑu*
116	OC -*ong* > -*ong*	-*uong*
120	OC -*iong* > -*iong*	-*iwong*
121	OC -*iuk* > -*iok*	-*iwok*
131	OC -*ag* > -*a* > -*o* (> -*u*)	-*uo*
133	OC -*iag* > -*ia* > -*io* > -*iu*	-*iu*
134	OC (-*ug* >) -*u* > -*o* > -*əu*	-*əu*

Note that all of these finals had the o-vocalism either in Middle Chinese or in the stage immediately preceding Middle Chinese, in spite of the divergent Middle Chinese reconstructions proposed by Karlgren. My conclusion is, therefore, that the phonological value of OJ o_1 was o.

One might find a similarity in methodology between mine used in this section and that of Ōno (1953) and criticize me because it was Ōno's work that Wenck (1959:18) specifically mentioned as an example of "ad hoc reconstruction" of Middle Chinese to fit one's own premises. My reconstruction is far from ad hoc, however. For 41 and 43A, the o-vocalism is recovered from Karlgren's Old Chinese data and subsequent developments which can be confirmed. The o-vocalism of 116, 120, and 121 are attested in Middle Chinese. The o-vocalism stages of 131, 133, and 134 are confirmed by Chinese transcription of Sanskrit words. One may still consider my treatment ad hoc because in many finals the o is not attested in the data from the eighth century when the majority of Old Japanese texts were written. It is evident, however, that Japanese scribes did not always use the *ongana* in accordance with contemporary Chinese sounds, but that they used them largely according to the spelling convention handed down from generation to generation, as we have already observed. Trying (as Lange has attempted) to explain the eighth-century Japanese phonology solely on the basis of the language codified in a Chinese dictionary compiled in A.D. 601 (the compilers had begun the work in 581) is unrealistic.

4.2. OJ o_2

While the majority of *ongana* for Old Japanese o_1-ending syllables had final 131, one of the main sets of *ongana* for o_2-ending syllables had final 132. Therefore, Lange postulated / o / for OJ o_2 because he had adopted Luó's reconstruction -$\underset{\wedge}{i}o$ as the Middle Chinese value of 132, as we saw in section 3.2. However, he was evidently puzzled by the fact that o_2-ending syllables were also spelled by characters belonging to many other rhyme classes for which unrounded vocalisms are reconstructed. He tried to explain this seeming confusion in terms of complementary distribution, but without success. For example, in spite of his suggestion (ibid., 120) that o_2 was [o] after velars, the palatal glide and the lateral and that it was [ə] after dentals and labials, only three of the six characters in his list of *ongana* for ko_2/go_2 belong to 132 for which he reconstructed -$\underset{\wedge}{i}o$, and the three others are with 125, for which he had adopted Lǐ's reconstruction -$i\partial$ instead of Karlgren's -(j)i; the ratio of [o] : [ə] after velars is 3 : 3, if his reconstructions are correct.[15]

In section 3.2 we proposed MC -$i\partial$ for 132 on the basis of (i) compara- tive data (especially Korean and Vietnamese ə instead of the unreliable o in

the Middle Japanese reading of Kan-on and Go-on) as well as (ii) the Chinese transcription of Sanskrit words (which suggests an unrounded back or non-front vowel) and (iii) the classification of this final as *kāikŏu* (open-mouthed) in old sound tables. This reconstruction is corroborated by (19), which lists all Middle Chinese finals (except 132) which are used to spell Old Japanse syllables with o_2.

(19)

MC final number	Karlgren's reconstruction Middle Chinese		Old Chinese
46	-$\hat{a}i$	<	-∂d
93	-$i\check{e}t$	<	-$i\partial d$
94	-$\underset{\wedge}{i}\partial n$	<	-$i\partial n$
98	-$u\partial n$	<	-$\underset{\wedge}{w}\partial n$
106	-$\underset{\wedge}{i}\partial p$	<	-$i\partial p$
107	-∂ng	<	-∂ng
108	-∂k	<	-∂k
109	-$\underset{\wedge}{i}\partial ng$	<	-$i\partial ng$
110	-$\underset{\wedge}{i}\partial k$	<	-$i\partial k$
125	-$(j)i$	<	-$i\partial g$
134	-$\underset{\wedge}{\partial}u$	<	-∂g

This list clearly indicates that Old Japanese o_2 was ə and indirectly con- firms my independently constructed theory that the nucleus vowel of Middle Chinese final 132, which was used to transcribe the same Old Japanese vocal- ism as the one transcribed by the finals listed in (19), was ə and not o.

List (19) also presents further evidence corroborating my theory that the *ongana* spelling of Old Japanese was a product of long tradition. During the Suiko era (A.D. 607-630), for example, characters with final 125 were most frequently used to spell Old Japanese o_2-ending syllables, but 132 became the most commonly used final to transcribe o_2 since the census record dated A.D. 702, evidently as a result of the phonological change occurred in final 125 in Chinese. Nevertheless, some characters with 125 continued to be in use to spell o_2, ko_2, and to_2 even in the latter half of the eighth century, as observed in Sato 1977:193.

4.3. Concomitant arguments

One may still prefer / wo / vs. / o / as the phonological representation of OJ o_1 vs. o_2, claiming that it is more "economical in terms of the number of phonemes in our system" because the system must have both / o / and / w /, anyway (Lange, p. 121). It is misleading and confusing, however, to render a single monophthongal segment by means of two symbols as in / wo /,

of which / w / is a symbols of "labiality" if this / wo / is preceded by a consonont (as suggested by Lange, loc. cit.), while treating / w / as a separate phoneme (i.e., an on-glide) if /wo/ is preceded by a vowel or a word boundary. The principle of "nonlinearity of sequence" advocated by Martin (1953:8) was once an important principle in phonemic description, but it has been outdated since the introduction of the theory of distinctive features (Jakobson et al. 1963), which has led us to treat each of the letter symbols like / w / and / o / as shorthand notation for a "bundle of phonological features" (as in Chomsky and Halle 1968).

Intending to corroborate Lange's theory that OJ $o_1 : o_2$ was / wo / : / o /, Unger (1975) presents some excellent etymologies of Old Japanese words which demonstrate that at least one source of o_1 was $* u + * a$.[16] However, Unger's diachronic evidence does not necessarily indicate that the eighth-century value of o_1 was a diphthong, for we also have the evidence of a prehistroic assimilation which created pairs of forms involving $o_1 : o_2$, such as so_2-ko_1 "that place" : $miya$-ko_1 "palace-place," so_2 "clothing" : so_1-de "sleeve", so_2-po ($< * so_2$-po_2) "red dye" : so_1-pi "reddish color," to_2-ko_2-ro_2 "(certain) place" : $kuma$-to_1 "hidden place," etc. As demonstrated in Sato 1977:293-312, the assimilation which generated these pairs involved only the backness feature of the non-high vowel; no "insertion of w" was involved in the process.

To sum up, the evidence presented in this chapter not only indicates that Old Japanese contrast $o_1 : o_2$ was $o : a$, but it also corroborates my theories (which I constructed without using Japanese data as crucial evidence) that the vocalism of Middle Chinese final 132 was a and that no Middle Chinese final contained more than one phonologically significant labial segment, hence no labial before a rounded vowel.

5. System-oriented reconstruction

Three different methods have been used in the present work, a system-oriented method (Ch. 2), a comparative-historical method (Ch. 3), and the use of corroborative evidence deduced from Old Japanese (Ch 4), all of which led to the same conclusion: no medial -u- / -w- occurred before MC o. Of these three, the system-oriented reconstruction was the most essential. Without it, the particular defect of Karlgren's reconstruction could not have been recognized. What the more conventional methods did in chapters 3 and 4 was primarily to confirm the validity of the conclusion reached by the first method.

As Saussure (1916) reminded his students repeatedly, language is a system. Note especially his following remark (ibid. 157, emphasis mine):

... c'est une grande illusion de considerer un terme simplement comme l'union d'un certain son avec un certain concept. Le définir ainsi, ce serait l'isoler du système dont il fait partie ; ce serait croire qu'on peut commencer par les termes et construire le systèm en en faisant la somme, alors qu'au contraire *c'est du tout solidaire qu'il faut partir pour obtenir par analyse les éléments qu'il renferme.*

By applying this principle to Indo-European linguistics, Saussure (1879) had laid the foundation for the technique of internal reconstruction. And this technique set off a chain reaction in the development of our knowledge of Indo-European, just as, in the field of natural science, the discovery of the periodic table of elements led scientists to predict the existence of still undiscovered elements, and the subsequent discovery of these predicted elements in turn helped refine the periodic table, solidifying the foundation of nuclear science. Saussure's examination of Indo-European morphological system led him to predict the existence of *coefficients sonantiques* (Saussure 1879), whose existence was confirmed 48 years later by Kuryłowicz (1927), and the discovery of these Indo-European "laryngeals" (= Saussure's *coefficients sonantiques*) led to a theory of proto-Indo-European root structure (Benveniste 1935:147 -187), and so on and on. With the advent of the system-oriented Saussurean internal reconstruction, Indo-European linguistics shook off the "shackles of strict Neo-Grammarian conventionalism" (Polomé 1965 : 44), and moved forward into the new dimension of a system science.

However, because Indo-Europeanists used this new method primarily in their study of morphological and morphophonemic systems, many scholars have come to foster a belief which Lange (p. 4) expresses as follows:

Another disadvantage of the method [of internal reconstruction] is that, based as it is upon morphophonemic patterns in which phonemes are restricted in occurrence to specific allomorphs of a morpheme, its applicability depends upon the complexity of the language's morphology. A language ... which possesses an extensive inflectional system ... will offer greater scope for the application of this method than would Chinese.

The present work has demonstrated that system-oriented reconstruction is possible even without recourse to morphological information. It has also demonstrated that results of system-oriented reconstruction are not a fiction created by the researcher's imagination but are verifiable in more conventional methods, provided that sufficient data are available.

Viewed as the phonological system of a natural language, Karlgren's reconstruction contains many abnormal characteristics besides those discussed in the present work. The number of low vowels is disproportionately large, the number of monophthongs is disproportionately small, the variety of on-glides is unrealistically rich, and there are such hard-to-pronounce quadruphthongs as -*jwie̯*, to name just a few. By rigorously applying the technique of system-orineted reconstruction, much of such abnormality may eventualsy be corrected, and I expect that we can also find corroborative evidence in the available corpus of data, as I did in the present work. Language is a system. I expect, therefore, that Middle Chinese phonological structure is far more systematic than what Karlgren and his followers have reconstructed. Although dismissed outright by Karlgren (pp. 366-7) as "speculation" and "often one-sided and over-simplifying," and although they are scarcely referred to since then as a result, such classic "phonemic" works as Chao 1940 and Martin 1953 may deserve re-examination with a new perspective.

FOOTNOTES

[1] Following the prevailing practice in the field, I omit the asterisk before reconstructed forms. A Chinese syllable consists of the INITIAL consonant and the FINAL, of which the latter consists of the MEDIAL glide, the NUCLEUS vowel, and the POSTNUCLEUS consonant or glide. A syllable must have a non-null nucleus, but all other components are optional elements and they can be null. Hereafter, all references to Karlgren are to Karlgren 1954, unless otherwise specified.

[2] Modern dialects have -*wo* (spelled as -*uo*) which contrasts with -*o*, but the former normally goes back to a *hékŏu* final with an unrounded nucleus vowel.

[3] Lange (p. 94) also suggests, although not explicitly, that his -*wi̯*- was an unsegmentable glide with labial and palatal features.

[4] Karlgren's Korean forms given here are all in Modern Korean. In Middle Korean, 中, 叔, 鍾, 燭, and 足 are attested as *tyuŋ*, *syuk*, *čyoŋ*, *č yok*, and *čyok*, respectively. Karlgren's Kan-on forms are transliteration of their Middle Japanese *hiragana/katakana* spelling (but his *p-* = MJ [∅]). Kan-on -*u* following a back vowel corresponds to Middle Chinese -*ŋ*. Note also: Karlgren's *tś* = *č* (unaspirated), *tś'* = *č* (aspirated), and *ś* = *š*.

[5] Karlgren spells this as *sok*, evidently by error. The Modern Korean reading of 足 is *čok*, and its Middle Korean reading is *čyok*.

[6] Although the earliest extant edition of the *Yùnjìng* has Zhāng Lí-zhī's preface dated 1161, the text is generally believed to have been written before the end of the Táng dynasty (A.D. 907) or by the middle of the tenth century, at the latest.

[7] Karlgren calls this language by its old name, Annamese (or Ann.).

[8] The forms in (8) are spelled according to the standard Vietnamese orthography (note especially *c* = /k /, *đ* = /d /, *ô* = /o/), in which tones are indicated diacritically: e.g., *đô'* (rising) "to bet," *đô̰'* (low-rising) "beans," *đô'* (falling) "to pour," *đô* (middle) "capital," *đồ* (low-falling) "thing," *độ* (low) "degree."

[9] Karlgren's Kan-on and Go-on forms given in (9), (10), and (11) are transliteration of their Middle Japanese *hiragana / katakana* spelling. For example, the Middle and Modern Japanese value of his *kiyo* is *kyo*. The Old Japanese reflexes of the nucleus vowels of 131 and 132 will be discussed below.

[10] Karlgren spells this as *uo*.

[11] I cannot explain why Modern Korean reading of 初 "beginning, onset" is *č o*. Cf. MK *č yə-z-əm* (> ModK *čaɨm*) "beginning, onset."

[12] The suffixes "A" and "B" after the reference number indicate the contrasting members of *zhóngniŭ* ("doublets"), which Karlgren has disregarded. See Arisaka 1937-39 for details.

[13] Karlgren's reconstruction of the first character of (13c) is *mi*, which would have been correct if the final of the character were 124A. See note 12 above. The use of 124B-character 美 (MC *mi*) for OJ *mi* (i.e., *kō*-type *mi*) was evidently by Korean influence, for the *zhóngniŭ* after labial initials is not attested in Korean.

[14] As Luó has ascertained, it was mostly before the Táng period that 131 was used to transcribe Skt. *o* in China, whereas during the Táng dynasty this final was usually used for Skt. *u*. That is to say, the change *o* > *u* had already occurred before the Japanese Nara period, when most of Old Japanese texts were written. This explains why many characters with final 131 are used to spell *u*-ending syllables as well as o_1-ending syllables in Old Japanese texts. In song 96 of the *Nihonshoki*, for example, 都 with final 131 is used to spell *tu* in 都麻 *tuma* "wife" and 奴都 $no_1 tu$ "in the field," while the same character is used to spell to_1 in 阿都 ato_1 "leg" in the same song (cf. 阿度 and 安刀 cited in (14)). See also 奴 (which also had final 131), which was used to spell no_1 as well as *nu* in the *Nihonshoki*: i.e., 奴都 $no_1 tu$ (mentioned above), 斯奴 $sino_1$ "small bamboo" (Kamiyo I), 都奴 $tuno_1$ "horn" (songs 84 and 97), etc., vs. 奴那波 *nunapa* "(a kind of) wather plant" (song 36), 奴底 *nute* "(a kind of) bell" (song 85), 資利奴 *sirinu* "I have learned" (song 77), 奴難等 $nunato_2$

"sound of jewelry" (Kamiyo I), etc. While determining the phonological value of OJ o_1 as /wo/ on the basis of Karlgren's reconstruction of the Middle Chinese final 131, Lange (pp. 108 and 109) lists 烏, 都, and 奴 (all of which had final 131) not as ongana for OJ wo, to, and no, but as ongana for OJ u, tu, and nu, respectively (he reconstructs OJ u as /u/). This is inconsistent with his principle because he does not consider Old Japanese spelling to reflect developments that occurred over a long period of time but as a synchronic reflex of the language codified in the Qièyùn (see Lange, p. 72). The examples cited in this note (and a host of other similar examples found in Old Japanese texts) refute this assumption of Lange.

[15] Lǐ's reconstruction -iə for 125 is not based on any solid comparative data, but it is based primarily on the reconstructed value of its Old Chinese precursor -iag and his desire to distinguish the Middle Chinese value of this final from that of 124 (which has "doublets" while 125 does not). The comparative data (such as those presented in Karlgren, p. 263) suggests that the vocalism of this final was i in Middle Chinese.

[16] Some of his etymologies are, however, unsound. For example, Shuri Qkwa "child" does not correspond to OJ ko_1 but to OJ ko_1-ra: i.e., Qkwa < kura < ko-ra. See Sh. ku :: OJ ko_1 "child, small" attested in ku-bashi "small bridge," ku-yuči "light snow," ku-hwiN "small bottle," ku-gusiku "small castle," etc. See also OJ makura :: Sh. maQkwa "pillow." J mekura :: Sh. miQkwa "blind," etc., which reflect the developement. Sh. Qkwa < kura.

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