PHONETIC COMPONENTS IN JAPANESE CHARACTERS

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Hiroko Townsend

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The Undersigned Faculty Committee Approves the

Thesis of Hiroko Townsend:

Phonetic Components in Japanese Characters

Zev bar-Lev, Chair
Department of Linguistics and Asian/Middle Eastern Languages

Ryu Kitajima
Department of Linguistics and Asian/Middle Eastern Languages

James Schorr
Department of European Studies

12-6-10
Approval Date

DEDICATION

This thesis is dedicated to my loving husband Dave, who has encouraged me all the time.

ABSTRACT OF THE THESIS

Phonetic Components in Japanese Characters
by
Hiroko Townsend
Master of Arts in Linguistics
San Diego State University, 2011

Japanese characters (hereafter referred to as *kanji*) give clues as to how their phonetic compounds are pronounced. Up until now, teachers and students of *kanji* have been expected to somehow connect the seemingly arbitrary assembly of strokes of *kanji* to the sounds of words that they refer to by rote memorization. However, this thesis will demonstrate that the reader can rely in a practical way on phonetic components to practically search for the pronunciation. A phonetic component is part of any compound character. In a compound *kanji* character, one component gives a clue about the meaning of the whole compound character and the other component gives a clue about the phonetic form.

Studying phonetic components in kanji has the potential to revolutionize the teaching and learning of kanji, because the phonetic component is an implicit mnemonic for its pronunciation. What this thesis attempts to argue is that semantic components alone offer a somewhat limited, and unbalanced learning process for students. Particularly, when a *kanji* character has many complicated strokes, it may be burdensome to memorize its sound as its radical does not provide a hint for its pronunciation. Through the utilization of both phonetic components and semantic components together, teachers can offer students multiple ways to break up *kanji* into meaningful units. Students can relate a particular graphic element to either its sound or its meaning, making it more likely that the student will remember it and use it correctly in the future. Further, by using phonetic components, teachers of *kanji* can help their students save much effort that is required for rote memorization of pronunciation.

The thesis includes a list of 146 phonetic components, which was garnered from 2,230 *kanji* characters in the Japanese dictionary. The list is classified into five categories, ranging from phonetic components that are completely regular to those that are completely irregular.

TABLE OF CONTENTS

PAGE

APPENDIX

LIST OF TABLES

PAGE

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CHAPTER 1

INTRODUCTION

So, what is a phonetic component? It is part of any compound character. A compound character usually consists of two components put together, similar to compound nouns in English, such as *fireman [fire + man]*. But in a compound *kanji* character, one component gives a clue about the meaning of the whole compound character and the other component gives a clue about the phonetic form.

The semantic components do provide clues to meanings. It might be thought that the semantic component would be more important for comprehension; this would seem to be all the more true because the *kanji* were borrowed from Chinese, undergoing significant and even chaotic changes in the process of borrowing. Even given that Chinese phonetic components are significant in Chinese (as shown in "Phonetic Components in Chinese" by Wang, 2008), it would seem unlikely that the significance would survive the "translation" into Japanese. But it does seem clear that the phonetic element plays a more important role than the semantic element for native readers, because they can gain meanings from the sounds and determine the meaning of *kanji* (DeFrancis, 1984 in Matsunaga, 1995).

Apparently some semantic components are too vague to be of real use in comprehension; for example, the semantic component 口meaning "mouth" occurs in *kanji* like員 'member', 品 'goods', 知 'to know', 号 '(for magazines) issue No.', 噴 'to erupt' and句 'phrase'. Namely, Japanese native speakers would know the meaning of *kanji* more

from its pronunciation than from its semantic component. Clearly, the study of phonetic components gives advantageous clue to learners particularly in aural comprehension.

Kanji are very different from English compound nouns, in which both the words are pronounced equally. For example, *kanji* 飯 /han/ 'rice' can be divided into the left and right components: 食 /shoku/ 'to eat' and反 /han/ 'to rebel'. The right side of *kanji* 反 /han/ 'to rebel' gets attached to various characters and contributes its phonetic shape to compound characters. These compound characters have the same pronunciation as反 /han/, for example: **飯** /han/ 'rice', **版** /han/ 'print', **坂** /han/ 'slope', **販** /han/ 'sale' and **板** /han/. This is a clear example of how *kanji* compounds with the same or similar pronunciations usually include the same component. It is called a phonetic component because it provides a clue to the pronunciation.

Studying phonetic components in *kanji* has the potential to revolutionize the teaching and learning of *kanji,* because the phonetic component becomes what linguist Michael Pye (1971) calls "an obvious built-in mnemonic" for its pronunciation. What this thesis attempts to argue is that semantic components alone offer a somewhat limited, and unbalanced learning process for students. Particularly, when a *kanji* character has many complicated strokes, it can be burdensome to memorize its sound as its radical does not provide a hint for its pronunciation. Through the utilization of both phonetic components and semantic components together, teachers can offer students multiple ways to break up *kanji* into meaningful units. Students can relate a particular graphic element to either its sound or its meaning, making it more likely that the student will remember it and use it correctly in the future. Further, by using phonetic components, teachers of *kanji* can help their students save much effort that is required for rote memorization of pronunciation.

The thesis includes a list of 146 phonetic components, which was garnered from 2,230 *kanji* characters in the Japanese dictionary. The list is classified into five categories, ranging from phonetic components that are completely regular to those that are completely irregular. Eighty-three percent of the phonetic components in this list match with their compounds. This is good news for *kanji* learners because regular patterns are always easier to learn than irregular ones.

CHAPTER 2

PHONETIC COMPONENTS

PRONUNCIATION OF *KANJI*

In English, each letter of the alphabet and its combinations possess certain sounds. For example, the English word 'rice' is constituted with the combination of phonetic sounds /r/, /ai/, and /s/, and when English speakers hear the consecutive sounds /r-ai-s/, they know its meaning. However, the non-Roman alphabetic written character, *kanji* 飯 /han/ 'rice' does not display any such spelling to evidence similar consecutive sounds /h/,/a/, and /n/ within the character as expected in English. In other words, there are no components in *kanji* that act as English spelling components do. Japanese children have always learned the pronunciation of *kanji* without any clues. Somehow they are expected to understand that various shapes of *kanji* and their readings mysteriously become apparent as they wade their ways through from the simple to the complicated kanji (Pye, 1971). However, there is a different kind of element in *kanji* character which can serve as a clue to the pronunciation. Many kanji characters are constructed with two components: one component called a radical, representing its meaning, and the other called a phonetic component, which is the one that gives a clue to the pronunciation. This thesis discusses the study of the phonetic components in Japanese *kanji.*

The phonetic components can be "basic forms that are essentially pictographic and not analyzable into parts corresponding to elements of meaning" (Habein & Mathias, 1991). Many of them are independent undividable *kanji.* The phonetic component carries the same

or similar pronunciation and represents the pronunciation of the whole *kanji* sound in the compound *kanji* so long as it is part of the *kanji* character. For example, take the *kanji* 士 /shi/ 'gentleman'. This *kanji* is also a phonetic component because it creates compound characters as follows: 仕 /shi/ 'to serve', 志 /shi/ 'to aspire', and 誌 /shi/ 'magazine'. All of these phonetic compounds are pronounced /shi/ as well, although each of these *kanji* compound characters has different meanings. The phonetic component 士 /shi/ is attached to the radicals, 人、心、and言 in each, carrying its sound. In other words, the phonetic component empowers its pronunciation as a whole *kanji* sound. This inventive system revolutionizes the traditional pedagogy of *kanji* pronunciation. This convenient concept of *kanji* pronunciation should be emphasized in pedagogy of *kanji* because it would give an avenue of shortcut to the travails of reading *kanji* characters.

NATIVE SPEAKERS

Because specific sound indicators of *kanji* are usually not taught, even native Japanese students are expected to memorize them by simply writing and reviewing them countless times. Many young Japanese students usually first observe *kanji* and then learn how to write the whole shapes of *kanji* as they utter the reading sounds. They repeat this process until they can automatically recognize and write the *kanji* as they utter their sounds. In the process of doing so, they are usually taught semantic components as they assemble compartments of *kanji* characters.

This *kanji* acquisition requires a considerable amount of time when it comes to simply learning the seemingly endless barrage of *kanji* by heart. Japanese students in Japan are required to learn 1,006 *kanji* from the first to sixth grade, and 1,945 *joyo kanji* (commonly used characters) plus 285 *kanji* used for people's names by the twelfth grade.

For reading Japanese newspapers, a total of 2,230 is said to be required. Furthermore, 3,000 characters need to be learned to become competent *kanji* readers (Bullock, 2010). How many years would it take for native Japanese students to memorize the pronunciation and writing of 2,230 or 3,000 *kanji*? Some systematic method to remember the pronunciation of *kanji* would certainly give some ease to the students in reducing the amount of time for their learning.

The method which can systematically ensure easier learning is the use of the phonetic component, which orders groups of *kanji* according to shared phonetic components. By this strategy, the need to learn 2,330 *kanji* would shrink to a fewer number of groups of *kanji* labeled with the same phonetic components. A benefit of the use of phonetic components, particularly compared to the rote memorization of the sounds, may perhaps even prevent *kanji* learners from feeling demoralized. Especially as students have to learn a wide range of *kanji* in the fourth or fifth grade, the use of phonetic components as a clue to categorize them would enhance their learning process.

"CHINESE READINGS" AND "JAPANESE READINGS"

The Chinese characters in Japanese (the *Kanji*) are pronounced in two ways: the *on* reading or 'phonetic Chinese reading' and the *kun* reading or 'native Japanese pronunciation'. Fifty-three percent of the entire vocabulary in the *Kadokawa* Japanese Dictionary (Hayashi et al., 1969) consists of *on* readings of *kanji*, which outnumbers *kun* readings at 37% (Matsunaga, 1995). In other words, students learn more *on* readings than *kun* readings, and if they were able to acquire clues to the pronunciation of *on* readings, it would be very practical for them.

Historically, Japan had no original native writing system. Its writing system began with the importation of Chinese culture and literature. The *on* readings came with characters from China but Japan modified them into somewhat similar sounds or totally different ones without tones (Pye, 1971). *On* readings are occasionally used by themselves as Japanese words, but they are found much more frequently in compounds (Pye, 1971). For this reason, only *on* readings are discussed in this thesis because the phonetic components and their compounds are the focus of the topic.

Another distinctive feature of *on* readings is that they have multiple readings. Since the Chinese characters entered Japan during different historical periods between the fifth and ninth centuries, and also because they originated from different geographical regions, many Chinese characters have acquired several *on* readings in Japan (Halpern, 2001). This indicates that the pronunciation of Chinese characters themselves have probably evolved over the years and have also altered through geographical dialects. This explains why there are more than one *on* reading for each *kanji*.

Table 1 clearly shows that pronunciations of Chinese and Japanese phonetic components and their compounds have distinctively different readings between the two languages. It also displays the variations within the compounds in each language. For instance, the Chinese readings of the compounds include a variation of the contrast between the voiced /g/ and /j/ and unvoiced /k/ and /h/ for reading the same compounds. The same contrast is also frequently found in pairs such as /t/ and /d/, /c/ and /z/, /ch/ and /zh/. Another group of variations in reading Chinese compounds contains all the labial sounds with aspiration such as /b/, /p/ and /f/ (Wang, 2008). A notable observation is that the vowels maintain mostly the same sounds, but the consonants alter within the same group of

Table 1. Chinese and Japanese Readings of the Phonetic Components and their Compounds

Phonetic Components	Chinese Reading of the Phonetic Components	Japanese *On*-Readings of the Phonetic Components	Compounds	Chinese Readings of the Compounds	Japanese *On*-Readings of the Compounds
古	gu3	/ko/	居	ju1	/kyo/
			固	gu4	/ko/
			故	gu4	/ko/
			枯	ku1	/ko/
			個	ge4	/ko/
			湖	hu2	/ko/
			箇	-	/ko/, /ka/
青	qing1	/sei/	情	qing2	/jou/
		/shou/	清	qing1	/sei/, /shou/
			晴	qing2	/sei/
			精	jing1	/sei/, /shou/
			静	jing4	/jou/, /sei/
			請	qing3	/sei/, /shin/
反	fan3	/han/	坂	ban3	/han/
		/tan/	返	fan3	/hon/, /hen/
		/hon/	板	ban3	/ban/
			版	ban3	/han/
			販	fan4	/han/
			飯	fan4	/han/
白	bai2	/haku/	伯	bo1	/haku/
		/byaku/	拍	pai1	/hyou/
			泊	po1	/haku/
			迫	po4	/haku/
			舶	bo2	/haku/
包	bao1	/hou/	抱	bao4	/hou/
			泡	pao4	/hou/
			胞	bao1	/hou/
			砲	-	/hou/
			飽	bao3	/bou/

Numbers after Chinese Readings: The Wade transcription uses numbers to show 4 kinds of tones in Chinese

variations. This phenomenon is logically explained by the fact that “Chinese is a tone language, which means that by modulating the pitch of the voice you can differentiate between syllables, that would otherwise have exactly the same pronunciation” (Anderson, 1981). Because the consonants are influenced by the tonal characteristics, they produce both the voiced and unvoiced consonants.

On the other hand, Japanese variations in the compounds do not always retain the same vowels. Habein and Mathias (1991) point out that the linguistic differences in Chinese and Japanese cause multiple *on* readings, as Japanese syllables end in a vowel while some Chinese words end in a consonant. In the process of translation, some Japanese vowels are added to Japanese words. Instead, the variations are created by the alteration of hiragana, 46 Japanese phonetic symbols. The phonetic variations of *on* readings are created by adding diacriticals (two short strokes) or three lower cases of characters, や /ya/, ゆ /yu/, and よ/yo/.

For instance, when hiragana はん/han/ has a diacritical added, it changes the sound to ばん/ban/. The other pair contrasts are found between each pair: か /k/ and が /g/, さ /s/ and ざ /z/, た /t/ and だ /d/, は /h/ and ば /b/. These contrasts result in the differences between the “soft and hard” consonant (Pye, 1971), while Chinese contrasts are described as voiced and unvoiced. When the lower case of a character よ/yo/ is added to き/ki/, it makes きょ/kyo/, a sound with a glide such as the /kyo/ of ‘Tokyo’. In Table 1 for the phonetic component白、there are two *on* readings of its phonetic component: はく/haku/ and びゃく/byaku/. The first process is that the primary readingはく/haku/ is given a diacritical, which changes it to ばく /baku/. The second process is that a lower case of や/ya/ is added

to ばく /baku/, which turns it into びゃく/byaku/. Table 1 shows other examples of the contrasts between the phonetic components and their compounds when a diacritical is added: しょう/shou/ and じょう/jou/ for 青 and はん /han/ and ばん /ban/ for 反, and ほう /hou/ and ぼう /bou/ for 包. The variations usually include these changes based on the possible hiragana alterations, and this process is often predictable in the variations in Japanese *on* readings.

The reason that *kun* readings of *kanji* are not considered here in the study of the phonetic components and their compounds is that *kun* readings were invented by Japanese with no regard to their Chinese-derived readings. Native Japanese oral words existed before the introduction of Chinese characters to Japan. When Chinese characters arrived in Japan, native Japanese words were attached to Chinese characters on the basis of the characters' meanings (Halpern, 2001). For example, the Japanese language had an oral word /yama/ meaning 'mountain', and when a Chinese character 山 /shan1/ 'mountain' came to Japan, the Japanese assigned their own word for a mountain /yama/ to it. At the same time, they modified the Chinese reading /shan1/ to the Japanese *on* reading /san/. As a result of the particular way that Japanese adopted Chinese script into their own language, the *kun* readings have no phonetic relation with phonetic components or their compounds.

Essentially, the *kun* readings were used to translate Chinese characters in a Chinese text and to explain the interpretation in native Japanese words (Halpern, 2001). Thus, *kun* reading historically have had a double role allowing readers to translate Chinese into Japanese. Of course, one consequence of this is that there are no similarities between *on* reading and *kun* reading in sounds. For example, the *kanji* 犬meaning 'dog' has a *kun* reading /inu/ and an *on* reading /ken/. Obviously, the two sounds are completely dissimilar,

although the meaning is the same. The *kun* reading of犬 is used alone. For instance, in the sentence of 'Here is a dog', its *kun* reading /inu/ is used alone for 'a dog'. Because *on* readings are found more frequently in compound words, the *on* reading /ken/ is used with other *kanji* that have *on* readings in the compound, such as 狂犬病 /kyou-ken-byou/ meaning 'rabies'. The *on* readings of the first *kanji*狂 /kyou/ meaning 'madness', the middle *kanji*犬 /ken/ meaning 'dog', and the last *kanji*病 /byou/ meaning 'disease' make up an *on* reading compound meaning 'rabies'. However, the combinations of *on* and *kun* readings are in four possible ways*: on-on*, *kun-kun, on-kun,* and *kun-on.* Unfortunately, there is no reliable rule for determining if a character is to be read in the *on* or *kun,* or for deciding which of several possible readings to select in a particular instance (Halpern, 2001).

In addition, another characteristic of *kun* readings is that hiragana characters, the 46 Japanese phonetic symbols mentioned above, are used to mark off the prefixes and suffixes of *kun* readings of *kanji*. This is because when the Japanese words were applied to Chinese characters, people realized that not all the *kun* readings could fit in the Chinese characters. For example, the Chinese word for 'exchange' is交 /jiao1/ and its reading was modified to the Japanese *on* reading /kou/ with its Chinese meaning retained. However, when the Japanese native word /maji-waru/ meaning 'exchange' was applied to the Chinese character交 'exchange', the first sound /maji/ was attached to the Chinese character, but the suffix /waru/ was described by hiraganaわる/waru/. This is because Japanese language is agglutinative and therefore various morphemes are put together to indicate various grammatical functions such as tense, aspect, causative, passive, honorific and so forth. As a result, suffixes could not be included in Chinese characters. As mentioned above, *kun* readings occupy only 37% of the entire vocabulary in the *Kadokawa* Japanese dictionary, and

this thesis focuses only on the *on* readings which can be inferred by the phonetic components and their compounds.

IRREGULAR SOUNDS

Of course, there are irregularities in the readings of the compounds, which do not follow the pattern of phonetic components, just as exceptions in grammar and pronunciation are part of any other language. Besides, Liu (1983) states that "(a)lthough the phonetic component [of *kanji*] is not always reliable owing to the sound change of language evolution, the meaning component has remained constant throughout history." In other words, phonetic components naturally evolve into mismatches with the compounds because the sounds of *kanji* change over the years, even though the meanings stay the same. In fact, Habein and Mathias (1991) echo this idea that "such instances [the mismatched sounds] are usually the result of irregular sound changes that took place during the long history of the Chinese language or variations among its many dialects" and they also add "sometimes they [the mismatched sounds] result from misreadings, for reasons not now understood, on the part of Japanese of earlier periods." Apparently, human errors are part of irregular sounds.

Furthermore, "when the Chinese characters were taken over into Japan, the Chinese readings were pressed into the Japanese phonetic system, resulting in an enormous number of homophones" (Pye, 1971). Thus, the incidental creation of homophones is another cause of irregular pronunciation. Because Japanese words do not have tonal varieties like Chinese, many different Chinese sounds have narrowed down to the same Japanese sounds. Table 2 shows that the Chinese readings for the following characters are all different due to the presence of tones: 方 /fang1/, 防 /fang2/, 訪 /fang3/, and 放 /fang4/. However, the Japanese readings for the same characters are all pronounced /hou/. The histories of Japanese and

Table 2. Sounds of Phonetic Components and Compounds in Chinese and Japanese

Phonetic Component	Pronunciation of P.C.	Meaning of P.C.	Compounds	Pronunciation of C.	Meaning of C.
Chinese					
□	fang1 (flat)	square	□	fang2(rising)	to protect
			□	fang3(falling then rising)	to visit
			□	fang4(falling)	to release
Japanese					
□	hou	square	□	hou	to protect
			□	hou	to visit
			□	hou	to release

(Phonetic Component = P.C., Compounds = C.)

Chinese languages tell us that although Chinese characters were initially intended to be used for the Japanese phonetic value only, without regard to their meaning, the readings of Chinese characters had to be altered in Japan because Japanese is polysyllabic and Chinese is tonal (Pye, 1971). When one language does not possess the same set of sounds that the other language has, an adjustment has to be made. This type of modification is necessary not only between Chinese and Japanese but also between English and Japanese. For example, because Japanese phonetic structures do not have the English pronunciation of /_/ (‘th’ sound), this sound is described as /s/ in Japanese. Namely, English pronunciations of both /_/ and /s/ are shrunk to one sound of /s/ in Japanese. Likewise, the Chinese multiple tonal sounds had to be transcribed onto the toneless single sound of Japanese, which have created homophones.

For those reasons, we expect dissimilar sounds to occur between the phonetic components and their compounds, and we call them irregular compounds. Here is an

example of an irregular compound. A kanji 己 is pronounced ‘ki’ and it is a phonetic component. The following three phonetic compounds 起, 記, 紀have the same phonetic component 己and they are all pronounced ’ki’. However, the following three compounds that include the same phonetic component 己 do not have the same pronunciation ‘ki’ but different pronunciations, as shown here: 忌 ‘ki’, 改 ‘kai’ and配 ‘hai’. This shows that there are irregular compounds that do not have the same sounds as the phonetic component. Yet, regardless of irregular ones, knowledge about the phonetic components gives learners a shortcut to the *kanji* pronunciation. Besides, according to Suzuki (2007), phonetic compound characters share more than 65% of commonly used characters. Clearly, it is worthwhile to use this phonetic component system rather than investing time consuming effort in rote memorization of pronunciation.

SEMANTIC COMPONENTS

In current mainstream and non-mainstream teaching methods of *kanji,* meanings of *kanji* are emphasized through the use of radicals, which are semiotic components and are supposed to give a clue to the meaning of *kanji* characters. What exactly is a radical and why is it used for semantic suggestion? Habein and Mathias (1991) provide five ways to discover radicals in *kanji:* (1) If the *kanji* is an indivisible unit (such as a basic form) like 女 ‘woman’, 手 ‘hand’, and 山 ‘mountain’, the whole *kanji* may be a radical. (2) If the *kanji* can be divided into a top and bottom part, either part might be the radical. For 男 ‘man’, either 田or 力could be the radical (田 is). Radicals at the top are more common than radicals at the bottom. (3) If the *kanji* can be divided into a left and right part, either part might be the radical. For 信 ‘to believe’, either イ or言could be the radical (イ is). There are three

times as many left-side radicals as right-side radicals. (4) If the *kanji* can be divided into an enclosure or partial enclosure and an enclosed portion, either part might be the radical. For 閑, either 門or木could be the radical (門 is). An enclosure is more commonly a classifier than what is enclosed. (5) Some radicals occur in different positions and angles in different *kanji*. 口, for example, is variously positioned: 鳴, 知, 号, 告, and句. The forms of radicals make various shapes from a simple single stroke to complicated seventeen-strokes, such as 一 (one stroke), 丁(two strokes), 竜 (ten strokes) and 齢 (seventeen strokes).

As mentioned above, the radical is a component that gives a clue to the meaning of the word. For example, a radical 言, of which name as a radical is called /gon-ben/, means 'to say'. This radical言gets attached to various components and creates compounds that have something to do with the verb 'to say'. Some examples with the radical言 'to say' includes: 語 'language', 話 'to talk', 詩 'poem', 訴 'appeal', 請 'beg', 記 'to record', 誌 'magazine' and 訪 'to visit'. For these eight *kanji,* teachers traditionally would tell their students that each *kanji* has something to do with 'to say'. In this way, teachers direct the students' attention to the radical 言. However, not all radicals provide the key to a word's meaning. For example, the radical月'the moon' creates compounds that have nothing to do with its original meaning 'the moon' as the following *kanji* show: a group of compounds that largely shares something to do with physiological elements: 脂 'animal fat', 肪 'fat of meat', 脈 'pulse', 肌 'skin', 肝 'liver' 胆 'gallbladder', 脳 'brain', 肢 'arms and legs', 腫 'tumor', 胎 'fetus', and 胞 'cellular'. There are also some compounds that cannot be categorized under a single semantic clue, as seen in the following examples: 肥 'manure', 勝 'victory', 服 'clothes'. These examples show that readers cannot always rely on the original meaning of

radical to figure out the meanings of *kanji.* Instead, some radicals create a group of compounds with a different semantic meaning from the original meaning of the radical, or they form arbitrary semantic meanings. Because of this complicated aspect of radicals, the utilization of phonetic components for learning *kanji* is useful.

In fact, some linguists have conducted studies that show that phonetic factors deliver a larger percentage of successfully learned *kanji* pronunciation than do radicals when they are used to uncover meanings. For instance, DeFrancis's (1984) study shows that "in 67% of the cases, the phonetic element represented specific sounds, while in 57% the semantic element did no more than suggest general categories of meaning" (Matsunaga, 1995). This indicates that there are more *kanji* that have phonetic relation than semantic one. Similarly, Habein and Mathias (1991) discovered that there are 1,310 *kanji* in which phonetic components are related to the *on* readings (i.e., their compounds) although this number includes different sounds that are considered as natural changes in pronunciation, in comparison, 483 *kanji* have semantic components that suggest the meanings of the *kanji*. These numbers indicate that about two thirds of *kanji* have phonetic components that are useful to students learning Japanese. Habein and Mathias' work also makes it clear that phonetic components are reliable and convenient for searching for the sounds of *on* readings.

Moreover, Horodeck (1987) concludes that native readers of Japanese do not perceive meanings only when they read *kanji;* what they primarily perceive are sounds. To examine the validity of Horodeck's (1987) study, Matsunaga (1995) conducted the study with the eye-movement tracking technology, using a computer monitor. The subjects were given a list of *kanji* with some errors and an error-marking sheet, and they were asked to circle the *kanji* errors (Matsunaga, 1995).

The list of *kanji* in the study included homophones and non-homophones (Matsunaga, 1995). The definition of homophonic *kanji* is that they share the same sound and similar forms, but have dissimilar meanings (1995). The following is an example with an error: 俳 /hai/ 'perform' replaces 排 /hai/ 'remove' in 排除 /hai-jo/. Non-homophonic *kanji* have dissimilar sounds and meanings, but similar forms: for example, 借 /shaku/ 'borrow' replaces 措 /so/ 'settle' in 借置 /shaku-chi/. The study's results showed that the subjects' eye-movement patterns reflected on the greater number of non-homophonic errors, and research participants noticed the non-homophonic errors significantly more often than they noticed homophonic errors (1995). This indicates that the subjects relied more on the effect of sound, rather than the forms of radicals. Conversely, the subjects more frequently missed the homophonic errors, which means that the subjects again relied on the sounds and got confused when two different *kanji* had the same sounds and same phonetic components. In other words, phonetically and visually the shared elements in the homophonic *kanji* pairs confused the students. If the subjects had focused on the radicals of homophones, instead of the phonetic elements, they would have caught their errors, but apparently they did not.

In addition to homophones mentioned above, Matsunaga's study reveals another kind of homophone for which the subjects frequently noticed the errors. They have similar sounds and dissimilar forms and meanings. Matsunaga concludes that "it is obvious that people can easily notice *kanji* errors whose graphic features are considerably different from the correct ones, regardless of how similar or different they are in terms of their sounds or meanings" (Matsunaga, 1995). Evidently, conspicuous graphic differences overpower phonetic or semantic elements and lead the readers to find the errors without difficulties. For example, 間 /kan/ and 乾 /kan/ have undoubtedly different graphic features and have the same sounds,

which lead the students to be able to effortlessly notice the errors, despite the same sounds, much like "write" and "right" in English. As shown here, this type of homophone involves *kanji* that do not share a common phonetic component, which also helps the reader not to be baffled. Ultimately, her study concurred with Horodeck's (1987) study that sounds play a significant role in reading *kanji.*

In line with Horodeck (1987) and Matsunaga (1995), DeFrancis (1984) agrees that the phonetic element plays a significant role for native readers who can derive meanings from sounds to determine the meaning of *kanji* (Matsunaga, 1995). If native readers mostly interpret the meanings by the sounds of *kanji*, perhaps non-natives *kanji* learners should also approach readings the same way. Of course, this requires a wholly new teaching method that emphasizes phonetics.

RADICALS

Why do we need radicals? In the past, many people have sought to arrange an astronomical number of Chinese characters in some logical way that would make it easy to look up a character whose readings are unknown (Hadamitzky & Spahn, 1985). It seems, for a long time, scholars and teachers tried to create a systematic method of finding a character in an index of over 3,000 Chinese characters. Surprisingly, "already about the time of Christ, the Chinese had formed the idea of using radicals in dictionaries" (Anderson, 1981). More than 2,000 years ago, Chinese had already invented the use of radicals for the organization of the 3,000-plus Chinese characters. They produced dictionaries by collecting characters with the same radicals and classifying them together. With that development, they formed the first real dictionary making use of no fewer than 540 radicals (Anderson, 1981). The number 540 still appears large but it is certainly smaller than 3,000. Furthermore, in 1716 a character

dictionary known as the *Koki Jiten* was published in China. This work uses 214 kinds of radicals to classify the Chinese characters into an equal number of groups (Hadamitzky & Spahn, 1985). It was great progress to reduce the number of radicals to less than a half in a dictionary because, of course, it is easier to find a particular radical from an index of 214 than from a list of 540.

Unfortunately, when radicals were chosen, there was no consistent graphical principle to base on what part of the characters are to be radicals. Very simply, the meaning of the character was the criterion for selecting radicals (Hadamitzky & Spahn, 1985). Radicals were selected somewhat randomly, but the procedure of choosing radicals is not totally at random. It seems that characters with similar meanings were gathered together, and from that group, a common form was identified. As a result, whatever form was common among them was named as the radical for that group. Despite the seemingly arbitrary selection of the radical, its discovery and use were useful in order to consolidate the large number of Chinese characters into a manageable number of classification groups.

The idea of using radicals to organize the structure of writing also came to Japan when Chinese characters started to be imported to Japan in the fifth century. As Chinese words were assimilated, *kanji* were pressed into use to represent native Japanese words, [not by means of a phonetic association as had been tried at first, but on the basis of similarities of meaning] (Pye, 1971). For example, the character 飯 means ‘rice’ in both Chinese and Japanese, but it is pronounced /fan4/ in Chinese and /han/ in Japanese. The radical 食is the same form and has the same meaning in both languages; only the sounds are different. Japan inherited the use of radicals from China and has been utilizing this method to this day. This classical radical system, despite all its shortcomings, is still used as the basis for almost all

kanji dictionaries (Hadamitzky & Spahn, 1985). The Japanese dictionary has an index of 214 radicals arranged by their stroke count. Radicals are mainly used for organization of the multitudes of *kanji* and for searching for certain *kanji* in the dictionary.

As for memorization of radicals, it is of considerable importance to students to know how the symbols are pronounced. In Japan a custom has developed of giving the radicals descriptive designations of their form, thus facilitating explanations in normal speech (Anderson, 1981). For example, 糸 /ito/ 'thread' is used as a radical, so that this radical is called *ito-hen. Ito* is the reading of this character and *hen* means a radical. When someone tries to orally convey one of the *kanji* with an *ito-hen* such as 縫, s/he would start saying, "*Ito-hen* on the left side". However, some radicals do not have a Japanese pronunciation of their own, but instead a description (Anderson, 1981). For example, the top part of a character of穴 (part after removing ノ丶) is called *nabebuta* meaning 'pot-cover' because of its form. Extraction of radicals by their descriptive names should simplify the learning considerably. Particularly, when an already-learned radical is abstracted from a complicated character, the remainder looks less complicated. The use of radicals leads to a convenient way of dissecting the *kanji* for conveying the descriptions of *kanji*. In this way, teaching radicals have become the traditional pedagogy for looking up *kanji* in dictionaries and describing the divided parts of *kanji*. Although radicals are used for organization of *kanji* in dictionaries and breaking them into smaller segments, they do not serve any role of giving clues to the pronunciation of *kanji.*

LEXICOGRAPHY

Unquestionably, it is time consuming and challenging to practice and memorize close to 2,000 *kanji.* Yet, this is exactly what students are required to do. In order to ease this

demanding task, Chinese, in addition to the structures of radicals, invented another method that can be employed as a teaching method for *kanji*. The Chinese classified the construction of characters into six categories of lexicography about 1,900 years ago: Pictographs, Ideographs, Compound ideographs, Phonetic-ideograph, Derivative characters, and Phonetic loans (Halpern, 2001). Pictographs show that目'eye' is described with a picture of an eye with an eye ball in the middle, and 山 'mountain' is depicted with a picture of a mountain with three peaks. Ideographs show the meanings of abstract ideas such as numerals and human activities: number one is described by one horizontal line 一、number two with two horizontal lines 二, and an action of standing with a person standing on the ground 立. As Habein and Mathias (1991) characterize it, "it cannot always have been easy to reduce abstract concepts to pictorial characters, but they managed to do so with astonishing ingenuity." Compound ideographs consist of two or more elements, each of which contributes to the meaning of the whole: a person 人resting under a tree木makes休 'rest'. Phonetic-ideograph characters consist of one element that roughly expresses meaning called a radical, and another element that represents sound and often also meaning: 茎 /kei/ 'stem' consists of the top radical meaning 'plants' and the rest of the component is pronounced /kei/ 'straight' in Chinese. Derivative characters are characters used in an extended, derived, or figurative sense: 令/rei/ changed from its original meaning 'command' to 'person who gives orders'. Phonetic loans are characters borrowed to represent words phonetically without direct relation to their original meanings, or to characters used erroneously: 豆 /to/ originally referred to an ancient sacrificial vessel, but is now used in the borrowed sense of 'bean'

(Halpern, 2001). The use of some pictures and ideas could mnemonically help learners recognize and interpret the meanings.

However, a study by Suzuki (2007) revealed that pictograph can be utilized in only 10% in the *toyo kanji* (1,850 *kanji* for practical use). Likewise, Habein and Mathias (1991) state that "not many *kanji* originated as pictographs, and they hardly look like pictures today . . . particularly when they [the pictorial representations] depict ancient Chinese things that no longer exist." The example of 門 /mon/ 'gate' demonstrates this problem well. It is explained as a stylized picture of an ancient Chinese gate, however it does not necessarily look like a gate to a twentieth-century *kanji* learner (p.19). Additionally, DeFrancis (1984) offers a critical reminder that *kanji* are not ideographs at the psycholinguistic level because the phonetics of *kanji* are more effective than the semantics of *kanji* for native readers to derive meanings. Confidently, he asserts that the sound of *kanji* conveys the meanings, while the traditional idea is that the radical component of *kanji* provides the meanings. These six categories of lexicography can be an aid for semantic aspects only, but they do not provide clues to the sounds of *kanji*.

CHAPTER 3

KANJI DICTIONARY

KANJI DICTIONARY FOR NON-NATIVE SPEAKERS

For non-mainstream teaching methods of *kanji* to English speaking students, there is a book/dictionary called "Kanji & Kana" consisting of a list of 1,900 basic *kanji*, written by Wolfgang Hadamitzky and Mark Spahn (1985). In this book, "the order of presentation (of *kanji*) is based on pedagogical principles, proceeding from the simplest and most often used characters to those which are more complex and occur less frequently" (p.7). For example, the first page starts with 人 (person)、一、二、三、四、五 (counting one to five, respectively), 日 (day) which are simple in terms of fewer strokes, and also commonly used. The last couple pages of the book have 璽 (imperial seal), 厘 (old unit of currency, 1/1,000 yen), 俵 (straw sack), 勅 (imperial decree) which are complicated and less frequently used in English-speakers' Japanese reading materials. As the students move through the book, they are introduced to progressively more complicated and rare *kanji*. As the book is arranged with this particular intention, no phonetic components are considered in this book.

However, "characters which are graphically similar and easily confused are presented together in order to call attention to their similarities and differences in form, reading, and meaning" (Hadamitzky & Spahn, 1985, p.7). For example, 持and待are printed in a row on the same page because they are graphically similar. The right-side components are exactly the same in both *kanji*, and both *kanji* have the same *on*-readings, /ji/. Although the factors of phonetic components are displayed, it is up to the students to analyze the hidden clue. If

the right side character 寺were taught as a phonetic component, many more *kanji* with the same phonetic component寺 could be introduced on the same page as follows: 侍 /ji/ ‘warrior’, 持 /ji/ ‘to have’, 待 /ji/ ‘to wait’, 時 /ji/ ‘time’,塒 /ji/ ‘bird nest’, and 峙 /ji/ ‘to rely on’. However, these other *kanji* are scattered on different pages. Evidently, the phonetic components are neither focused nor used as a clue to the pronunciations in their compounds.

KANJI DICTIONARY FOR NATIVE SPEAKERS

Dictionaries further demonstrate that the pronunciation system of *kanji* is an underdeveloped aspect of *kanji* pedagogy. Although dictionaries are part of the teaching tools offered to students, *kanji* dictionaries do not provide a systematic method for learning pronunciation. There are two kinds of arrangements of *kanji* in mainstream *kanji* dictionaries. One shows *kanji* phonetically by the ‘*on*-readings’ and starts with the order of fifty hiragana pronunciation, and the other has chunks of *kanji* with the same radicals collected together.

The former type of dictionary shows a group of *kanji* in the same section having the same or similar pronunciations, and many of those *kanji* have the same phonetic components on their right sides, such as 反、飯、坂、阪、板、販、版 all having the same *on*-reading /han/. This suggests that the same right-sided components must be the phonetic components since they are common elements among all the *kanji* and produce the same pronunciation. However, there are no explanations or instructions about the phonetic components in the dictionaries. Thus, it is expected that a native speaker would somehow find the connection among the *kanji* in each section, but a student who is learning Japanese as a foreign language

is not given any insight into the common phonetic structures. The student would have to figure out on his/her own how to identify shared phonetic components.

The latter type of dictionary shows groups of the *kanji* with the same radicals. For example, the radical舟means 'a boat' and the following *kanji* that has 舟on the left side are all related to boat and ship in meanings: 船 (boat)、航 (sail)、舶 (large ship)、and 艇 (small boat). Yet the same issue exists: the radicals do not provide any key for their readings.

In addition to the arrangement of *kanji* in *kanj*i dictionaries, indexes in *kanji* dictionaries do not explicitly guide learners to discover the phonetic symbols either. In order to find a certain *kanji* character in the dictionary, learners can use three kinds of indexes: an index of radicals (*bushu sakuin*), a stroke-count index (*sokaku sakuin*), and an index of readings (*on-kun sakuin).* A reader uses an index of radicals when none of the readings of a character is known. A reader uses a stroke-count index when none of the readings of a character is known and determining its radicals seems too troublesome. Then the character can be located by means of the stroke-count index. Lastly, a reader uses an index of readings, which is arranged in alphabetical order, when s/he knows one of the readings of the *kanji* in question. Since many *kanji* have the same *on*-reading (e.g., among the 1,900 basic *kanji* alone there are 44 characters which have the reading *kan*), learners should, whenever possible, look for the *kanji* under its *kun* readings (Hadamitzky & Spahn, 1985). Again the three indexes also do not direct learners to search for *kanji* from the perspective of the phonetic components. Thus, in the current teaching method of *kanji* pronunciation, neither the *kanji* reference books nor their indexes discuss the phonetic components.

CHAPTER 4

RESEARCH METHOD

This thesis is written for the significance and evaluation of the list of phonetic components and their compounds in Japanese *kanji* (Appendix). The list includes 146 phonetic components which are garnered from the Japanese dictionary, *Dai-katsuji Kanji Jiten* (Big Print Kanji Dictionary) (Ito, 2004). This dictionary includes 7,163 *kanji* sorted by the primary reading of each *kanji*. However, the *kanji* I collected in the list are mainly from the category of 1,945 *Joyo Kanji* (characters in common use) along with 285 *Jinmei Kanji* (characters used for people's names). The list is divided into five categories: (1) 'Phonetic components that are mostly or completely regular', (2) 'Phonetic components that are obsolete *kanji*: mostly and completely regular', (3) 'Phonetic components that are mostly irregular', (4) 'Phonetic components that are completely irregular', and (5) 'Phonetic components that are obsolete *kanji*: completely irregular'. Phonetic components in each list are placed in alphabetical order of their pronunciation under each set of the same strokes.

CHAPTER 5

RESULTS AND DISCUSSIONS

The first category: 'Phonetic components that are mostly or completely regular' means that there are more than three compounds that have sounds that match their phonetic components. This category includes a list of 51% of all the phonetic components, which has occurred most frequently as Table 3 shows. The second category: 'Phonetic components that are obsolete *kanji*: mostly or completely regular' means that the phonetic components in this list are not used as independent Japanese characters, but they are simply attached to other components, making more than three compounds. This category comprises 12% of all the phonetic components. The third category: 'phonetic components that are mostly irregular' means that there are one or two matched compounds, not three. This list comprises 20%, and is the second most frequently occurring type, as shown on Table 3.

Essentially, the three lists (1), (2), and (3) all share the commonality that their phonetic components are related to their compounds. The total number of compounds in these three lists adds up to 457 *kanji* which together make up 83% of all phonetic components, as shown in Table 3. While DeFrancis (1984) found that "nine-tenths of *kanji* in Karlgren's *Analytic Dictionary of Chinese and Sino-Japanese* (1923) contain a phonetic element as well as a semantic element," I find 83%, which is quite similar to DeFrancis, especially considering that his result of 90% includes both phonetic and semantic elements.

In another similar analysis, Suzuki (2007) investigated the *toyo kanji (1,850 kanji* for practical use) to see how regular the phonetic components are in relation to their compounds,

Table 3. Number and Proportion of Phonetic Components and their Compounds in Each Category

No.	Categorized Lists	No. of Phonetic Components	% of regular compounds	% of irregular compounds
(1)	Phonetic components that are mostly or completely regular	74 (51%)	338 (52%)	57 (9%)
(2)	Phonetic components that are obsolete *kanji*: Mostly or completely regular	18 (12%)	74 (11%)	9 (1%)
(3)	Phonetic components that are mostly irregular	29 (20%)	45 (7%)	42 (6%)
	Subtotal of (1), (2) and (3)	121 (83%)	457 (70%)	108 (16%)
(4)	Phonetic components that are completely irregular	21 (14%)	0	71 (11%)
(5)	Phonetic components that are obsolete *kanji*: Completely irregular	4 (3%)	0	12 (2%)
	Subtotal of (4) and (5)	25 (17%)	0	83 (13%)
	Total of regular/irregular compounds		457 (70%)	191 (29%)
	Total of components and compounds	146 (100%)	648 (100%)	

and found 65.5% which is substantially lower than what I find here in my analysis of 1,945 *Joyo Kanji* (characters in common use) along with 285 *Jinmei Kanji* (characters used for people's names). Perhaps it is because his sample (1,850) was smaller than mine (2,230).

Regarding 'obsolete *kanji*' as seen in lists (2) and (5), Table 4 shows one of the examples of obsolete Japanese characters. The Chinese phonetic component □ is an independent character pronounced /yong3/. It means 'aisle' and creates seven compounds with similar readings in Chinese. However, this component □neither exists as Japanese *kanji*, nor has reading sound or meaning in Japanese language. Yet, there are compounds with this Chinese phonetic component 甬 in Japanese. Table 4 shows that Japanese language inherited five Chinese characters 勇, 通, 涌, 桶 and痛 and retained the same

Table 4. Comparison of Chinese and Japanese Phonetic Components

Existing Chinese Phonetic Component:				
甬	yong3	aisle	勇	yong 3 brave
			涌	yong 3 to rush out
			通	tong 1 to go through
			桶	tong 3 bucket
			痛	tong 4 pain
			捅	tong 3 to poke
			诵	song 4 to read aloud
Obsolete Japanese Phonetic Component:				
甬	no meaning		通	tsuu to go through
			桶	tsuu bucket
			痛	tsuu pain
			irregular compound	
			踊	you to dance
			涌	you to rush out
			勇	yuu brave

meanings but changed to different readings. Japanese language even added a new one, 踊with this Chinese phonetic component甬. Although the five Chinese characters were passed onto Japanese language, two other characters disappeared as Japanese characters. In this way, phonetic components have also evolved and made changes; some have obviously disappeared entirely from the Japanese language.

Lastly, the fourth category: 'Phonetic components that are completely irregular' and the fifth: 'Phonetic components that are obsolete Japanese *kanji:* Completely irregular' mean that none of the compounds matches the phonetic components. Many *kanji* on these

lists appear to have only an arbitrary relationship between the phonetic components and their compounds. The combined percentage of these two lists comes to only 13% out of all the compounds, which means that 87% belong to compounds that have some phonetic relation with phonetic components. Therefore, despite some irregular sounds, the analysis of this study concurs with Pye, who argues that: "the positive value of the groupings [for phonetic compounds] would outweigh more and more the negative weight of the exceptions" (Pye, 1971). As learners progress and add more *kanji* to their study, it will be still productive to take advantage of phonetic components as a clue to memorize the readings of compounds.

CHAPTER 6

PEDAGOGICAL IMPLICATIONS

Both mainstream and non-mainstream *kanji* teaching materials and teaching practices lack instructions for learning *kanji* through their phonetic components. However, a substantial percentage of *kanji* have compounds with phonetic components that learners can use as a reliable guide to pronunciation. At least 87% of all compounds are related to phonetic components that are listed and categorized in this thesis as pronunciation learning tools. Therefore, implementing phonetic components into *kanji* instruction is beneficial, as it gives learners an additional route to mastering *kanji*. Phonetic components are especially helpful to non-native learners whose first language is alphabetic language.

Matsunaga's (1995) following three arguments support this position. Firstly, even native readers of Japanese failed to notice the errors in radicals when *kanji* characters shared the same phonetic components. Secondly, DeFrancis' (1984) research findings suggest that the phonetic component is more useful than the radical for fluent readers to derive the meaning of *kanji.* Thirdly, it is difficult to accurately guess the meanings of many *kanji* compounds from the meaning of each *kanji* character, and meanings are certainly impossible to decipher from their radicals alone.

However, in order to effectively implement phonetic components into *kanji* instruction, two suggestions need to be taken into consideration. According to Jorden and Walton (1987), "it would be more beneficial to introduce oral/aural skills prior to reading/writing skills rather than to do it in the reversed order or simultaneously" (Matsunaga, 1995). In other words, teachers should have their students listen to and be

familiar with the sounds and meanings of the words before they introduce the written forms of *kanji*. Furthermore, Habein and Mathias (1991) recommend that "in order to learn to associate the forms of *kanji* with their meanings and *on* readings with maximum efficiency, those basic forms that are most frequently used should be studied first."

While heeding the above advice, some effective teaching methods that utilize phonetic components for *kanji* learning can be introduced. One such method is to introduce several words whose *kanji* characters share the same phonetic components through listening comprehension exercises. After students familiarize themselves with the words, the teacher introduces corresponding *kanji* characters, while directing students' attention to the shared graphic unit that represents the shared phonetic component among those target *kanji* characters. Let's take an example where the target *kanji* are 御飯 /han/ 'lunch', 販売 /han/ 'selling', and 黒板 /ban/ 'blackboard'. Prior to introducing these target *kanji*, students do a listening comprehension exercise on a story such as "a boy went to Seven Eleven where lunch (= 昼御飯 /han/) is sold (=販売 /han/), and he found several menus on the blackboard (= 黒板 /ban/) in the store." After they familiarize themselves with those words, *kanji* representing those words are introduced to them, while the teacher directs their attention to the phonetic component so that students realize that all the target *kanji* share the same graphic unit "反" representing the same or similar phonetic component /han/ or /ban/. In this way, students learn to categorize the *kanji* characters under the graphic unit that represents the shared phonetic component.

Another method of *kanji* instruction is to employ games that focus on phonetic components. For example, one game is to present 15 to 20 *kanji* characters containing two to three different phonetic components and have students categorize them according to the same

phonetic components. Then students could be asked to guess the pronunciation of the *kanji* characters in each group in a game format, perhaps scoring points for each correct guess. Another game for advanced students is to give a few phonetic components to groups of students and then let the groups compete against each other to come up with as many *kanji* characters containing each phonetic component as possible, along with their meanings, in the allotted time.

As described above, implementing phonetic instruction into standard teaching curriculum is not only possible but also effective, though it would require a great deal of work in terms of developing new teaching materials that are not currently in existence. Teachers and textbook writers could compile reading exercises and other materials strictly based on phonetic patterns. For instance, a teacher could create compositions and stories that revolve around multiple *kanji* characters that share the same phonetic components. Alternatively, teachers or textbook writers could help increase students' *kanji* vocabulary by identifying a list of *kanji* that share a phonetic component every time a new phonetic component appears in a text. That way, students would be encouraged to look for phonetic themes among *kanji* that they learn.

Although this thesis emphasizes the importance of phonetic components of *kanji*, this is not meant to imply that semantic components are somehow less important. For example, instructing students to pay attention to radicals (semantic components) allows students to piece together a visual understanding of the graphic elements of *kanji*. This is a valuable skill for Japanese learners, as they must unpack complicated characters in order to decipher their meanings. On the other hand, the focus on phonetic components enables *kanji* learning to be more conceptual, by relating a particular graphic unit to its sound and possibly its

meaning. While the traditional way of learning *kanji*, such as through the utilization of radicals is also conceptual, it relies heavily on students' own strategies to memorize their pronunciations. When the phonetic association is not emphatically and practically taught, students need to spend tireless hours memorizing pronunciation for each *kanji.* This is why this thesis focuses on pedagogical aspect of utilization of phonetic components for *kanji* learning, which provides students with the clue to how *kanji* can be pronounced.

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APPENDIX

PHONETIC COMPONENTS AND COMPOUNDS

(1)

Phonetic Components That are Mostly or Completely Regular

74 Phonetic Components	339 Compounds that Match with Phonetic Components

Phonetic Component = P.C.
Compounds = C.

P.C.	Pronunciation	Meaning	C.	Pronunciation	Meaning
2 strokes:					
几	ki	desk	机	ki	desk
			肌	ki	skin
			飢	ki	to starve
			irregular compounds		
			役	eki	duty
			疫	eki	epidemic
			投	tou	to throw
			穀	koku	crop
			秀	shuu	excel
3 strokes					
亡	bou	to die	忙	bou	busy
			忘	bou	to forget
			盲	bou	blind
			荒	bou	uncultivated
			望	bou	to desire
			妄	bou	unreasonable
干	kan	dry	汗	kan	sweat
			肝	kan	liver

			奸	kan	treachery
			刊	kan	to publish
			岸	gan	shore
己	ki	self	起	ki	to get up
			記	ki	to record
			紀	ki	history
			忌	ki	to dislike and avoid
			<u>irregular compounds</u>		
			改	kai	to change
			配	hai	to distribute
工	kou	labor	紅	kou	red
			空	kou	sky
			虹	kou	rainbow
			江	kou	river
			攻	kou	attack
			功	kou	achievement
			肛	kou	anal
及	kyuu	to reach	吸	kyuu	to suck
			級	kyuu	level
			扱	kyuu	to treat
士	shi	man	仕	shi	to serve
			志	shi	to aspire
			誌	shi	magazine

4 strokes:

方	bou	direction	肪	bou	fat
			坊	bou	Buddhist priest
			紡	bou	to spin
			防	bou	to protect
			妨	bou	to prevent
			房	bou	room
			謗	bou	to insult
			傍	bou	widely
			芳	hou	scent
			訪	hou	to visit
			放	bou	to release
			irregular compounds		
			施	shi	to execute
			旅	ryo	to travel
			族	zoku	group
			旋	sen	to swirl
中	chuu	middle	忠	chuu	loyal
			沖	chuu	shore
			仲	chuu	relation
			虫	chuu	insect
			狆	chuu	type of dog
			irregular compound		
			風	fuu	wind

化	ka	to transform	花	ka	flower
			貸	ka	freight
			靴	ka	shoe
反	han	anti-	版	han	edition
			板	han	a board
			坂	han	slope
			飯	han	rice
			販	han	to sell
			叛	han	to betray
			irregular compound		
			仮	ka	temporary
分	hun	minute	粉	hun	powder
			紛	hun	be confused
			雰	hun	atmosphere
			irregular compound		
			盆	bon	bowl
5 strokes:					
半	han	half	伴	han/ban	to accompany
			絆	han	to tie
			拌	han	to mix
			判	ban	coin
白	haku	white	伯	haku	aunt, uncle
			拍	haku	to clap

			泊	haku	to stay
			迫	haku	to approach
			舶	haku	ship
			狛	haku	top
			柏	haku	oak
			箔	haku	coating
			珀	haku	fossil
皮	hi	skin	彼	hi	he
			被	hi	over head
			疲	hi	tired
			被	hi	to suffer
			披	hi	to open
			<u>irregular compound</u>		
			破	ha	break
			波	ha	wave
付	hu	to attach	府	hu	source
			符	hu	ticket
			附	hu	attachment
			俯	hu	to look down
包	hou	to wrap	抱	hou	to hold
			泡	hou	bubble
			胞	hou	cell

			砲	hou	bullet
			飽	hou	to get tired of
			咆	hou	to bark
可	ka	possible	河	ka	river
			何	ka	what
			荷	ka	load
			苛	ka	harsh
			呵	ka	yell
			歌	ka	song
			<u>irregular compounds</u>		
			阿	a	flatter
			婀	a	coquettish
古	ko	old	居	ko	to reside
			固	ko	solid
			故	ko	reason/old
			枯	ko	to wither
			個	ko	individual
			湖	ko	lake
			箇	ko	marker for counting
			沽	ko	commerce
			姑	ko	mother-in-law
			苦	ko	to suffer
生	sei	to live	姓	sei	surname

			性	sei	nature
			星	sei	star
			牲	sei	sacrifice
			惺	sei	conscious
正	sei	correct	征	sei	to conquer
			政	sei	politics
			症	sei	symptom
			整	sei	to order
			性	sei	gender
			牲	sei	sacrifice
司	shi	rule	伺	shi	to visit
			詞	shi	word
			嗣	shi	to inherit
			飼	shi	to rear
且	sho	besides	粗	so	humble
			祖	so	ancestor
			狙	so	to aim
			阻	so	to interrupt
			組	so	group
			<u>irregular compounds</u>		
			助	jo	to help
			宣	sen	to declare

旦	tan	tomorrow	但	tan	except
			胆	tan	liver
			疸	dan	jaundice
			担	tan	to carry on the shoulders
			<u>irregular compound</u>		
			垣	en	hedges
令	rei	command	冷	rei	cold
			鈴	rei	bell
			零	rei	zero
			領	rei	owned
			齢	rei	age
立	ryuu	to stand	竜	ryuu	imaginary animal
			滝	ryuu	water fall
			粒	ryuu	small round object
			笠	ryuu	woven hat
			龍	ryuu	dragon
			<u>irregular compound</u>		
			端	tan	edge
申	shin	to say	神	shin	God, god
			伸	shin	to stretch
			呻	shin	to groan
			押	shin	to push

			紳	shin	sash
召	shou	to summon	招	shou	to invite
			沼	shou	swamp
			昭	shou	bright
			紹	shou	to introduce
			詔	shou	order
			照	shou	to shine
			<u>irregular component</u>		
			超	chou	surpass
<u>6 strokes:</u>					
安	an	peaceful	案	an	suggestion
			按	an	to investigate
			鞍	an	saddle
			鮟	an	a kind of fish classification
			<u>irregular compound</u>		
			宴	en	banquet
同	dou	same	洞	dou	cave
			胴	dou	body
			桐	dou	paulownia (tree)
			恫	dou	emotional pain
			銅	dou	copper
			洞	dou	cave

			筒	tou	tube
寺	ji	temple	侍	ji	warrior
			持	ji	to have
			時	ji	time
			塒	ji	bird nest
			峙	ji	to rely on
			待	ji	to wait
旬	jun	10 days	洵	jun	truly
			殉	jun	to obey
			恂	jun	faithful
各	kaku	individual	格	kaku	to correct
			喀	kaku	cough up blood
			閣	kaku	high fine building
			額	gaku	forehead
			<u>irregular compounds</u>		
			客	kyaku	guest
			略	ryaku	abbreviation
			落	raku	to drop
			路	ro	alley
圭	kei	Used for a person's name	掛	kei	hang
			桂	kei	'katsura' name of a tree
			畦	kei	levee

			珪	kei	pointed ball
			罫	kei	to rule
			鮭	kei	salmon
			硅	kei	one of the chemical elements
糸	kei	thread	系	kei	genealogical
			係	kei	breed
			繋	kei	to connect
			<u>irregular compounds</u>		
			結	ketsu	conclusion
			潔	ketsu	pure
			緊	kin	tight
			繁	han	luxury
			縣	ken	old kanji of 県
			紫	shi	purple
光	kou	light	恍	kou	ecstatic
			幌	kou	awning
			胱	kou	bladder
			晃	kou	bright
交	kou	intersection	校	kou	school
			絞	kou	to wring
			狡	kou	crafty
			較	kou	difference

			郊	kou	suburb
			効	kou	effect
			咬	kou	to bite
共	kyou	together	供	kyou	to offer to gods
			恭	kyou	humble
			洪	kou	flood
			哄	kou	laghter
次	shi	next	姿	shi	figure
			諮	shi	to question
			資	shi	capital/finance
			irregular compound		
			盗	tou	to steal
成	sei	to form	盛	sei	flourish
			誠	sei	faithful
			筬	sei	weaving tool
			城	sei	castle
朱	shu	orange color	株	shu	stock
			珠	shu	pearl
			殊	shu	special
			蛛	shu	spider
7 strokes:					
我	ga	myself	峨	ga	rugged terrain
			蛾	ga	moth

			餓	ga	famine
			俄	ga	suddenly
			鵞	ga	goose
甫	ho	beginning	浦	ho	edge (of the river)
	(used for people's names)		捕	ho	to capture
			哺	ho	to nurture
			匍	ho	to crawl
			補	ho	to compensate
			蒲	ho	pot
			輔	ho	to help
			舗	ho	to lay down
見	ken	to see	硯	ken	printing
			蜆	ken	a kind of shells
			現	gen	present
			<u>irregular components</u>		
			規	ki	rule
			窺	ki	to observe
			覗	shi	to peek
			視	shi	to see
			親	shin	parent
谷	koku	valley	欲	yoku	desire
			浴	yoku	shower
			俗	zoku	custom

				irregular component	
			裕	yuu	rich
辰	shin (used for people's names)		唇	shin	lips
			振	shin	to vibrate
			賑	shin	lively
			震	shin	earthquake
			娠	shin	to get pregnant
				irregular compound	
			辱	joku	shame
肖	shou	shape	宵	shou	evening
			消	shou	to extinguish
			硝	shou	glass
				irregular compound	
			削	saku	to shave
弟	tei	younger brother	第	tei	prefix for ordinal number
			剃	tei	to shave
			涕	tei	tears
廷	tei	garden	庭	tei	garden
			挺	tei	to draw

				艇	tei	boat
良	ryou	good		郎	rou	young man
				浪	rou	waves
				朗	rou	cheerful
				狼	rou	wolf
				廊	rou	hallway
				irregular compound		
				娘	jou	daughter
8 strokes:						
直	choku	straight		植	choku	to plant
				埴	shoku	clay
				殖	shoku	to reproduce
				稙	choku	to plant earlier
			I	irregular combounds		
				置	chi	to place
				値	chi	price
長	chou	long		張	chou	stretch
				帳	chou	notebook
				脹	chou	swell
非	hi	not		悲	hi	sad
				緋	hi	scarlet
				誹	hi	criticize

			鯡	hi	name of fish
			琲	hi	coffee
			扉	hi	door
朋	hou	friend	崩	hou	collapse
			棚	hou	shelf
			硼	hou	boric acid
果	ka	fruit	課	ka	class
			菓	ka	confectionery
			踝	ka	ankle
			顆	ka	round, small objects
官	kan	official	棺	kan	casket
			管	kan	tube
			館	kan	mansion
奇	ki	strange	崎	ki	mountainous
			埼	ki	peninsula
			椅	ki	chair
其	ki	third person pronoun	期	ki	phase
			欺	ki	to cheat
			棋	ki	chess
			基	ki	basic
			旗	ki	flag

金	kin	money	欽	kin	to respect
			錦	kin	flamboyant
			銀	gin	silver
			irregular compound		
			鈴	rei	bell
采	sai	(used for people's names)	彩	sai	multi-color
			菜	sai	vegetable
			採	sai	choose
青	sei	blue	清	sei	clean
			靖	sei	to ease
			精	sei	energy
			晴	sei	clear
			請	sei	to beg
			情	sei	emotion
			鯖	sei	mackerel
			静	sei	quiet
昔	shaku	ancient	借	shaku	to borrow
			惜	shaku	to grudge
			錯	shaku	be confused
尚	shou	besides	常	shou	often
			裳	shou	clothes

			掌	shou	palm
			<u>irregular compound</u>		
			党	tou	political party
昌	shou	bright	娼	shou	prostitute
			唱	shou	to chant
			菖	shou	iris
			晶	shou	crystal
<u>9 strokes:</u>					
禺	guu	monkey	遇	guu	to meet
			寓	guu	to drop by
			隅	guu	edge
			偶	guu	even number
			<u>irregular compound</u>		
			愚	gu	foolish
扁	hen	flat	編	hen	to knit
			偏	hen	to lean
			篇	hen	one piece of writing
			蝙	hen	bat
則	soku	in other words	側	soku	side
			測	soku	to measure
			惻	soku	to sympathize

相	sou	aspect	想	sou	imagine
			箱	sou	box
			霜	sou	frost
			<u>irregular compounds</u>		
			湘	shou	phonetic loan
			廂	shou	eaves
<u>10 strokes:</u>					
莫	baku	anti-	摸	baku	to search
			膜	baku	membrane
			漠	baku	desert
			博	baku	
			縛	baku	to bind
			幕	baku	stage curtain
			<u>irregular compounds</u>		
			模	bo	model
			慕	bo	to admire
			墓	bo	grave
			暮	bo	evening
			募	bo	to recruit
高	kou	high	縞	kou	stripes
			稿	kou	draft
			藁	kou	straw
曹	sou	surname	遭	sou	to meet by chance

			槽	sou	tub
			糟	sou	waste
曽	sou	used to	贈	sou	to give a present
			僧	sou	monk
			憎	sou	to hate
			増	sou	to increase
12 strokes:					
童	dou	foolish condition	撞	dou	to strike
			憧	dou	to long for
			瞳	dou	pupils in the eyes
13 Strokes:					
義	gi	righteous	儀	gi	rule
			議	gi	consider
			犠	gi	sacrifice
			蟻	gi	ant
			艤	gi	install in ship

(2)

Phonetic Components That are Obsolete Japanese *Kanji:*
Mostly or Completely Regular

18 Phonetic Components	74 Compounds that Match with Phonetic Components

Phonetic Component = P.C.
Compounds = C.

P.C.	C.	Pronunciation	Meaning
4 strokes:			
孝 (remove the bottom component子)	孝	kou	filial piety
no meaning	老	kou	grow old
	考	kou	think
5 strokes:			
径 (remove the left component)	径	kei	diameter
no meaning	経	kei	longitude
	軽	kei	light in weight
	怪	kei	dubious
	茎	kei	stem
乍no meaning	作	saku	to make
	昨	saku	yesterday
	窄	saku	narrow
	酢	saku	vinegar
	搾	saku	to wring
低 (remove the left componentイ)	低	tei	low
no meaning	底	tei	bottom

	抵	tei	to resist
	邸	tei	mansion
	抵	tei	root of tree
6 strokes:			
券 (remove the bottom component刀)	券	ken	ticket
no meaning	巻	ken	series
	圏	ken	circle
	拳	ken	fist
根 (remove the left component木)	根	kon	root
no meaning	痕	kon	trace
	恨	kon	grudge
	懇	kon	intimate
	墾	kon	cultivate
	irregular compounds		
	眼	gan	eye
	退	tai	recede
	腿	tai	thigh
峡 (remove the left component 山)	峡	kyou	ravine
no meaning	狭	kyou	narrow
	挟	kyou	interpose
浅 (remove the left componentシ)	浅	sen	shallow
no meaning	銭	sen	coins

	践	sen	to execute
	irregular compound		
	桟	san	truss bridge
珍 (remove the left component王)	診	shin	to diagnose
no meaning	疹	shin	eczema
	参	shin	modest way of
	irregular compounds		
	惨	san	cruel
	珍	chin	rare, unusual ‘come/go’
7 strokes:			
峰 (remove the left component 山)	峰	hou	peak
no meaning	逢	hou	meet by chance
	縫	hou	to sew
	蜂	hou	bee
	蓬	hou	a plant of chrysanthemum family
俊 (remove the left component イ)	俊	shun	to excel
no meaning	峻	shun	rugged
	悛	shun	to repent
	逡	shun	to retreat
	竣	shun	to be completed
	浚	shun	to dig in the bottom covered with water

通 (remove the left component)	通	tsuu	aisle
no meaning	桶	tsuu	bucket
	痛	tsuu	pain
	irregular compound		
	踊	you	to dance
	涌	you	to rush out
	勇	yuu	brave
8 strokes:			
険 (remove the left component)	険	ken	harsh
no meaning	験	ken	testing
	検	ken	investigation
9 strokes:			
過 (remove the left component)	渦	ka	swirl
no meaning	堝	ka	melting pot
	鍋	ka	pot
	蝸	ka	snail
	窩	ka	hole where animals live
	禍	ka	disaster
10 strokes:			
福 (remove the left component礻)	福	huku	fortune
no meaning	副	huku	vice
	複	huku	plural
	幅	huku	width
	富	huku	wealth

	蝠	huku	bat
	搏	haku	to fight
11 strokes:			
滴 (remove the left component)	滴	teki	a drop of liquid
	適	teki	apply
	敵	teki	enemy
13 strokes:			
壁 (remove the bottom component土)	壁	heki	wall
no menaing	癖	heki	habit
	irregular compound		
	避	hi	to hide
燥 (remove the left component 火)	燥	sou	dry
no meaning	操	sou	to exercise
	藻	sou	seawood

(3)

Phonetic Components That are Mostly Irregular

29 Phonetic Components			**45 Compounds that Match with Phonetic Components**		
Phonetic Component = P.C. **Compounds = C.**					
P.C.	**Pronunciaiton**	**Meaning**	**C.**	**Pronunciation**	**Meaning**
2 strokes:					
丁	chou	counter for blocks of houses	町	chou	town
			irregular compounds		
			汀	tei	dirt by the sea/lake
			灯	hi	light
			打	da	to hit
			亭	tei	restaurant
3 strokes:					
才	sai	talent	材	zai	material
			財	zai	wealth
4 strokes:					
元	gan	source	玩	gan	toy
			完	kan	complete
			irregular compounds		
			院	in	institution
少	shou	small amount	省	shou	to reflect upon

			抄	shou	to make paper
			irregular compounds		
			秒	byou	second of time
			妙	myou	strange
			劣	retsu	inferior
			砂	sha	sand
5 strokes:					
台	dai	counter for vehicles	胎	tai	embryonic
			怠	tai	lazy
			irregular compounds		
			治	chi	to cure
			始	shi	to start
			殆	tai	almost
永	ei	long time	泳	ei	to swim
			詠	ei	to compose
牙	ga	fang	雅	ga	elegant
			芽	ga	sprout
			irregular compound		
			邪	ja	vicious
必	hi	definitely	泌	hi	to flow
			秘	hi	secret

			irregular compounds		
			蜜	mitsu	honey
			密	mitsu	secret
句	ku	to remain	駒	ku	young horse
区	ku	section	駆	ku	to dash out
			irregular compounds		
			欧	ou	to spit out
			殴	ou	to hit
			枢	suu	hinge
巨	kyo	giant	距	kyo	distance
			拒	kyo	to refuse
6 strokes:					
毎	bai	every	梅	bai	plum
			irregular compounds		
			海	kai	ocean
			晦	kai	dark
			悔	kai	to regret
			敏	bin	swift
兆	chou	trillion	眺	chou	to gaze
			跳	chou	to jump

			irregular components		
			逃	tou	to escape
			桃	tou	peach
亥	gai	boar	咳	gai	cough
			骸	gai	skeleton
			irregular compound		
			核	kaku	nucleus
			刻	koku	mince
舟	sen	small boat	船	sen	boat
			irregular compound		
			航	kou	sail
			舶	haku	large ship
			艇	tei	small boat
朱	shu	scarlet	珠	shu	pearl
			殊	shu	especially
周	shuu	circumference	週	shuu	week
羊	you	sheep	洋	you	ocean
			痒	you	itchy
			irregular compounds		
			鮮	sen	fresh
			群	gun	flock

			羨	sen	jealous
8 strokes:					
宛	en	attention to	婉	en	elegant
			苑	en	garden
			irregular compounds		
			腕	wan	arm
			碗	wan	bowl
京	kei	capital	景	kei	light
			鯨	kei	whale
			irregular compounds		
			影	ei	shadow
			涼	ryou	cool
			就	shuu	to assign
奇	ki	strange	寄	ki	approach
居	kyo	to reside	裾	kyo	skirt/tail of clothes
者	sha	person	煮	sha	to boil
			irregular compounds		
			猪	cho	wild pig
			著	cho	to write

			暑	sho	hot
			都	to	capital
			賭	to	to gamble
9 strokes:					
冒	bou	risk	帽	bou	hat
盾	jun	shield	循	jun	circulate
			楯	jun	shield (same as 盾)
胡	ko	why	糊	ko	glue
			湖	ko	lake
皇	kou	emperor	凰	hou	imaginary bird
単	tan	single	弾	tan	bullet
12 strokes					
然	nen	like that	燃	nen	burn

(4)

Phonetic Components That are Completely Irregular

21 Phonetic Components			**70 Compounds that Match with Phonetic Components**		
Phonetic Component = P.C. **Compounds = C.**					
P.C.	**Pronunciation**	**Meaning**	**C.**	**Pronunciation**	**Meaning**
1 stroke:					
乙	otsu	secondary	irregular compound		
			迄	made	until
2 strokes:					
了	ryou	to complete	irregular compounds		
		孔 kou	Confusian		
			好	kou	to like
			承	shou	to acknowledge
			蒸	jou	steam
			乳	nyuu	milk
			浮	fu	to float
刀	tou	sword	irregular compounds		
			辺	hen	degree
			分	fun	minute of time
			切	setsu	to cut
又	yuu	also, again	irregular compounds		
			双	sou	pair
			怒	do	to get mad

			努	do	to make effort
			最	sai	highest
			受	ju	to accept
			叔	shuku	siblings of parents
			淑	shuku	graceful
3 strokes:					
凡	bon	common	irregular compound		
			帆	ho	sail
土	do	dirt	irregular compound		
			社	sha	company
丸	gan	round	irregular compounds		
			熱	netsu	heat
			勢	sei	force
刃	jin	blade	irregular compound		
			忍	nin	to endure
子	shi	child	irregular compounds		
			好	kou	to like
			孔	kou	hole
			孝	kou	filial piety
			吼	kou	howl
也	ya	as it is	irregular compounds		

			地	chi	ground
			池	chi	pond
			馳	chi	to make a horse run
			他	ta	other
4 strokes:					
云	un	to say	irregular compounds		
			転	ten	to roll
			伝	den	transmit
			芸	gei	art
5 strokes:					
田	den	rice field	irregular compounds		
			思	shi	to think
			累	rui	involvement
			塁	rui	base for baseball
			異	i	different
			翼	yoku	wing
			畑	hata	cultivated field
占	sen	foretell	irregular compounds		
			店	ten	store
			点	ten	points
			粘	nen	sticky
主	shu	main	irregular compounds		
			住	juu	to live

			注	chuu	to pour
			駐	chuu	to park
			柱	chuu	pillar
			往	ou	to proceed
7 strokes:					
臣	jin	subject	irregular compound		
			臨	rin	to confront
車	sha	vehicle	irregular compounds		
			軍	gun	troops
			運	un	fate
			連	ren	group
			漣	ren	ripple
走	sou	to run	irregular compound		
			徒	to	on foot
8 strokes:					
雨	u	rain	irregular compounds		
			雲	un	cloud
			曇	don	get cloudy
			雪	setsu	snow
			霞	ka	mist
			霰	san	hail
			霜	sou	frost
			雹	haku	hailstone

			雷	rai	thunder
			霧	mu	fog
			電	den	electric
			霊	rei	spirit
			零	rei	to fall
9 strokes:					
首	shu	neck	irregular compounds		
			道	dou	road
			導	dou	to guide
頁	you	counting pieces of pages	irregular compounds		
			順	jun	order
			頌	shou	to praise
10 strokes:					
恵	kei	bless	irregular compound		
			穂	ho	head of grain

(5)

Phonetic Components That are Obsolete Japanese *Kanji:*
Completely Irregular Compounds

4 Phonetic Components	**12 Compounds that Match with Phonetic Components**

Phonetic Component = P.C.
Compounds = C.

P.C.	**C.**	**Pronunciaiton**	**Meaning**
2 strokes:			
ト no meaning	irregular compounds		
	朴	boku	thrift
	赴	hu	to go forward
6 strokes:			
律 (remove the left component)	irregular compounds		
	律	ritsu	law
	津	shin	harbor
7 strokes:			
悦 (remove the left component)	irregular compounds		
no meaning	悦	etsu	joy
	税	zei	tax
	説	setsu	explanation
8 strokes:			
進 (remove the left component)	Irregular compounds		
no meaning	推	tai	to push
	堆	tai	to layer

	錐	sui	drill
	誰	sui	who
	進	shin	to proceed