ARTICLES

The Linguistic Nature of Kanji Reexamined: Do Kanji Represent Only Meanings?

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Introduction

Kanji, or Chinese characters, in contrast with well-known phonetic writing systems, are commonly called "pictographs," "ideographs," "logographs," or "morphographs," terms that define kanji as written symbols which solely represent objects, ideas, words, and morphemes, respectively. These terms have been used by those who claim that kanji symbolize meanings independent of sounds (e.g., Wang, 1973; Suzuki, 1975), and those who believe that fluent readers of Chinese and Japanese read kanji without relying on sounds (e.g., Morioka, 1968; Smith, 1985). These beliefs, however, seem to have been falsified as a myth both linguistically (Nomura & Itô, 1978; Itô, 1979; DeFrancis, 1984a, 1984b, 1989) and psycholinguistically (Tzeng, Hung & Wang, 1977; Horodeck, 1987; Perfetti & Zhang, 1991; Cheng, 1992; Matsunaga, 1995). Nevertheless, the belief in this ideographic myth still appears to be strong among certain scholars (e.g., Hansen, 1993) and non-scholars alike, triggering renewed philosophical, historical, linguistic, psycholinguistic, and pedagogical counter arguments.

Erbaugh (1995), for example, criticizes the post-structuralists' view which characterizes kanji as "paintings rather than words to be spoken" (p. 265), by saying "'language' in China and Japan [in their view] is somehow reduced to poetry in writing" (p. 265), with formal structures such as pronunciation and rhyme being ignored. Unger (1995) documents how uncritically historians have accepted the ideographic myth, and how such an acceptance has distorted their interpretations of events. Vance (1995) notes discrepancies between meanings associated with the Chinese readings (*on'yomi*) and the Japanese readings (*kun'yomi*) for the same kanji, which should not be the case if kanji were ideographs. Tzeng and Hung (1995) reject the hypothesis of linguistic relativity, arguing that reading processes are similar across different scripts. Jorden (1995) emphasizes the pedagogical importance of introducing reading materials whose spoken forms are already familiar to non-native speakers in order to create not mere decoders, but true readers of Japanese texts.

These are powerful interdisciplinary arguments, yet what could still be added is a comprehensive argument against the misleading terms used to characterize kanji that are mentioned above. While such an argument is available for Chinese (DeFrancis, 1984a, 1984b, 1989), it is not for Japanese. The purpose of this paper is, therefore, to reexamine the linguistic nature of kanji, while arguing that not only in Chinese but also in Japanese, kanji represent sounds as well as meanings.[1] This reexamination will provide negative answers to four questions in turn: "Are kanji pictographs?" "Are kanji ideographs?" "Are kanji logographs?" and "Are kanji morphographs?" Following DeFrancis (1984a, 1984b, 1989), more appropriate labels for kanji in both Chinese and Japanese writing will then be suggested.

ARE KANJI PICTOGRAPHS?

Historically, it is true that when kanji or Chinese characters were first developed more than three thousand years ago, many of them were pictographs, drawings of concrete objects (Karlgren, 1923/1946; Gelb, 1963; DeFrancis, 1984b, 1989; Coulmas, 1989) with no indication of their sound values (Liu, 1978). As an example, the evolution of the character for *ma* (in Chinese) and *uma* (in Japanese) meaning 'horse' is shown below:

Shang	Great Seal	Small Seal	Scribal	Regular	Simplified
					

(adapted from J. DeFrancis, *Visible Speech: The Diverse Oneness of Writing Systems* [1989:96] with permission from University of Hawaii Press).

As can be derived from the above example, the evolution of many of the first pictographs is traceable from their earliest forms to the latest form. This fact does not mean, however, that kanji in general are pictographic symbols with no indication of sounds. In modern Chinese or Japanese writing, only one percent of kanji in Chinese (DeFrancis, 1989) and only 11.7 percent of kanji on the *Tôyô* kanji list in Japanese (Nomura & Itô, 1978) originate from the pictographs of 1200-1045 B.C. The current lack

of graphic representation is due to the development and the reform of the two writing systems, both of which are characterized by movements toward the representation of the sounds of the two spoken languages. Such movements are exemplified by: (a) the phoneticization of kanji (e.g., the pictograph representing 'wheat' 来 *lai* in the protowriting stage, came to be used to represent the sound of the homophonous word 'come' in the real writing stage [DeFrancis, 1984b:138]); (b) the creation of phonetic compounds, that is, composing new kanji by combining a radical and a phonetic element (e.g., 訪 'ask' [Ch. *fang*/Jn. *hô*] = 言 'talk' [radical] + 方 [Ch. *fang*/Jn. *hô*]) (Karlgren, 1923/1946:57); (c) the creation of two types of kana (syllabic signs) and the standardization of the Japanese writing system, using kanji and kana in the modern form of *kanji-kana-majiri-bun* (texts written in a mixture of kanji and kana); and (d) the adaptation of a colloquial style in both Chinese and Japanese to approximate the written to the spoken languages.

Once the two writing systems were developed through these stages, kanji could no longer simply be called "pictographs"; as DeFrancis (1984b) puts it:

> To see that writing has the form of pictures and to conclude that it is pictographic is correct only in one sense—that of the form, but not the function, of the symbols. We can put it this way:
>
> QUESTION: When is a pictograph not a pictograph?
>
> ANSWER: When it represents a sound. (p. 140)

Are Kanji Ideographs?

The word "ideograph" is a popular term used by many scholars to describe kanji, expressing the notion that kanji do not represent sounds, but rather ideas. A typical thought of this kind is found in Creel (1936):

> The Chinese early abandoned the method of writing by means of readily recognizable pictures and diagrams. . . . It was in part because the Chinese gave up pictoral [*sic*] writing that they were able to develop a practicable pictographic and ideographic script, with comparatively little help from the phonetic principle. . . . The course taken in many parts of the world was to conventionalize the picture, reduce it to a simple and easily executed form, and then use it to represent homophonous words or parts of words. The

> course the Chinese have chosen has also been to conventionalize and reduce, but they then use the evolved element for the most part not phonetically, but to stand for the original object or to enter with other such elements into combinations of ideographic rather than phonetic value. This parting of the ways is of the most profound importance. (p. 91-93, cited in DeFrancis, 1984b:141)

In the above statement, there seems to be a claim of progress in describing Chinese as no longer a pictographic language. Yet as DeFrancis (1984b) has pointed out, Creel's emphasis on "ideographic rather than phonetic value" in his characterization of kanji makes his statement no different from saying that kanji are drawings or pictures in simplified and conventionalized forms. His use of the word "ideographic" is simply a replacement of the word "pictographic" in form, but not in meaning.

Although it is an error to emphasize the semantic over the phonetic value of kanji (DeFrancis, 1984a, 1984b, 1989), Many scholars continue to refer to Chinese writing (Karlgren, 1923/1946; Wang, 1973; Kolers, 1977; Liu, 1978; Li & Thompson, 1982; Smith, 1985, 1988) in a similar way to that of Creel (1936). Li and Thompson (1982), for example, label kanji "logographs," by defining them in a similar manner to the one offered for "ideographs" above. They say:

> . . . the Chinese writing system is unique among modern writing systems in being semantically, rather than phonologically grounded. That is, in Chinese each 'character' or LOGOGRAPH, represents a semantic or grammatical unit. It does not convey phonological information except in certain composite logographs where the pronunciation of the composite is similar or identical to one of its component logographs. Thus, even in those cases, the phonological information conveyed by the composite logographs is based on other logographs, whose forms provide no clue to their pronunciation. (Li & Thompson, 1982:77)

Contrary to Li and Thompson's statement above, the linguistic data provided by DeFrancis (1984b) show that "the phonetic elements have a great deal to do with the sounds of Chinese characters" (p. 108). DeFrancis statistically examined the construction features for kanji, and 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. Moreover, among 500 kanji which he sampled from Chen's

(1928) list of 4,719 different characters that were found to occur in a frequency count of almost one million characters of running text, 91 (18 percent) were found to be independent phonetics, 394 (79 percent) were phonetic compounds, and only 15 (3 percent) had no phonetic aspect at all. Furthermore, among the 394 phonetic compounds, the phonetic element had much greater importance than the semantic element in helping to identify the linguistic element associated with an individual kanji. In 66 percent of the cases the phonetic element represented specific sounds, while in 52 percent (based on the author's calculation according to DeFrancis' [1984b:129] data) the semantic element did no more than suggest general categories of meaning, such as liquid, fire, and so on.

What these results mean, according to DeFrancis (1984b), is that "a reader with a knowledge of the phonetic component in Chinese writing has two chances out of three of guessing correctly the pronunciation of any given character he is likely to encounter in reading" (p. 108). In other words, for native readers who can derive meanings from sounds, being fluent speakers, the phonetic element plays a more important role than the semantic element in determining the meaning of a kanji, since the radicals provide, for the most part, little more than a very vague hint for the reader to use in order to reach the meaning of the whole character (DeFrancis, 1984b). The notion that kanji are "ideographs" representing only ideas should therefore be rejected in Chinese writing.

The ideographic myth is popular in connection not only with Chinese writing but also with Japanese writing. In order to see how, the way in which the Japanese writing system works needs to be described briefly. The two languages, Japanese and Chinese, being completely unrelated to each other, have in common only the fact that they both use kanji in writing, and that many lexical items called *kango*, or Sino-Japanese words, were borrowed from Chinese into Japanese. This is due to the historical fact that the Japanese not only adopted Chinese characters to write native Japanese words, but also borrowed Chinese lexical items by assigning readings which are approximations of the Chinese pronunciations.

There are two ways in which kanji were adopted to write native Japanese words: one is by borrowing kanji with the Chinese sounds irrespective of their meanings (e.g., 也 *ya* + 麻 *ma* = 也麻 *yama* 'mountain' [Seeley, 1991:190]); the other is by assigning the Japanese sounds to the meanings of borrowed kanji (e.g., *yama* for 山 'mountain'). The former

syllabic usage of kanji is called *man'yôgana* and was later simplified to two types of kana, the modern Japanese syllabic signs, namely *hiragana* and *katakana*: *hiragana* are used mainly for grammatical inflections and particles; *katakana* are used for Western loan words and for special emphasis, which is especially likely in onomatopoeia.

The latter meaning-based usage of kanji is called *kun*. As mentioned earlier, however, Sino-Japanese words are read not in Japanese readings (*kun*) but in Chinese readings. This usage of Chinese readings of kanji is called *on*. Thus, in *on*-reading, the character 山 meaning 'mountain' or 'Mt.' is read as *san*, and in *kun*-reading, it is read as *yama*, as illustrated in the following two sentences, with underlines indicating the parts written in kanji:

山に登る。 *Yama ni noboru.* '[I' ll] climb a mountain.'

富士山に登る。 *Fuji-san ni noboru.* '[I' ll] climb Mt. Fuji.'

When kanji are labeled as "ideographs" in Japanese writing, the following arguments are typically made (e.g., Katô, 1989), many of which are shared by Morioka (1968), Sakamoto and Makita (1973), Suzuki (1975, 1975/1982), Iwata (1983), Backhouse (1984), and Shibatani (1990):

1. One can get meanings of words written in kanji immediately and directly.
2. Kanji differentiate homophonous words.
3. Kanji indicate subtle differences in meanings of words.
4. One can correctly guess the meanings of words written in kanji upon encountering them for the first time.
5. Kanji have a function of creating new words.
6. Kanji being mixed with kana in Japanese writing provides visual signals for the readers to pick up meanings from kanji, and thus makes skimming of a text easier. (Katô, 1989:9-17, summarized and translated by the author)

As for argument 1, counter evidence is abundant. For example, Perfetti and Zhang (1991) and Cheng (1992) found that subvocalization occurs, if not prior to, then simultaneously with meanings in Chinese at the word level. Tzeng, Hung and Wang (1977) and Horodeck (1987) provided strong evidence for subvocalization at the sentence level in Chinese and Japanese, respectively. Furthermore, Matsunaga (1995) confirmed

Horodeck's result using an eye-tracking methodology at the discourse level in Japanese. What these results indicate is that fluent readers do not get at meanings of words without using the sounds of kanji under normal conditions (i.e., reading Japanese and Chinese for comprehension). Although one may argue that this psycholinguistic evidence does not prove that one cannot get at meanings of words immediately and directly, the evidence in support of the direct access of word meanings (i.e., lack of subvocalization) is weak, and limited to the identification of familiar single-character words (Hatta, 1978; Seidenberg, 1985).[2] Normal Chinese and Japanese texts do not consist solely of familiar single-character words. Argument 1 stated above thus lacks empirical support.

As for argument 2, it is true that kanji can differentiate homophones, as seen in: (a) native-Japanese words, 泣く '(humans) cry' and 鳴く '(birds) sing,' both of which are read as *naku* (Katô, 1989:9); and (b) Sino-Japanese words, 構成 'composition,' 厚生 'welfare,' 更生 'regeneration,' 攻勢 '(take) the offensive,' 公正 'impartiality,' 校正 'proofreading,' and 抗生 'antibiotics,' all of which are read as *kôsei*.

However, this power of kanji is unnecessary when the words appear not in isolation but in context. It should be emphasized that in normal writing, all words are written in context unless they are used for signs or names (e.g., road signs and place names). Thus, 泣く and 鳴く in the above examples are almost always accompanied by their subjects or agents at the sentence level, at which no other contexts are given, as seen in 子供が泣く *Kodomo ga naku* 'A child cries,' and 鳥が鳴く *Tori ga naku* 'A bird sings.' At the discourse level, furthermore, as long as the subject or agent can be determined from the context, the meaning of the verb is clear. What this means is that it does not have to be kanji that differentiate homonyms; in these examples in particular, even if the homophonous verbs are written in kana instead of kanji, the two meanings can be easily understood from the contexts.

The power of context in differentiating homonyms also applies to Sino-Japanese words, yet it is a persistent belief that if not written in kanji, the meanings of homophonous words, particularly Sino-Japanese words, could not be easily understood. Those who have this belief should consider the following Sino-Japanese words, whose meanings could not be specified by kanji alone: 人道 *jindô*, 公式 *kôshiki*, and 本社 *honsha* (Nomura, 1975:215). None of these is a difficult word, yet their meanings are

ambiguous without context. Does 人道 mean 'humanity' or 'a sidewalk' ? Does 公式 mean 'formality' or '(mathematical) formula' ? Which meaning should be assigned for 本社 , '(the writer's) own company' or 'the main office (versus branch offices)' ? Obviously, these kinds of Sino-Japanese words are often ignored by those who believe in the ideographic myth.

Argument 3 emphasizes the power of kanji in indicating subtle differences in meanings, as claimed for the following examples: (a) in native-Japanese words, 見る 'look (at)' and 診る 'examine,' both of which are read as *miru* (Katô, 1989:9); and (b) in Sino-Japanese words, 死亡 *shibô*, 死去 *shikyo*, 凍死 *tôshi* and 焼死 *shôshi*, meaning 'die,' 'pass away,' 'be frozen to death,' and 'be burned to death' respectively (Iwata, 1983:184).

As for the native-Japanese examples, again, while no one can deny that kanji differentiate the meanings of these homophones, contexts can do the same job as kanji in normal writing. Thus, the latter example of *miru* 診る, which appears only in the context of medical treatment or examination, need not be written in kanji, so long as the meaning of the verb is determined by the context.

As for the Sino-Japanese examples, Iwata (1983) argues that when compound words consist of two characters XY and XZ, or YX and ZX, the difference in meaning is determined by the difference between Y and Z. This rule indeed applies to the two words, 凍死 and 焼死. However, as pointed out by Nomura (1988), in the words 死亡 and 死去, the difference in their meanings cannot be easily determined by the two characters 亡 'disappear' and 去 'leave.' Thus, argument 3 cannot be said to be valid as strongly as it is claimed to be, not only in native-Japanese words but also in Sino-Japanese words. After all, "it is not the kanji themselves that are doing the work of differentiation. The associated morphemes, written in kanji or not, are doing the work" (T. J. Vance, personal communication, February, 1994).

Argument 4 is the so-called "semantic transparency" of kanji (Suzuki, 1975, 1975/1982; Shibatani, 1990). In order for one to understand this notion of "semantic transparency," it is necessary to recall the fact that in Japanese, there are many cases in which both Chinese readings (*on*) and Japanese readings (*kun*) are assigned for the same kanji. The character 水, for example, has the *on*-reading *sui* and the *kun*-reading *mizu*, both meaning 'water.' Based on this fact, an argument has been made by Suzuki

(1975/1982) among others that because all mature Japanese readers know 水 is *mizu*, and 素 is *moto*, even when they encounter the Sino-Japanese word 水素 *suiso* 'hydrogen' for the first time, they can correctly guess its meaning by assigning the *kun*-readings for the characters. In the mind of the Japanese, Suzuki says, *mizu* means 'water' and *moto* means 'element,' and together, they arrive at the meaning of the word, 'the element of water.' Thus, what Suzuki and others mean by the "semantic transparency" of kanji is this power of *kun*-readings of individual characters that allows Japanese readers to get the meanings of unknown Sino-Japanese words.

This argument is valid, however, only provided that the following two conditions are met. The first is that every single kanji has both *on*- and *kun*-readings. The second is that the two types of readings for each character correspond to a shared range of meaning. These two conditions are, unfortunately, not met in many cases. According to Tajima (1989), of the 1,945 kanji on the *Jôyô* kanji list (List of Characters for General Use), 737 are assigned only *on*-readings and 40 only *kun*-readings, leaving 1,168 kanji (60.5 percent) having both *on* and *kun*-readings. Moreover, although this 60.5 percent figure looks reasonably large at first glance, it does not mean that this is the extent to which the Japanese can guess the meanings of unknown Sino-Japanese words based on the *kun*-readings that they know. For example, the character 風 'wind' has its *kun*-reading *kaze* and its *on*-reading *fû*. These two readings share the meaning of 'wind' only in Sino-Japanese words like 風速 *fûsoku* 'the wind speed' and 強風 *kyôfû* 'a strong wind' ; the predictability of the meaning of Sino-Japanese words based on this *kun*-reading is lost in words like 風習 *fûshû* 'customs,' 風格 *fûkaku* 'character,' and 風景 *fûkei* 'landscape' (Nomura, 1975:188).

In the above examples with 風, the semantic relationship between the *kun*-reading *kaze* and the *on*-reading *fû* is one to many, yet there are characters whose *kun*-readings and *on*-readings have the opposite relationship; that is, many to one (Nomura, 1975). The character 山 'mountain,' or 'Mt.,' whose *kun*-reading is *yama* and *on*-reading is *san*, is an example. For this character, both readings can mean 'mountain' or 'Mt.,' as in the sentences given earlier. The *kun*-reading *yama* is, however, also used in sentences such as the following (Nomura, 1975:187):[3]

試験で山をはる。

Shiken de yama o haru.

'To take one's chance in the exam.'

事件の山がみえた。

Jiken no yama ga mieta.

'The end of the trouble is in sight.'

In neither of the two sentences above, does the character 山 mean 'mountain' or 'Mt.' ; instead, in the former, it means 'the highlight,' and in the latter, 'the solution.' These examples, together with the examples of 風 given earlier, clearly show that the two conditions defined above are not met in order for the argument of "semantic transparency" of kanji to be valid.

Argument 5 concerns the power of kanji in creating new words in combination with other existing kanji. It is true that this power of kanji was strong in the early Meiji period (1868-1912), when Japan was in need of a vast number of new lexical items for its modernization. This need was met by borrowing Western words by means of assigning kanji that fit the translation of the loan words. Typically, kanji were used as "building blocks" (Seeley, 1991:136), as seen in 三輪車 (三 *san* 'three' + 輪 *rin* 'wheel' + 車 *sha* 'vehicle' = 三輪車 *sanrinsha* 'tricycle' [Coulmas, 1991:235]). Here again, one can argue that "it is not the kanji themselves that have this power, but the Sino-Japanese morphemes with which they are associated" (T. J. Vance, personal communication, February, 1994).

Nevertheless, an additional case against Argument 5 can be presented, questioning how strong this power of kanji is in the present, especially because of the increase of loan words written in *katakana*. Satô (1989), for example, examined the types of new words listed in *Gendai yôgo no kiso-chishiki* (The Basic Knowledge of the Vocabulary of Modern Use) of 1982 and 1989. His research showed that, of 114 new words which appeared in the 1982 edition, only 48 (42 percent) remained in the 1989 edition, which means that 58 percent of the new words in 1982 were no longer used in 1989. Among the 48 words shared between the two editions, moreover, it was found that 44 percent were loan words (non-kanji words), 23 percent kanji words, 21 percent loan-plus-kanji words, and 12 percent abbreviations of loan words. Furthermore, when a comparison of the types of new words was made between the two editions, it was found that: (a) the number of kanji words decreased from 16 to 11; (b) that of loan-plus-kanji words from 22 to 10; and (c) that of abbreviation-of-loan-plus-kanji words from 2 to 0. These data clearly document the decline in the number of new words written in kanji.

Satô's 1989 data further indicate that the power of kanji in word creation has been replaced by *katakana* and even by the Roman alphabet. It is shown that the number of loan words (44 percent) exceeded that of kanji words (23 percent) among the 48 remaining words from 1982. The loan words here are words spelled in most cases in *katakana* (e.g., データ・バンク *deeta banku* 'data bank') and in some cases in the alphabet (e.g., ARPANET), rather than being translated into Sino-Japanese words written with kanji (Satô, 1989:137). Since these data are already seven years old, the gap between the number of new words written in *katakana* or the alphabet and the number of those written in kanji may be even larger by now. What this shift shows, therefore, is that "kanji are not indispensable in adding words to the vocabulary . . . and that European elements work just as well as Sino-Japanese elements" (T. J. Vance, personal communication, February, 1994).

Argument 6 says that Japanese readers can easily and quickly get meanings from kanji, since they stand out visually by being mixed with kana in Japanese texts. To give some evidence for this argument, Sakamoto and Makita (1973) mention Sakamoto's (1960) experiment photographing college students' eye movements while they read short sentences written either in *hiragana* only or in kanji-kana combination. The finding was that the subjects read sentences written in kanji-kana combination faster than the ones written in kana only.

However, there is a problem with the fact that Sakamoto and Makita (1973) made this claim based on such an experimental result. First of all, the visual length of kana-only sentences is unavoidably longer, compared to the same sentences written in kanji-kana combination. This difference in length could possibly contribute to the result. Second, as Paradis, Hagiwara, and Hildebrandt (1985) have pointed out, there is always a danger in interpreting any results of experiments in which the visual familiarity factor is not controlled. Kana-only sentences are almost never encountered by mature Japanese readers. This unfamiliarity of kana-only sentences, as opposed to kanji-kana combination, might have slowed the subjects down when they read the sentences in Sakamoto's experiment. Argument 6, therefore, needs more empirical support.

In sum, the critical review above appears to have weakened all of the six arguments made by Katô (1989) and others to a significant degree, and thus cast doubt on the notion that Japanese kanji are ideographs. Before going

on to the next section, one more important piece of linguistic evidence against the idea that Japanese kanji are ideographs should be added. The evidence comes from Itô's (1979) statistical study on the construction features for 1,993 kanji, those in the *Tôyô* kanji list (List of Characters for Current Use) of 1946 and those added in *Shin-kanjihyô shian* (New Character List—Draft) of 1976, the latter being a draft version of the *Jôyô* kanji list of 1981. Of these 1,993 kanji, Itô found that 66.1 percent were, historically speaking, phonetic-plus-radical compounds, and that, of 1,192 kanji which had *on*-readings and clearly identifiable phonetic elements in the modern pronunciation, 61.6 percent had *on*-readings that match their phonetic elements exactly. Given this 61.6 percent figure from the Japanese data and the 66 percent figure from the Chinese data provided by DeFrancis (1984b), it seems highly implausible that kanji are ideographs, representing ideas or meanings irrespective of sounds, in either Chinese or Japanese.

ARE KANJI LOGOGRAPHS?

As an alternative to the term "ideographic," the term "lexigraphic" was introduced by DuPonceau (1883), and "logographic" by Sansom (1928/1968):

> . . . the Chinese system of writing is not, as has been supposed, *ideographic*; . . . its characters do not represent *ideas*, but *words*, and therefore I have called it *lexigraphic*. (DuPonceau, 1883:xxxi, cited in DeFrancis, 1984b:146)

> The unit in Chinese writing is a symbol which . . . is much more accurately described as a logograph. It is a symbol which represents a word, as contrasted with symbols which, like the letters of an alphabet or a syllabary, represent sounds or combinations of sounds. (Sansom, 1928/1968:2)

As seen in the above quotations, there is an apparent improvement in the use of the terms "lexigraphic" and "logographic" for Chinese writing, because these terms imply that one character corresponds to one word in Chinese, as opposed to one idea. These terms, however, are still misleading, since they further imply that there are as many kanji as words in Chinese, when in fact that is not the case.

DeFrancis (1984b:177-188), for example, in his chapter "The Monosyllabic Myth," refutes the idea of characterizing Chinese as a monosyllabic language, the idea which equates syllables represented by

individual kanji with words in Chinese. DeFrancis (1984b:185) presents the following data on the distribution of types of words in Chinese taken from a random sample of two hundred kanji:

44 % free (includes 7 % literary)
45 % semibound
11 % completely bound
100 %

Examples for the free and semibound categories are 教 *jiao* 'teach,' and 員 *yuan* 'member of a profession,' together meaning 'teacher' ; examples for the completely bound category are 珊 *shan* and 瑚 *hu* which together mean 'coral' (DeFrancis, 1984b:186). These data indicate that in Chinese, as individual characters, only about 44 percent of kanji could be called "logographs." This 44 percent figure, moreover, appears to be an overestimation, considering the fact that when the calculation is done on the basis of dictionary entries rather than individual characters, less than five percent of the more than 200,000 entries in the *Modern Chinese-English Technical and General Dictionary* (McGraw-Hill, 1963) consist of one-syllable or one-character words (DeFrancis, 1984b). In Chinese, therefore, much less than 44 percent seems to be the true extent to which kanji represent words.

What about Japanese? To what extent do kanji represent Japanese words? According to a calculation done by the author based on the figures given by Kokuritsu Kokugo Kenkyûjo (The National Language Research Institute) in *Gendai shinbun no kanji* (A Study of Uses of Chinese Characters in Modern Newspapers) (1976:50), of 7,939 general words written in kanji, taken from three major newspapers, *Asahi*, *Mainichi*, and *Yomiuri*, published during the year 1966, only 30 percent were independent words written with a single kanji. Of these, 6.4 percent were *on*-readings, and 23.6 percent were *kun*-readings. Examples are 鉄 *tetsu* 'iron' (*on*-reading), and 山 *yama* 'mountain' (*kun*-reading).

These figures are low, yet they are still overestimations, because according to Nomura (1989), examples for these free words are by no means restricted to one-character nouns; that is, other kinds of words are included in this category as long as they are written with a single kanji, even in combination with kana. Examples are 信ずる *shin-zuru* 'believe' (*on*-reading) and 走る *hashi-ru* 'run' (*kun*-reading). The parts written in kanji in these words cannot occur without the following kana. Thus, the

figure 30 percent given above overestimates the extent to which kanji could be said to represent words in Japanese. It should be emphasized that a much lower figure than 30 percent is the true extent to which kanji can be said to be logographs in Japanese writing.

In this section, it was pointed out that the term "logographs" used to refer to kanji is an improvement over "pictographs" or "ideographs," since the term does express that kanji stand for words rather than ideas. However, it was shown that this notion is valid at most for 44 percent of kanji in Chinese and 30 percent in Japanese. The next question, which will be dealt with in the following section, is whether kanji represent morphemes of Chinese and Japanese.

ARE KANJI MORPHOGRAPHS?

It is true that the majority of kanji correspond to morphemes, or the smallest meaningful units of the Chinese language (Sampson, 1985; Hoosain, 1991). However, this is only half-truth. DeFrancis' (1984b:185) data cited above indicate that Chinese characters are at best 89 percent morphemic (44 % free + 45 % semibound), while "all characters (except that for the suffix *r*) represent syllables, either as single-element graphs which themselves comprise phonetics or as multielement graphs which include phonetics of the varying degrees of utility" (DeFrancis, 1989:116). In other words, it can be said that Chinese writing is primarily a syllabic system, and secondarily a morphemic system (DeFrancis, 1989).

Nevertheless, the importance of the sound components of kanji (i.e., Chinese syllables) is often overlooked or de-emphasized, as seen in the following statement by Sampson (1985), who uses the term "logographs" to describe kanji, when he in fact means that they represent morphemes:

> Technically [Chinese writing] is morphemic; but, in most cases, words in Chinese can be identified with morphemes. . . . Because words are scarcely distinguishable from morphemes in Chinese, and because the term 'word' is so much more natural in English than 'morpheme,' I shall often allow myself to talk of Chinese graphs as standing for 'words.' (p. 148)

> . . . Chinese writing is a logographic rather than a phonographic system. It is true that the units of script are co-extensive with syllables, which are phonological units; but this is merely an accidental consequence of the fact that in Chinese the minimal

> meaningful units, or morphemes, happen always to be one syllable long. (p. 148)

The answers to the question of whether "words are scarcely distinguishable from morphemes in Chinese," and that of whether it is only "accidental" that the syllable corresponds with the morpheme in Chinese represented by kanji, are clearly no. As noted above, DeFrancis' (1984b) data indicated that Chinese writing is 100 percent syllabic, 89 percent morphemic, and only 44 percent logographic. The overriding importance of phonetic elements of kanji over semantic elements in indicating meanings shown by DeFrancis (1984a, 1984b), moreover, is evidence against the claim by Sampson (1985) and others that for kanji, the representation of morphemes has primary importance and that of syllables is secondary or not important at all. Based on this linguistic evidence, therefore, it is best to call Chinese writing a "morphosyllabic" system of writing as repeatedly advocated by DeFrancis (1984a:18; 1984b:88; 1989:115-116), a term which reflects the fact that most individual characters represent simultaneously a single syllable and a single morpheme of the Chinese language.

In the case of Japanese, Paradis, Hagiwara, and Hildebrandt (1985) define kanji in the following way:

> A kanji is a graphic symbol representing a lexical morpheme with no systematic relationship to the corresponding spoken sounds, each morpheme being represented by a specifically shaped character. . . . It is not strictly speaking a logogram, since it does not stand for an entire word, except in the case of monomorphemic words. Polymorphemic words are represented by more than one kanji. Hence, for lack of a better word (such as morphogram) we refer to it as an ideogram, since in some sense a morpheme represents an idea, more specifically a unit of meaning, an object of mental representation. (p. 1)

It is unfortunate that Paradis et al. use the term "ideogram" when they in fact mean that kanji represent morphemes of Japanese. As suggested in the previous sections, kanji are not ideographs, representing ideas or meanings only; instead, they correspond to morphemes, at least in the Sino-Japanese words. Therefore, Paradis et al. are inaccurate in calling kanji "ideogram[s]," but accurate to some extent in saying that kanji represent morphemes of Japanese.

Nevertheless, like everyone else who emphasizes the meaning components of kanji, Paradis et al. also make the same mistake when they draw a quick conclusion based on the following reasoning:

> . . . even though a component shape (the so-called phonemic radical) may give a clue to the pronunciation in two or three kanji, the same characters as homographs (with a Kun or a different On-reading) may still be pronounced differently in other contexts, in spite of the presence of the phonemic clue; while characters not containing the phonemic clue are nevertheless pronounced the same as those that do. (pp. 11-12)

It is true that there are many homophones in Japanese and that the multiple readings of single kanji complicate the relationship among the sounds, forms, and meanings of individual kanji. However, de-emphasizing the sound components of kanji for these reasons only does not seem reasonable, and calling kanji simply "morphogram[s]" is not accurate enough. To repeat, in Japanese writing, 61.6 percent of phonetic compounds which contain clearly identifiable phonetic elements have their *on*-readings that exactly match the sounds of the elements (Itô, 1979). A correct term for the kanji in Sino-Japanese words, therefore, should express both phonetic and morphemic components of kanji.

What about the kanji used in native-Japanese words? Are they morphemic? The answer to this question seems to be not always. First of all, as Matsunaga (1995:4) has pointed out, in examples like 湖 /mizu+umi/ 'lake,' 今日 /kyoo/ 'today,' and 怪我 /kega/ 'injury,' kanji either represent bimorphemes or partial morphemes, or are simply *ateji* (rebus-like usage). Second, although it is true that kanji contain no clues for their *kun*-readings, the assignments of such readings are not necessarily mediated by the morphemes with which the given kanji are associated, despite the common assumption that they are.[4] There are in fact many cases in which kanji alone could not specify the associated morphemes. The character 生 in the following words is a good example:

1. 生きる /iki+ru/ 'live'
2. 生む /um+u/ 'bear'
3. 生える /hae+ru/ 'grow'

4. 生地 /ki+zi*/ 'cloth' or /see*+či*/ 'birthplace'

5. 生物 /nama+mono/ 'raw food' or /see*+bucu*/ 'a living thing'

**on*-reading

In examples 1, 2 and 3, the morphemes to which 生 partially corresponds, //live//, //bear//, and //grow//, respectively, cannot be differentiated until the appropriate sounds are assigned to the kanji together with the kana that follow. In other words, these illustrate the case in which individual kanji alone do not always represent morphemes either fully or accurately. In examples 4 and 5, the morphemes for which 生 stands, //pure// or //birth//, and //raw// or //alive//, respectively, again, cannot be differentiated until the appropriate sounds are assigned; furthermore, the assignments of the sounds are done only with the help of the kanji that follow 生, and the help of the contexts in which these words appear. These examples (4 and 5) illustrate the case in which kanji alone do not necessarily specify the morphemes until the appropriate sounds are assigned, even when the individual kanji fully occupy the places where the associated morphemes should be.

Of course, the correct assignments of these sounds are possible only when the readers know Japanese, the spoken language. In other words, kanji in combination with the kana or kanji that follow, and with the help of contexts, trigger sounds for the fluent readers who know the language to get at the meanings, even though kanji themselves do not contain useful sound clues for the *kun*-readings. This reading process, as attested by the occurrences of subvocalization, seems to further reinforce the importance of the sounds of kanji. To repeat, there are many cases in which without the sounds, the exact morphemes to which kanji correspond could not be identified. A correct term for the kanji in native-Japanese words, such as 生物 *namamono*, as well as Sino-Japanese words, such as 生物 *seibutsu*, therefore, should embrace the sounds of kanji whose function is crucial for identifying correct morphemes.

What then should kanji be called in Japanese writing? Unlike the case in Chinese, individual kanji do not correspond with syllables of Japanese at a one-to-one level, but at a one-to-many level most of the time. However, this complexity should not prevent us from emphasizing the fact that kanji are not only "morphemic" but also "phonetic" as long as they represent and trigger Japanese spoken sounds and meanings. To account for both of these characteristics of kanji, it seems best to label kanji "morphophonic" or

"morphonic" following DeFrancis (1989:58), who suggests these terms to refer to any writing systems which have dual aspects, namely phonetic and morphemic.[5] These terms, of course, can refer to kanji used in Japanese and in Chinese as well.

SUMMARY AND CONCLUSION

In this paper, the linguistic nature of kanji was reexamined by answering the four questions, "Are kanji pictographs?" "Are kanji ideographs?" "Are kanji logographs?" and "Are kanji morphographs?" in turn. By so doing, it was pointed out that kanji represent not only meanings but also sounds, and the sound components of kanji are significant in determining meanings of kanji in both Chinese and Japanese. Therefore, it was argued that none of the four terms is adequate, and consequently that the answers to all of the four questions are negative. More appropriate terms in reference to kanji were suggested to be "morphosyllabic" (DeFrancis, 1984a, 1984b, 1989) specifically in Chinese writing, and more generally, "morphophonic" or "morphonic" (DeFrancis, 1989:58) in Japanese and Chinese writing.

In conclusion, it is important to reemphasize that Chinese and Japanese are spoken languages, and that kanji, in combination with kana in the case of Japanese, represent these languages in writing. Once this is understood, it should be clear that kanji could not simply be pictographs, ideographs, logographs, or morphographs. Replacing these terms with terms such as morphosyllabic, morphophonic, or morphonic would lead to a better understanding of the nature of kanji, which, as Mair (1995) says, "has serious implications for how we think about Asia, how we teach about it, and how we teach the languages written with them" (p. 265).

NOTES

1. This article is based on the author's doctoral dissertation (Matsunaga, 1994). The author would like to thank Dr. John DeFrancis, Professor Emeritus at the University of Hawaii at Manoa, Dr. Timothy Vance of Connecticut College, and the anonymous reviewers for their valuable comments on an earlier draft of this article.

2. It has also been described that foreign learners can learn kanji divorced from the sounds of the target language (Jorden, 1995). The common interpretation of this phenomenon is that these learners are getting at the meanings of kanji

directly. However, an alternative interpretation is possible; that is, foreign learners can learn to get at the meanings of Chinese words via sounds of their native language, just as Japanese speakers can apply Japanese sounds when reading Chinese texts. English speakers, for instance, might subvocalize /kæt/ to get at the meaning of 猫, while Japanese speakers use /neko/, when the Chinese sound /mao/ is unknown.

3. Nomura (1975:187), however, did not write the word *yama* in kanji, but in *katakana*, in these examples. He has his own policy of not using kanji to write native-Japanese words. He appears to have used *katakana* here for emphasis.
4. The common assumption is that one could not guess the *kun*-reading of a character without knowing what morpheme it is representing, and thus pronunciation is mediated by the morpheme. This argument, however, fails to specify how we correctly identify the morpheme, especially when a character is associated with more than one morpheme.
5. DeFrancis (1989:253-262) further argues that all full writing systems utilize both phonetic and non-phonetic devices, and that many symbols have a semantic as well as a phonetic function. Even in English, X in 'xenophobia' or 'Xmas' (to represent Christmas) has a phonetic function; 'X' (as in X-rated movies) or 'Mr. X' (as an unknown name) has a semantic function (DeFrancis, 1989:261). In this categorization, 生 in all of the above examples seems to belong to the former, which has a phonetic function.

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