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JPINYIN: A First Step toward the Standardization of the Pronunciation of Chinese Proper Nouns in Japanese

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1. Introduction

In Japan, foreign proper nouns (the names of people, places, etc.) are generally written using the kana that sound closest to the original pronunciation of the words. However, this is not a simple task for Chinese proper nouns, due in part to the historical connection between China and Japan. Cultural exchanges between the two countries have a long history going back over 2000 years; and in three periods, there were massive importations of Chinese from different regions of China into Japanese. As a result, though Chinese and Japanese use some of the same Chinese characters for writing, they pronounce the characters differently and cannot understand each other when speaking, even proper nouns. On the other hand, over the last decade, along with the rapid economic progress in China, there has been a dramatic increase in the number of governmental, economic, cultural, scientific and technological exchanges between China and Japan. According to statistics published by the Japanese Ministry of Justice, the number of Japanese nationals who visited China reached 2.2 million in 2000, which is five times of the number ten years ago. In particular, since China became a member of the WTO in 2001, exchanges between the two countries have been expanding steadily and rapidly. Nevertheless, a variety of problems hinder communications between them; and one of them is how Japanese people pronounce Chinese proper nouns.

There are three main transcription systems currently in use in Japan, which can be termed the Japanese, English, and Chinese styles (Table 1). The Japanese style is based on very old Chinese pronunciation, and is the most common because it is easy for Japanese to use. The chief drawback is that it bears little relationship to modern Chinese pronunciation, as the examples in Table 1 show. For instance, the name of the Chinese politician 邓小平 is written トウシャウヘイ *(Tou Shou He*i) 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. A further complication is the fact that the Japanese style can be broken down into three main subtypes: Go-on (the Japanese version of Wu pronunciation; borrowed from southern China in ancient times), Kan'on (the Japanese version of Han pronunciation; borrowed from northern China during the 7th and 8th centuries) and Tou-on (the Japanese version of Tang pronunciation; borrowed from China after the 10th century). For example, the Chinese character 行 is pronounced as "Gyou" in the word 修行 SyuGyou (Go-on), "Kou" in 孝行 (Kan' on), and "An" in 行灯 (Tou-on). That is, the Japanese style does not provide a unique way of transcribing a Chinese name, and different people may pronounce the same name in different ways. Consequently, this method causes tremendous confusion and does not promote mutual understanding.

The English style borrows the English pronunciation of some common Chinese proper

EAFTerm Newsletter
THE EAST ASIA FORUM ON TERMINOLIGY

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

In order to smooth communications between China and Japan, the Japanese government has encouraged Japanese to pronounce Chinese proper nouns in the Chinese way since the 1980s. The Chinese style adapts Chinese sounds to write proper nouns, thereby eliminating some of the confusion. The problem is that there is no universally recognized standard, and the mass media have independently 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. Furthermore, since the existing ways are not very close to the original Chinese sounds, they do not contribute very much to international communication.

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 (ジユウケイ) 桂林 (ケイリン)
Method 2	English style	北京 (ペキン) 厦门 (アモイ) 香港 (ホンコン)
Method 3	Chinese style	邓小平 (デンシヨウピン) 重庆 (チヨンチン) 青岛 (チンタオ)

To solve this problem, the authors established a research group in 2001, and devised a new Japanese kana notation called *j-pinyin* in order to foster smoother communications. It has undergone a series of modifications based on listening experiments, and the current version is at a fairly satisfactory level. This report summarizes the current state of the system and points out directions for further development.

2. j-pinyin

An investigation of various transcription systems used in popular publications ([1] ~ [5]) revealed two main problems:

(1) Divergence: Some transcriptions are very different from the original sounds, e.g., “an” → ァヌ, “ang” → ァン.

(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”→ ォン, “lu” and “ru” → ルゥ.

The major problem in transcribing Chinese syllables into Japanese is the big difference in the number of sounds between the two languages. 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 with Japanese kana on a one-to-one basis with no confused sounds.

Four rules were devised to govern 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.

EAFTerm Newsletter
THE EAST ASIA FORUM ON TERMINOLIGY

(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 “ァ”.

(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. Detailed observations were made, followed by a thorough analysis and carefully planned experiments. The process of developing the first version of j-pinyin involved the following steps:

(1) Our research group prepared a preliminary plan for 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) The six plans were analyzed, 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 results, and the first version of j-pinyin was completed

After the first version of j-pinyin was finished, listening experiments were conducted to demonstrate its validity and pinpoint any problems. First, recordings were made of 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). The data were compared and analyzed both linguistically and phonetically; and based on the results, some slight modifications were made to the first version of j-pinyin. Then, the pronunciation of the modified j-pinyin spoken by two Japanese who have never studied Chinese was recorded, and these data were used as source material for listening experiments. Finally, listening experiments were conducted at a university in Beijing in September, 2001. 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. Three types of tests were carried out: a test of monosyllables, a test of the distinguishability of easily confused monosyllables, and a test of the distinguishability of easily confused polysyllables. Based on an analysis of the results, some modifications were made to the first version. Next, the pronunciation of the new version of j-pinyin was recorded (by two Japanese who do not know Chinese at all), and the data were prepared for listening experiments. Then, listening experiments were conducted at a university in Tianjin in August, 2002 to test the validity of the modification. The items tested were the same as those tested in Beijing, but the modified parts received particular scrutiny and emphasis. After a careful examination of the results, j-pinyin was again modified, and then tested in Tokyo (by ten Chinese who know Japanese). Finally, the second version of j-pinyin was obtained (Table 2 - 4). This version is much more mature than the first one, and should prove useful for a variety of applications.

j-pinyin has the following characteristics.

(1) It handles the vowels “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, the appropriate kana was finally determined to be “ウ ォ”. For “ü”, the appropriate kana was finally determined to be “ユイ”.

(2) It handles aspirates, unaspirates, dorsals, retroflex consonants, etc. in consonants accurately.

EAFTerm Newsletter
THE EAST ASIA FORUM ON TERMINOLIGY

2-1) Aspirates/unaspirates: The best use of unvoiced/voiced sounds in Japanese is made.

b	p	d	t
バ line バ,ビ,ブ,ベ,ボ	パ line パ,ピ,プ,ペ,ポ	ダ line ダ,ヂ,ヅ,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 “l” and putting a subscript “ゥ” before these kana for “r”.

Example:

lao → ラオ / rao → ゥラオ

long → ローン / rong → ゥローン

2-4) “h”/“f”:

h	f
ハ、ヘ、ホ	フ

Example:

hu → ホゥー / heng → ホゥォーン

fu → フ / feng → フォン\

2-5) “n”/“ng”:

an	ang	in	ing
アン	アーン	イン	イーン

3. Conclusions

In 1984, Japanese started to base the pronunciation of proper nouns from countries where Chinese characters are used on the original pronunciation. 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 “セィアン” in almost all the mass media. However, due to the complexity of Chinese pronunciation, there is no universally recognized standard. The main newspaper, broadcasting, travel, publishing, etc. companies in Japan have developed their own ways of writing Chinese syllables. It is unfortunate that none of them are suitable for general use due to their incompleteness and other inadequacies.

After a thorough investigation of existing rules, work was begun on devising a systematic kananotation for transcribing Chinese syllables into Japanese. Many techniques have been employed, and thevalidity of the resulting system has been proven by experiments. After two stages of modifications, a generally satisfactory version has been obtained. To further refine it, ways of solving some minor problems are now being explored. At the same time, three-kana and four-kana versions, in which each Chinese syllable is transcribed using at most three or four kana, are being developed to suit various needs.

In the near future, work will begin on (a) building an input support system for Chinese proper nouns for computers running a Japanese operating system, (b) creating electronic Japanese/Chinese and Chinese/Japanese name dictionaries, and (c) constructing an intelligent retrieval system for computers using j-pinyin.

Acknowledgments

The authors wish to thank Professors Toshio Yokoi and Kimio Ibuki of the Tokyo University of Technology for helpful discussions and advice.

They are also grateful to Mr. Katsumi Yokobori of the editorial board of People's China, Mr. Hajime Shimada, and Ms. Seiko Yamasaki for helpful suggestions and comments.

This research was supported in part by the Japanese Ministry of Education, Culture, Sports, Scienceand Technology under grant number 14510633

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EAFTerm Newsletter
THE EAST ASIA FORUM ON TERMINOLIGY

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	ウォ		ウォル	アイ	エイ	アオ	オウ	アン	エン	アーン	ウォン	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	プォン	
m	ma	mo	me			mai	mei	mao	mou	man	men	mang	meng	
	マ	モ	ムォ			マイ	メイ	マオ	モウ	マン	メン	マーン	ムォン	
f	fa	fo					fei		fou	fan	fen	fang	feng	
	ファ	フォ					フェイ		フォウ	ファン	フェン	ファーン	フォン	
d	da		de			dai	dei	dao	dou	dan	den	dang	deng	dong
	ダ		ドウォ			ダイ	デイ	ダオ	ドウ	ダン	デン	ダーン	ドォン	ドーン
t	ta		te			tai		tao	tou	tan		tang	teng	tong
	タ		トウォ			タイ		タオ	トウ	タン		ターン	トォン	トーン
n	na		ne			nai	nei	nao	nou	nan	nen	nang	neng	nong
	ナ		ウォ			ナイ	ネイ	ナオ	ノウ	ナン	ネン	ナーン	ヌォン	ノーン
l	la		le			lai	lei	lao	lou	lan		lang	leng	long
	ラ		ルォ			ライ	レイ	ラオ	ロウ	ラン		ラーン	ルォン	ローン
g	ga		ge			gai	gei	gao	gou	gan	gen	gang	geng	gong
	ガ		グォ			ガイ	ゲイ	ガオ	ゴウ	ガン	ゲン	ガーン	グォン	ゴーン
k	ka		ke			kai	kei	kao	kou	kan	ken	kang	keng	kong
	カ		クォ			カイ	ケイ	カオ	コウ	カン	ケン	カーン	クォン	コーン
h	ha		he			hai	hei	hao	hou	han	hen	hang	heng	hong
	ハ		ホウォ			ハイ	ヘイ	ハオ	ホウ	ハン	ヘン	ハーン	ホウォン	ホーン
zh	zha		zhe	zhi		zhai	zhei	zhao	zhou	zhan	zhen	zhang	zheng	zhong
	ジャア		シュオ	ジ		ジャイ	ジエイ	ジャオ	ジョウ	ジャン	ジエン	ジャーン	ジュヨン	ジョーン
ch	cha		che	chi		chai		chao	chou	chan	chen	chang	cheng	chong
	チア		チュオ	チ		チャイ		チャオ	チョウ	チャン	チエン	チャーン	チュヨン	チョーン
sh	sha		she	shi		shai	shei	shao	shou	shan	shen	shang	sheng	
	シャア		シュオ	シ		シャイ	シエイ	シャオ	ショウ	シャン	シエン	シャーン	シュオン	
r			re	ri				rao	rou	ran	ren	rang	reng	rong
			ウルォ	ウリ				ゥラオ	ゥロウ	ゥラン	ゥレン	ゥラーン	ゥルォン	ゥローン
z	za		ze	zi		zai	zei	zao	zou	zan	zen	zang	zeng	zong
	ザ		ズォ	ズ		ザイ	ゼイ	ザオ	ゾウ	ザン	ゼン	ザーン	ズォン	ゾーン
c	ca		ce	ci		cai		cao	cou	can	cen	cang	ceng	cong
	ツァ		ツオ	ツ		ツアイ		ツァオ	ツォウ	ツァン	ツェン	ツァーン	ツォン	ツォーン
s	sa		se	si		sai		sao	sou	san	sen	sang	seng	song
	サ		スォ	ス		サイ		サオ	ソウ	サン	セン	サーン	スォン	ソーン

EAFTerm Newsletter
THE EAST ASIA FORUM ON TERMINOLIGY

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	イオーン
b	bi		biao	bie		bian	bin		bing	
	ビ		ビアオ	ビエ		ビエン	ビン		ビーン	
p	pi		piao	pie		pian	pin		ping	
	ピ		ピアオ	ピエ		ピエン	ピン		ピーン	
m	mi		miao	mie	miu	mian	min		ming	
	ミ		ミアオ	ミエ	ミウ	ミエン	ミン		ミーン	
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	ニアーン	ニーン	
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	リアーン	リーン	
j	ji	jia	jiao	jie	jiu	jian	jin	jiang	jing	jiong
	ジイ	ジア	ジアオ	ジエ	ジウ	ジエン	ジン	ジァン	ジーン	ジオーン
q	qi	qia	qiao	qie	qiu	qian	qin	qiang	qing	qiong
	チイ	チア	チアオ	チエ	チウ	チエン	チン	チアン	チーン	チオーン
x	xi	xia	xiao	xie	xiu	xian	xin	xiang	xing	xiong
	シイ	シア	シアオ	シエ	シウ	シェン	シン	シアン	シーン	シオーン

EAFTerm Newsletter
THE EAST ASIA FORUM ON TERMINOLIGY

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	wa	wo	wui	wei	wan	wen	wang	weng	yu	yue	yuan	yun
	ウ	ウア	ウオ	ウァイ	ウエイ	ウアン	ウエン	ウアーン	ウォーン	イゥイ	イゥエ	イゥエン	イゥン
b	bu												
	ブ												
p	pu												
	プ												
m	mu												
	ム												
f	fu												
	フ												
d	du		duo		dui	duan	dun						
	ドゥ		ドゥオ		ドゥイ	ドゥアン	ドゥン						
t	tu		tuo		tui	tuan	tun						
	トゥ		トゥオ		トゥイ	トゥアン	トゥン						
n	nu		nuo			nuan				nü	nüe		
	ヌ		ヌゥオ			ヌアン				ニュイ	ニュエ		
l	lu		luo			luan	lun			lü	lüe		
	ル		ルゥオ			ルアン	ルン			リュイ	リュエ		
g	gu	gua	guo	guai	gui	guan	gun	guang					
	グ	グア	グゥオ	グアイ	グイ	グアン	グン	グアーン					
k	ku	kua	kuo	kuai	kui	kuan	kun	kuang					
	ク	クア	クゥオ	クアイ	クイ	クアン	クン	クアーン					
h	hu	hua	huo	huai	hui	huan	hun	huang					
	ホゥー	ホゥア	ホゥオ	ホゥアイ	ホゥイ	ホゥアン	ホゥン	ホゥアーン					
j										ju	jue	juan	jun
										ジュイ	ジュエ	ジュエン	ジュイン
q										qu	que	quan	qun
										チュイ	チュエ	チュエン	チュイン
x										xu	xue	xuan	xun
										シュイ	シュエ	シュエン	シュイン
zh	zhu	zhua	zhuo	zhuai	zhui	zhuan	zhun	zhuang					
	ジュウ	ジュウア	ジュウオ	ジュアイ	ジュイ	ジュアン	ジュン	ジュアーン					
ch	chu	chua	chuo	chuai	chui	chuan	chun	chuang					
	チュウ	チュウア	チュウオ	チュアイ	チュイ	チュアン	チュン	チュアーン					
sh	shu	shua	shuo	shuai	shui	shuan	shun	shuang					
	シュウ	シュウア	シュウオ	シュアイ	シュイ	シュアン	シュン	シュアーン					
r	ru	rua	ruo		rui	ruan	run						
	ウル	ウルア	ウルゥオ		ウルイ	ウルアン	ウルン						
z	zu		zuo		zui	zuan	zun						
	ズゥ		ズゥオ		ズゥイ	ズゥアン	ズゥン						
c	cu		cuo		cui	cuan	cun						
	ツゥ		ツゥオ		ツゥイ	ツゥアン	ツゥン						
s	su		suo		sui	suan	sun						
	スゥ		スゥオ		スゥイ	スゥアン	スゥン						