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***j-pinyin*: A New Systematic Approach to the Japanese Transcription of Chinese Syllables**

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**Abstract**

In Japan, Chinese proper nouns (the name of a person/place, etc.) are transcribed into Japanese kana in many ways. The lack of a standard causes confusion in international as well as domestic communication. The solution proposed in this paper is a new Japanese kana notation called *j-pinyin*. This transcription system was built and improved based on an analysis of the results of listening experiments. With it, we attempt to standardize the method by which the pronunciation of Chinese proper nouns is written in Japanese.

**Keywords:** Chinese syllables, Japanese kana, standardization, proper nouns, listening experiment.

**1. Introduction**

In Japan, there is no a general rule for writing the pronunciation of Chinese proper nouns (the names of people/places, etc.) using Japanese kana, and the “Onyomi” style (a Japanese system of reading Chinese characters based on old Chinese pronunciation introduced from China more than 1,000 years ago and hereafter referred to as the Japanese style) was mainly used until a few years ago. Over the last decade, along with the rapid economic progress in China, there has been a dramatic increase in the number of economic, cultural and scientific exchanges between China and Japan. In order to smooth communications between the two countries, the Japanese government has encouraged Japanese to pronounce Chinese proper nouns in the Chinese way. Since there is no standard, the mass media independently made some provisional rules to deal with individual cases. The situation now is that a mixture of many different ways of writing the pronunciation of Chinese proper nouns is commonly used. It causes great confusion in communications. Furthermore, since the existing ways are not very close to the original Chinese sounds, they do not contribute very much to international communications.

With these things in mind, the authors have devised a new Japanese kana notation, called *j-pinyin*, in order to foster smoother communications. This paper is organized as follows. Section 2 surveys the present situation and the problems with existing Japanese transcription systems. The new Japanese kana notation, *j-pinyin*, is described in Section 3. The results of listening experiments carried out to

determine its validity, are presented in Section 4. And Section 5 presents some concluding remarks.

## 2. Problems with existing Japanese transcription systems

In Japan, foreign proper nouns are now usually written in the kana having the sounds closest to the original words. However, this is not a simple task for Chinese proper nouns due to the historical connection between China and Japan. There are three main Japanese transcription systems currently in use (Table 1).

**Table 1.** Systems for transcribing Chinese proper nouns into Japanese.

Classification	Style	Example
Method 1	Japanese style	邓小平 (トウシヨウヘイ) 重庆 (ジュウケイ) 桂林 (ケイリン)
Method 2	Chinese style	邓小平 (デンシヨウピン) 重庆 (チョンチン) 青岛 (チンタオ)
Method 3	English style	北京 (ペキン) 厦门 (アモイ) 香港 (ホンコン)

The Japanese style is the one most widely used because it is easy for Japanese. However, it has little connection with the modern Chinese pronunciation. As the examples in Table 1 show the Chinese politician 邓小平 is written トウシヨウヘイ (*Tou Shou Hei*) in the Japanese style while it is pronounced *Deng Xiao Ping* in Chinese. Since the sounds are quite different, Chinese and Japanese cannot understand each other until they write down the Chinese characters. In addition, there are three Chinese-based Japanese pronunciations for a *single* Chinese character: the Go-style (borrowed from southern China in ancient times), the Han-style (borrowed from northern China during the 6th and 7th centuries) and the Tou-style (borrowed from China after the 10th century). So, just in the Japanese style itself, the way of transcribing a Chinese name is not unique. Different people may pronounce the same name in different ways. It is clear that this method causes tremendous confusion and does not promote mutual understanding.

The Chinese style borrows Chinese sounds to write proper nouns. This eliminates some of the confusion. The problem is that there is no universally recognized standard, and the mass media have established ad hoc rules for individual cases based on their own systems. In fact, there are many variations arising from the different systems, and that results in another kind of confusion.

The English style borrows the English pronunciation of some widely used Chinese proper nouns (It is called the Wade-Giles spelling system, which was originally developed to help foreigners learn Chinese and was widely used to write Chinese proper nouns.). Since the 3rd U.N. Conference on the Standardization of Geographical Names in 1977 determined that Chinese place names should be spelled based on Chinese pinyin, the English style is rapidly disappearing.

We investigated some transcription systems used by popular publications ([1] ~ [5]). They have two main problems.

- (1) Divergence: Some transcriptions are very different from the original sounds. e.g., “an” → アヌ, “ang” → アン.
- (2) Confusion: Some sounds are not distinguished from each other. e.g., “j”, “q”, “zh” and “ch” → チー, “sh” and “x” → シー, “r” and “l” → リー, “eng” and “ong” → オン, “lu” and “ru” → ルウ.

The major problem in transcribing Chinese syllables into Japanese is due to the big difference in the number of sounds between Chinese and Japanese. Chinese has 38 vowels (including monoph-/diph-/multi- thongs and nasal sounds) and 21 consonants, while Japanese has only 5 vowels and 14 consonants. As a result, there are about four times as many Chinese syllables (more than 400) as Japanese ones (about 100). As can be imagined, without a systematic method, it is very hard to match all the Chinese syllables to Japanese kana on a one-to-one basis with no confused sounds.

### 3. Description of j-pinyin

We made the following four rules for the transcription of Chinese syllables into Japanese kana.

- (1) All Chinese syllables should be clearly distinguished.
- (2) The pronunciation of the Japanese kana should be as similar as possible to the original Chinese sounds.
- (3) The Japanese kana should be easily pronounceable by Japanese, as well as be easily understandable by Chinese.
- (4) Each Chinese syllable should be transcribed using at most five kana.

The following points were carefully considered in establishing the new Japanese kana transcription system.

- (1) Combinations of kana should be used effectively.
- (2) Both normal and lower case kana characters should be used. e.g., “ア” and “ア”.
- (3) The symbol indicating a prolonged sound, “—”, should be used.

Special attention was paid to sounds that are indistinguishable to the Japanese ear, such as the groups “zh”/“ch”/ “sh”, “j”/“q”/“x”, “l”/“r”, “n”/“ng”, etc. We made detailed observations, a strict analysis, and carefully planned experiments. The first version of j-pinyin was developed according to the following steps.

- (1) Our research group prepared a preliminary plan transcribing Chinese syllables into Japanese.
- (2) Three Chinese who are proficient in Japanese and three Japanese who are proficient in Chinese were asked to make their own plans for transcribing Chinese syllables into Japanese.
- (3) Those six plans were analyzed, and systematized and compared to our plan, and then our plan was modified.
- (4) Five Chinese and five Japanese were asked to take part in a listening experiment. The experimental materials were prepared with an emphasis on sounds that are easily confused. Then, our plan was modified a second time based on the experimental result and the first version of j-pinyin was completed (Table 2 - 4).

j-pinyin has the following characteristics.

- (1) It handles the vowels of “e” and “ü” correctly: The Chinese sound “e” is between the Japanese sounds “オ” and “ウ”. However, since “オ” and “ウ” correspond to “o” and “u”, respectively, neither of them can be used alone to match “e”. After repeated listening experiments on エオ → エウ → エア → ウア → ウオ → ウォ, the corresponding kana was finally determined to be “ウォ”. For “ü”, the corresponding kana was finally determined to be “イウイ” after listening experiments on ユ → イユイ → イウイ.
- (2) It handles aspirates, unaspirates, dorsals, retroflex consonants, etc. in consonants accurately.

2-1) Aspirates/unaspirates: They make the best use of the unvoiced/voiced sounds in Japanese.

b	p	d	t
バ line (バ, ビ, ブ, ベ, ボ)	パ line (パ, ピ, プ, ペ, ポ)	ダ line (ダ, チ, ツ, デ, ド)	タ line (タ, チ, ツ, テ, ト)
g	k	j	q
ガ line (ガ, ギ, グ, ゲ, ゴ)	カ line (カ, キ, ク, ケ, コ)	ジ	チ
zh	ch	z	c
ジュ	チュ	ズ	ツ

2-2) Retroflex consonants, velars and dorsals:

zh	ch	sh	j	q	x
ジュ	チュ	シュ	ジ	チ	シ

2-3) “r”/“l”: Since no sound corresponding to the Chinese “r” exists in Japanese, a

new attempt was made by using ラリルレロ for mark “l” and putting a subscript “ウ” before the kana for ラ.

Example: lao → ラオ / rao → ウラオ

long → ローン / rong → ウローン

2-4) “h”/“f”:

h	f
ハ、へ、ホ	フ

Example: hu → ホウー / heng → ホウオーン

fu → フ / feng → フオーン

2-5) “n”/“ng”:

an	ang	in	ing
アン	アーン	イン	イーン

#### 4. Experiments

After the first version of j-pinyin was finished, we conducted listening experiments to demonstrate its validity. First, we recorded six people’s pronunciation of j-pinyin (two Chinese announcers, two Japanese who are proficient in Chinese, and two Japanese who do not know Chinese at all). We compared and analyzed these three different kinds of phonetic data from the standpoints of linguistics and phonetics, and made some slight modification to the first version of j-pinyin. Then, we recorded the pronunciation of the modified j-pinyin by two Japanese who have never studied Chinese, and used these data as source material for listening experiments. Finally, we carried out listening experiments at a university in Beijing. The twenty subjects (ten male and ten female, average age: 20) were born in the northern part of China. They use mandarin in their daily lives. The following experiments were carried out.

- (1) Test of monosyllables: The phonetic data of j-pinyin was arranged randomly according to the 407 Chinese monosyllables. The subjects listened to each one of the j-pinyin data twice and then wrote down what they had heard in Chinese pinyin.
- (2) Test of the distinguishability of easily confused monosyllables: 26 pairs of easily-confused monosyllables were chosen from a total 52 of pairs of j-pinyin syllables, for example, “bo”/“po”, “li”/“ri”, “zi”/“zu”, etc. The subjects listened to the j-pinyin pronunciation of one of each pair and decided which one they had heard.
- (3) Test of the distinguishability of easily confused polysyllables: A group of syllables, including those used in Experiment (2), was used to compose pairs of pseudo-Chinese names, for example, 童伟/董伟, 鲁少发/鲁笑花, 班玉荣/潘义龙, etc. The subjects listened to the j-pinyin pronunciation of one of the names of each pair and decided which one they had heard.

Arranging and analyzing the experimental results yielded the following conclusions.

- (1) Monophthongs: The experimental results are shown in Fig. 1. The quantitative difference of monophthongs between Chinese and Japanese is small. In fact, there are six monophthongs in Chinese (“a”, “o”, “e”, “i”, “u” and “ü”, not counting “er”), while there are five in Japanese (a – ア, i – イ, u – ウ, e – エ, o – オ). Except for “ü”, the other five monophthongs in Japanese use the same characters as those in Chinese. Furthermore, except for “e”, the Japanese pronunciations of the remaining four monophthongs are also close to Chinese at first hearing. However, comparing the methods of pronunciation, it is clear that the mouth is not as open for Japanese monophthongs as it is for Chinese ones. So, the pronunciations are not very close. The results of a speech analysis showed that, if the Japanese monophthongs “a”, “i”, “u” and “o” themselves are used to indicate the corresponding Chinese ones, the phonation is not sufficient. Thus, the experimental results were understandable. Among these results, the percentage of correct answers for “a” and “i” was very high, though the difference in pronunciation cannot be ignored. This is because these two monophthongs are not readily confused with other vowels. On the other hand, “o” and “u” are easily confused with other similar sounds, such as “o” with “uo”, “ou”, “u”, “ao”, etc., “u” with “e”, “er”, etc., This produced the difference in pronunciation between Chinese and Japanese. “e” and “ü” do not exist in Japanese. Even though we tried all possible means of investigation, analysis and modification, the results were disappointed (the percentage of correct answers was 0% for “e” and 5% for “ü”). But it is worth noting that 25% of the subjects thought they heard “e” when the source data was “ウ” or “ウア”. That provides us some hints for modifying and fixing the j-pinyin for “e”.

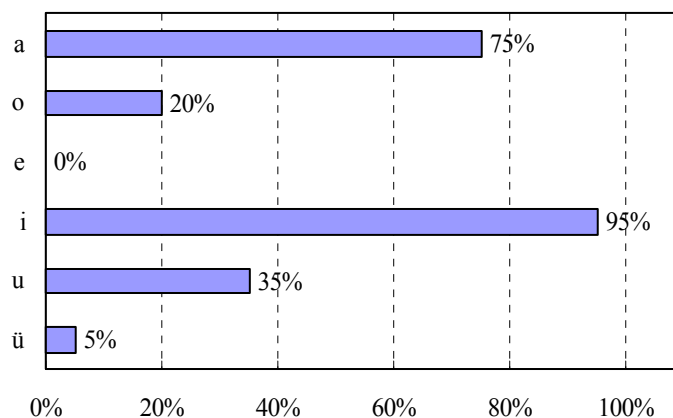
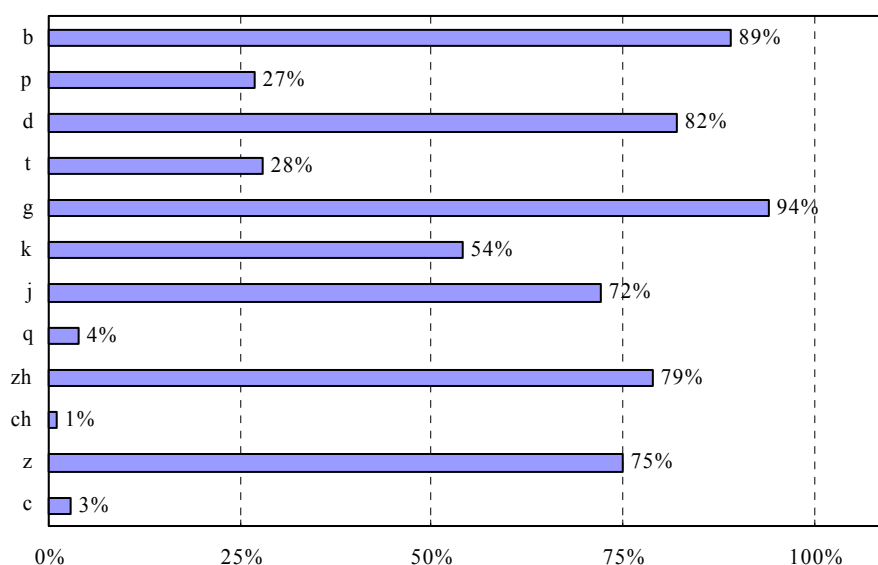


Fig. 1. Percentage of correct answers for monophthongs.

(2) Aspirates/unaspirates: The experimental results are shown in Fig. 2. It is clear that the percentage of correct answers is much higher for unaspirates than for aspirates. It proves that using Japanese sonances for the transcription was successful. However, before the experiments it was not thought that the percentage of correct answers for aspirates using Japanese resonances would be that low. After investigating the actual cause, we came to the following conclusions.

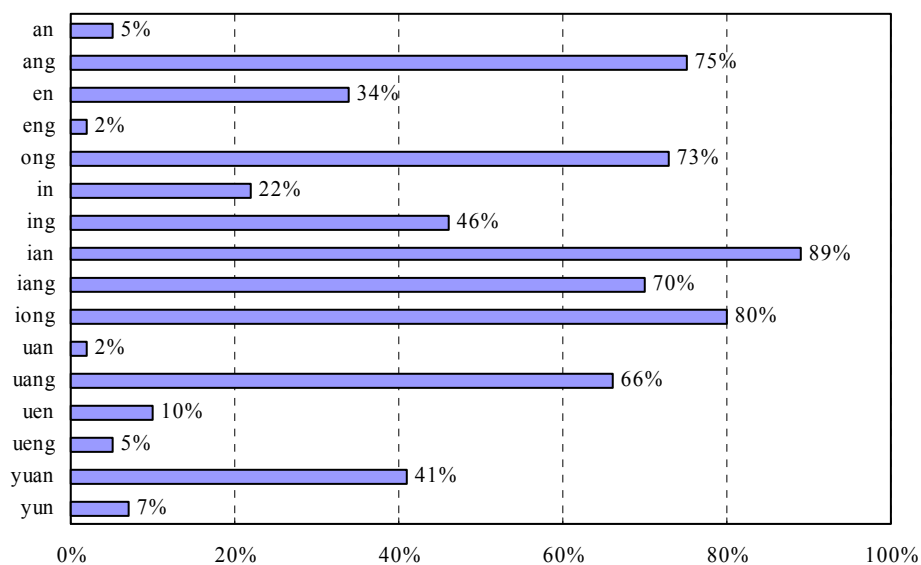
2-1) Japanese resonant consonants are, in fact, unaspirated. So, when Japanese pronounce a resonant consonant, their vocal cords vibrate either not at all or just a little bit. That makes it very hard for Chinese to decide if the sound is an aspirate or not, especially when one is not able to compare it with an unaspirated sonance.

2-2) The aspirates for which the percentage of correct answer was very low are the dorsal “q”, the retroflex consonant “ch”, and the dorsal “c”. Since the position of the tongue in pronouncing each one is near the teeth, the air passage is not closed at the beginning of the pronunciation, and duration of the air passing through the oral cavity is longer and the impulsive force is also weaker than for other aspirates. They are very difficult for Japanese to pronounce because they do not exist in Japanese. The experimental results clarified the problem points in transcribing Chinese syllables into Japanese, and showed that the resonances in Japanese are quite different from the aspirates in Chinese.



**Fig. 2.** Percentage of correct answers for aspirated/unaspirated consonants.

- (3) “l” and “r”: Since Japanese has no retroflex consonants (including “zh”, “ch” and “sh”), they basically write the pronunciation of foreign words without distinguishing “l” from “r”. For instance, light/right → ライト. In this study, in order to draw a clear distinction between “l” and “r”, we use the kana ラリルレロ for “l”, and handle “r” by putting a subscript ヅ before those kana. The experimental results show that the percentage of correct answers is 58% for “r”. More specifically, it is 100% for “rou”, 70% for “ruo” and 60% for “rui”. It may be said that this new attempt has made a breakthrough in solving the problem of distinguishing “l” and “r” which was previously considered insolvable. Our interim report ([6]), which was presented at the 12th Modern Chinese Education Research Symposium, created a sensation. Many people were interested in this method and some scholars decided to adopt this method in their new books (e.g., [7]).



**Fig. 3.** Percentage of correct answers for nasal sounds.

- (4) “n” and “ng”: The nasal sounds in Japanese can be divided into “n”, “ng”, etc. if we deal with them strictly from the phonetic point of view according to the area of contact of the tongue. For example, The area of contact for the “n” in “案内—アンナイ” is near the tip of tongue, and is very close to the Chinese sound “n”; while the area of contact for the “n” in “案内—アンガイ” is near the root of the tongue, and is very close to the Chinese sound “ng”. However, Japanese do not pay any attention to it because there is no difference in meaning even if the pronunciation is careful and precise. To deal with this problem, this study used the prolongation symbol “—” for “ng”. e.g., an → アン, ang → アン—. Fig. 3 shows the experimental results.



Unfortunately, the results are not as good as expected. Let us take a look at the pairs “an”/“ang” and “in”/“ing”. Superficially it seems that the percentage of correct answers for “ng” is much higher than that for “n”. However, a careful analysis of the experimental results reveals that the incorrect answers for “an” were all thought to be “ang”; and it is the same for “in”. So, there is a very high probability that Chinese would hear the sound as “ng” regardless of whether the Japanese source sounds were “アン” or “アーン”, or “イン” or “イーン”. This is because area of contact of the tongue is not fixed for a Japanese nasal sound and depends on the next vowel. Thus, this confusion is very hard to avoid.

## 5. Conclusions

Japanese started to pronounce proper nouns from countries where Chinese characters are used according to the original pronunciation in 1984. Since the pronunciation of Korean is easy to handle in Japanese, Korean proper nouns are accurately pronounced in the Korean way nowadays. In contrast, the transcription of Chinese proper nouns into Japanese is not satisfactory. It is true that the tendency to use the Chinese pronunciation for writing Chinese proper nouns has been gaining strength during the last decade. For example, the pronunciation of “西安” is now written “シーアン” instead of “セイアン” in almost all the mass media. However, due to the complexity of Chinese pronunciation, there is no universally recognized standard. One newspaper in Japan, the Asahi Daily, developed a way of transcribing the main Chinese syllables because the editorial office had received a great number of inquiries for further information about the pronunciation of Chinese proper nouns. In like manner, other large newspaper, broadcasting, travel, publishing, etc. companies in Japan have their own ways of writing Chinese syllables. It is unfortunate that none of them are suitable for general use due to the incompleteness and other inadequacies.

The experiments have proven that many of the techniques of transcribing Chinese syllables into Japanese in the first version of j-pinyin are very effective while some points still need to be improved. We are now exploring ways to solve the remaining problems. e.g., putting a Japanese germinated consonant at the beginning of j-pinyin to make it easier to distinguish the Chinese aspirates: pa → ツパ, ta → ツタ, q → ツチ, ch → ツチュ, c → ツツ, etc.; using Japanese palatalized syllables to reduce the number of kana in Japanese transcriptions: iao イアオ → ヤオ, iou イオウ → ヨウ, ü イウイ → ユイ; etc.

In addition, we focused too much on making a unique correspondence between the sounds of the two languages in the first version. For instance, in order to distinguish “zh”/“ch”/“sh” from “j”/“q”/“x”, we used ジュ, チュ and シュ for “zh”, “ch” and “sh”; respectively; but the ュ influences the pronunciation of the next vowel. We are trying to modify the Japanese transcription of consonants according to the vowels.

In the future, we are going to analyze the experimental results systematically from different standpoints, and then revise and finish the first version.

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Table 2. j-pinyin (Part 1)

Vowel Consonant	Without a head vowel													
	a	o	e	-i	er	ai	ei	ao	ou	an	en	ang	eng	-ong
	a	o	e		er	ai	ei	ao	ou	an	en	ang	eng	-ong
	ア	オ	ウオ		ウォル	アイ	エイ	アオ	オウ	アン	エン	アーン	ウォーン	オーン
b	ba	bo				bai	bei	bao		ban	ben	bang	beng	
	バ	ボ				バイ	ベイ	バオ		バン	ベン	バーン	ブォーン	
p	pa	po				pai	pei	pao	pou	pan	pen	pang	peng	
	パ	ポ				パイ	ペイ	パオ	ポウ	パン	ペン	パーン	プォーン	
m	ma	mo	me			mai	mei	mao	mou	man	men	mang	meng	
	マ	モ	ムオ			マイ	メイ	マオ	モウ	マン	メン	マーン	ムォーン	
f	fa	fo					fei		fou	fan	fen	fang	feng	
	ファ	フォ					フェイ		フオウ	ファン	フェン	ファン	フォーン	
d	da		de			dai	dei	dao	dou	dan	den	dang	deng	dong
	ダ		ドウオ			ダイ	デイ	ダオ	ドウ	ダン	デン	ダーン	ドウォーン	ドーン
t	ta		te			tai		tao	tou	tan		tang	teng	tong
	タ		トウオ			タイ		タオ	トウ	タン		ターン	トウォーン	トーン
n	na		ne			nai	nei	nao	nou	nan	nen	nang	neng	nong
	ナ		ノウオ			ナイ	ネイ	ナオ	ノウ	ナン	ネン	ナーン	ヌォーン	ノーン
l	la		le			lai	lei	lao	lou	lan		lang	leng	long
	ラ		ルオ			ライ	レイ	ラオ	ロウ	ラン		ラン	ルォーン	ローン
g	ga		ge			gai	gei	gao	gou	gan	gen	gang	geng	gong
	ガ		グオ			ガイ	ゲイ	ガオ	ゴウ	ガン	ゲン	ガン	グォーン	ゴーン
k	ka		ke			kai	kei	kao	kou	kan	ken	kang	keng	kong
	カ		クオ			カイ	ケイ	カオ	コウ	カン	ケン	カーン	クォーン	コーン
h	ha		he			hai	hei	hao	hou	han	hen	hang	heng	hong
	ハ		ホウオ			ハイ	ヘイ	ハオ	ホウ	ハン	ヘン	ハーン	ホウォーン	ホーン
zh	zha		zhe	zhi		zhai	zhei	zhao	zhou	zhan	zhen	zhang	zheng	zhong
	ジュア		シュオ	ジュ		ジュヤイ	ジュエイ	ジュアオ	ジュオウ	ジュヤン	ジュエン	ジュヤーン	ジュォーン	ジュォーン
ch	cha		che	chi		chai		chao	chou	chan	chen	chang	cheng	chong
	チュア		チュオ	チュ		チュヤイ		チュアオ	チュオウ	チュヤン	チュエン	チュヤーン	チュォーン	チュォーン
sh	sha		she	shi		shai	shei	shao	shou	shan	shen	shang	sheng	
	シュア		シュオ	シュ		シュヤイ	シュエイ	シュアオ	シュオウ	シュヤン	シュエン	シュヤーン	シュォーン	
r			re	ri				rao	rou	ran	ren	rang	reng	rong
			ウルオ	ウリ				ウラオ	ウロウ	ウラン	ウレン	ウラン	ウルォーン	ウローン
z	za		ze	zi		zai	zei	zao	zou	zan	zen	zang	zeng	zong
	ザ		ゾオ	ズ		ザイ	ゼイ	ザオ	ゾウ	ザン	ゼン	ザーン	ズォーン	ゾーン
c	ca		ce	ci		cai		cao	cou	can	cen	cang	ceng	cong
	ツア		ツオ	ツ		ツアイ		ツアオ	ツオウ	ツアン	ツエン	ツァーン	ツォーン	ツォーン
s	sa		se	si		sai		sao	sou	san	sen	sang	seng	song
	サ		スオ	ス		サイ		サオ	ソウ	サン	セン	サーン	スォーン	ソーン

Table 3. j-pinyin (Part 2).

Vowel Consonant	Head vowel "i"									
	i	ia	iao	ie	iou	ian	in	iang	ing	iong
	yi	ya	yiao	ye	you	yan	yin	yang	ying	yong
	イ	イア	イアオ	イエ	イオウ	イエン	イン	イァーン	イーン	イォーン
b	bi		biao	bie		bian	bin		bing	
	ビ		ビアオ	ビエ		ビエン	ピン		ピン	
p	pi		piao	pie		pian	pin		ping	
	ピ		ピアオ	ピエ		ピエン	ピン		ピン	
m	mi		miao	mie	miu	mian	min		ming	
	ミ		ミアオ	ミエ	ミウ	ミエン	ミン		ミン	
d	di		diao	die	diu	dian			ding	
	ディ		ディアオ	ディエ	ディウ	ディエン			ディーン	
t	ti		tiao	tie		tian			ting	
	ティ		ティアオ	ティエ		ティエン			ティーン	
n	ni		niao	nie	niu	nian	nin	niang	ning	
	ニ		ニアオ	ニエ	ニウ	ニエン	ニン	ニァーン	ニン	
l	li	lia	liao	lie	liu	lian	lin	liang	ling	
	リ	リア	リアオ	リエ	リウ	リエン	リン	リァーン	リーン	
j	ji	jia	jiào	jie	jiu	jian	jin	jiang	jing	jiong
	ジ	ジア	ジアオ	ジエ	ジウ	ジエン	ジン	ジャーン	ジン	ジョーン
q	qi	qia	qiao	qie	qiu	qian	qin	qiang	qing	qiong
	チ	チア	チアオ	チエ	チウ	チエン	チン	チャーン	チーン	チォーン
x	xi	xia	xiao	xie	xiu	xian	xin	xiang	xing	xiong
	シ	シア	シアオ	シエ	シウ	シエン	シン	シャーン	シン	シォーン

Table 4. j-pinyin (Part 3).

Vowel Consonant	Head vowel "u"									Head vowel "ü"			
	u	ua	uo	uai	uei	uan	uen	uang	ueng	ü	üe	üan	ün
	wu ウ	wa ウア	wo ウオ	wai ウアイ	wei ウエイ	wan ウアン	wen ウエン	wang ウアーン	weng ウォーン	yu イウイ	yue イウエ	yuan イウエン	yun イウン
b	bu ブ												
p	pu プ												
m	mu ム												
f	fu フ												
d	du ドウ		duo ドウオ		dui ドワイ	duan ドゥアン	dun ドゥン						
t	tu トゥ		tuo トゥオ		tui トゥイ	tuan トゥアン	tun トゥン						
n	nu ヌ		nuo ヌオ			nuan ヌアン				nü ニユイ	nüe ニユエ		
l	lu ル		luo ルオ			luan ルアン	lun ルン			lü リュイ	lüe リュエ		
g	gu グ	gua グア	guo グオ	guai グアイ	gui グイ	guan グアン	gun グン	guang グアーン					
k	ku ク	kua クア	kuo クオ	kuai クアイ	kui クイ	kuan クアン	kun クン	kuang クアーン					
h	hu ホウ	hua ホウア	huo ホウオ	huai ホウアイ	hui ホウイ	huan ホウアン	hun ホウン	huang ホウアーン					
j										ju ジュイ	jue ジュエ	juan ジュエン	jun ジュイン
q										qu チュイ	que チュエ	quan チュエン	qun チュイン
x										xu シュイ	xue シュエ	xuan シュエン	xun シュイン
zh	zhu ジュウ	zhua ジュウア	zhuo ジュウオ	zhuai ジュウアイ	zhui ジュイ	zhuang ジュアン	zhun ジュン	zhuang ジュアーン					
ch	chu チュウ	chua チュウア	chuo チュウオ	chuai チュウアイ	chui チュイ	chuan チュアン	chun チュン	chuang チュアーン					
sh	shu シュウ	shua シュウア	shuo シュウオ	shuai シュウアイ	shui シュイ	shuan シュアン	shun シュン	shuang シュアーン					
r	ru ウル	rua ウルア	ruo ウルオ		ru ウルイ	ruan ウルアン	run ウルン						
z	zu ズ		zuo ズオ		zui ズイ	zuan ズアン	zun ズン						
c	cu ツ		cuo ツオ		cui ツイ	cuan ツアン	cun ツン						
s	su ス		suo スオ		sui スイ	suan スアン	sun スン						