

SYLLABLE AND ACCENT IN JAPANESE¹

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1. Introduction

Such place-names as Yokohama, Tookyoo and Nippon have roughly the same length when spoken. Each word is written in the same number of (i.e. four) Japanese letters or syllabic signs (except kyo in Tookyoo, in which one has a device of a two-letter combination in order to show a palatalized, non-syllabic y between k and o). Each word is said to consist of the same number of "mora"s, i.e. of four moras.

According to one theory, the prevailing one in Japan, the mora equals a phonological syllable, because all the moras have almost the same length, because they are units of rhythm and of metre, and because a toneme (which is phonetically manifested in relative height of pitch) is put on any of the moras. Thus, each of the above words has four phonological syllables: Yo-k_o-ha-ma, To-o-k_yo-o, and Ni-p-po-n (where - shows a syllable boundary). This is one of the two major theories concerning the syllable and the accent, and is called the "pitch-level theory". Some foreign linguists hold a similar, or, rather, virtually the same opinion, saying that the mora is the only syllable which is found in Japanese, but differing as to details, claiming either that it is rather a "phonetic" syllable (Bloch 1950 §6.4); or that the mora - a unit of length -

1) I am very much obliged to Niels Ege for valuable comments on the first draft of this paper.

is the only "phonemic" syllable (Hockett 1955 §2214; 1958 §11.7) - based on Bloch's description; or that the acoustic phonetic data show that all the moras have virtually the same length, which fact shows the distinctive function of a mora as an "emic" syllable (Han 1962 p. 63f; Weitzman 1970 p. 6-7).

The other opinion advocated in Japan is that the mora is indeed a phonological "unit", but not a phonological "syllable", since the phonological behaviours or functions of moras are different according to their distribution and accentual function. Some moras are "free" moras which can occur in any position in the utterance, for example yo, ko, ha and ma, while others are "bound" moras which can occur only after a free mora in the utterance, for example the second component of the long vowel (the second a's in too and kyoo in the word Tookyo), p between i and p in the word Nippon, and n in the same word. Further, only a free mora can be an accent-bearer, i.e. a mora which can be (phonetically) higher pitched immediately before a lower pitched mora. Here, the tonemes are not considered to be distinctive accent units. This latter theory is Hattori's and is known as the "accent-kernel" theory. In this theory a phonological syllable is defined as consisting of either a free mora or a free mora followed by a bound mora. Thus, in this theory the above-mentioned words are divided into syllables as follows: Yo-ko-ha-ma, Too-kyoo, and Nip-pon.

Pike (1948 p. 14 fn. 29) and Garde (1968 p. 136-137) hold a similar opinion on the accent to Hattori's. McCawley (1968) sets up a similar theory using the approach of generative phonology. Interestingly enough, the mora is here taken up as a phonological unit from another point of view. Usually one has relied mainly on phonetic phenomena to establish the mora as a functional unit, but McCawley describes the mora essentially as a unit on the morpho-phonemic level, which makes it possible to apply in an ordered

way various accent manifestation rules such as "accent-deletion" and "pre-accentuation" rules.

In the following pages I will consider only the standard dialect (or standard Japanese), since almost all the works on Japanese phonology by foreign scholars are restricted to the description of the standard dialect. It should be mentioned, however, that not all the features in the standard dialect are the same in other dialects. The standard dialect is one of the simplified dialects, as far as the accent system is concerned, so that it is not at all the most representative dialect. Some features found in other dialects will be briefly mentioned at the end of this paper.

2. The pitch-level theory

In this theory a mora is considered to be a phonological syllable,² since a mora functions as a unit of rhythm and of metre and functions as the minimal unit on which a toneme is put.³ There are two distinctive tonemes: /high/ and /low/. Their syntagmatic functions in single-word utterances are shown below. Japanese ac-

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- 2) Hereafter, "syllable" in my text refers to a "phonological" syllable, when there can be no confusion, while a "phonetic" syllable is always referred to by me in its full form.
- 3) The following description is based on the articles of Haruhiko Kindaichi which are collected in his book from 1967 (= Kindaichi 1967): 1947 = 1967 p. 269-289; 1950a = 1967 p. 133-153; 1950b = 1967 p. 299-307; 1957 = 1967 p. 198-230; 1960 = 1967 p. 233-268; 1963 = 1967 p. 113-132; 1965a = 1967 p. 367-391; 1965b = 1967 p. 40-57; and 1967 = 1967 p. 58-77.

But, as I mentioned in the Introduction, the pitch-level theory is the one prevalent in Japan, so that Kindaichi is not the only advocate of the opinion.

cent is essentially a word-accent. Examples are:⁴

- 1,a) /kaki/ ('oyster')
 1,b) /kaki/ ('persimmon') ('fence')
 2,a) /hana/ (a girl's name)
 2,b) /hana/ ('nose') ('flower')
 3,a) /on/ ('favour')
 3,b) /on/ ('sound')
 4,a) /hoo/ ('direction')
 4,b) /hoo/ ('law, ordinance')
 5,a) /satoo/ ('the opposition party')
 5,b) /satoo/ ('gradation')
 5,c) /satoo/ ('sugar')

Here, in each pair or set, the words have the same segmental constituents. Permutation of tonemes makes paired words different words. Two tonemes are said to be necessary and sufficient in describing the accent system of the standard dialect. Kindaichi claims that this small number of tonemes (i.e. two in number) can describe not only the accent system of this dialect, but also those of other dialects in Japanese, and, further, is valid to a diachronic description.⁵ This means that a description applying two tonemes is economical and simple.⁶

The segmental structure of the mora, i.e. of the syllable, is one of the following four types, of which the first is the most general one but the other three, especially the last two, are more or less typical in Japanese.⁷

4) — = the high toneme, _ = the low toneme. The notation of segments is a phonemic one, but a loose one. As a consequence it is almost the same as the orthography by means of the Latin alphabet. Problems of segmental phonemes are not discussed in this paper.

5) Kindaichi 1967 p. 253.

6) Ibid. p. 252ff.

7) Ibid. p. 116-117.

- 1) / (C)(S)V / (C = consonant, S = semivowel,
V = vowel)
- 2) /N/ a nasal consonant of one-mora length
- 3) /Q/ the first component of a geminate
consonant, which has one-mora length
- 4) /:/⁸ a phoneme which prolongs the preceding
vowel by one-mora length, or in other
words, the second component of a
sequence of two identical vowels.

Details are discussed in 4. and the following sections.

3. Syllable in the accent-kernel theory

It is Hattori⁹ who first introduced in Japanese phonology a phonological syllable not equal to a mora. First, he explains how moras and phonetic syllables relate to each other:

"In the phonological interpretation of the pronunciation of the Japanese language, it is necessary to assume a phonological unit 'mora' which corresponds roughly but not exactly to the phonetic unit 'syllable'. While a syllable which ends with a short vowel corresponds to one mora,

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- 8) Kindaichi uses the symbol "-" instead of ":".
 - 9) I am not sure when Hattori first published his idea of a phonological syllable. As far as I can trace back, the idea is seen in his article from 1949, "'Bunsetsu' to akusento" ("On the accentual unit"), Hoogen to Minzoku Nos. 3 & 4, 1949 = Gengogaku no hoochoo ("Methods in linguistics"), Tokyo, 1960, p. 428-446. This summary of his ideas is based on his articles from 1949 = 1960 p. 428-446, 1950 = 1960 p. 751-763, 1954 = 1960 p. 240-272, 1958 = 1960 p. 360-364, the article from 1961, and Onseigaku ("Phonetics"), Tokyo, 1951. Articles from 1949, 1950, 1954 and 1958 are collected in his book from 1960, with some but often important corrections and additions, so that I refer to these articles as published in the book. But except for very crucial points, details of page number etc. are omitted.
Examples are in most cases my own.

a syllable which ends with a long vowel corresponds to two morae. The so-called 'haneru on' ('syllabic nasal') and 'tsumaru on' (choked sound) correspond to one mora." (1960 p.751).

"/CVN/ [N = "syllabic nasal", H.M.] corresponds usually to one syllable. ... /Q/ ["choked sound", H.M.] stands only after a vocalic phoneme and before /k, t, p, s, c/. The consonantal phonemes which follow /Q/ correspond to geminated consonants, while /Q/ itself corresponds to the laryngeal tension during the first half of the geminated consonants. /CVQ/ corresponds usually to one syllable." (Ibid. p. 753)

A "syllable" in the above citation is of course a "phonetic" syllable. When Hattori says that /CVN/ and /CVQ/ usually correspond to one phonetic syllable, he means that any mora can be pronounced as an independent phonetic syllable, when spoken very slowly (1960 p. 361 and elsewhere).¹⁰ The Japanese word /wan/ (with high-low pitch) ('bay'), for example, can be pronounced as [wa-n·], i.e. in two phonetic syllables, while the English /wʌn/ ('one'), for example, cannot be pronounced in two phonetic syllables. Hattori defines a phonetic syllable by acoustic or/and auditive sonority and articulatory explosion-implosion. A two-mora word like kaki is pronounced in two phonetic syllables [ka] and [ki],¹¹ while two-mora words like hoo and on are usually pronounced in one phonetic syllable, [ho:] and [kan] , respectively (1951 p. 169).

Now, what is a phonological syllable? There are "free" and "bound" moras.¹² A free mora is one which consists of a

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- 10) Hattori's terminology "syllabic" nasal is not suitable. It should be a 'postvocalic nasal of one-mora length'. Or else, the above statement of his does not make sense.
- 11) All phonetic transcription is very broad.
- 12) The expressions "free" and "bound moras" are adopted from Martin (1967 p. 246 fn.2).

consonant and a vowel¹³ with or without a semivowel between the two phonemes, while a bound mora is the second component of a long vowel, or a "syllabic nasal", or a "choked sound". A free mora can make a phonological syllable by itself, because it can form an independent phonetic syllable, and because it can occur in any position in the utterance without being followed by a bound mora. On the other hand, a bound mora cannot make by itself a phonological syllable, because it does not usually form one phonetic syllable by itself, and because it always occurs after a free mora. Possible combinations of segmental phonemes in the phonological syllable are:

- 1) /C(S)V/
- 2) /C(S)VV/ (where /VV/ should be a sequence of two identical phonemes),
- 3) /C(S)VN/,
- 4) /C(S)VQ/.

A bound mora, which is a phonological unit, corresponds neither to a phonological nor a phonetic syllable. The role of a bound mora as a phonological (i.e., functional) unit in the standard dialect is not explicitly mentioned, even if we take the accent into account.¹⁴ Although

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- 13) The syllable-initial vowel (or, rather, vocoid) is always preceded by a glottal constriction, if the vocoid is not preceded by a consonant (or, rather, contoid). Therefore, this glottal constriction is interpreted as a consonant phoneme, which is the counterpart of the voiceless /h/. (Cf. Hattori 1961.)
 - 14) In some dialects /N/ and the second vowel of /CVV/ can be accent-bearers. So that all the moras except /Q/ are "free" moras in that they can be accent-bearers, but a "bound" mora in the standard dialect seems to be also a "bound" mora in other dialects (perhaps with a few minor exceptions) in that a bound mora does not usually form a phonetic syllable, and that it cannot occur in utterance-initial position. (Cf. Hattori 1960 p.247.)

In a later page in the same article Hattori mentions that the mora is not a syllabic unit universal to all languages, so that we had better reconsider whether it is necessary to set up "mora" as a phonological unit in the description of Japanese (1960 p.270; fn.26 p.270).

the phonological syllable in Hattori's theory cannot be described sufficiently without taking the accent into account, his phonological syllable, in other words, is essentially the unit which best describes segmental combinations, and which corresponds to a phonetic syllable.

4. Validity of tonemes

Let us take the example words mentioned in 2. again, and describe their accents, by applying the technique of so-called autonomous phonemics.

For the sake of this argument, we assume that the mora is a phonological syllable, so that the following words in each pair have the same segmental constituents and all have the same number of syllables. The paired words are differentiated in meaning by a certain permutation of the pitch function. What is common to the four pairs of words is that all of them have the same number of syllables (=moras), and what is common to (a) or (b) is that they have the same pitch contour.¹⁵ (i) and (ii) are alternate forms.

(I)	Pair 1	Pair 2	Pair 3	Pair 4
(a)	<u>k</u> aki	hana <u>a</u>	o <u>n</u>	ho <u>o</u>
(b,i)	<u>k</u> aki	hana <u>a</u>	o <u>n</u>	ho <u>o</u>
(b,ii)	-	-	o <u>n</u>	ho <u>o</u>

(a) and (b) are in contrast in any environment, therefore the difference of pitch is invariably "emic". (i) and (ii) in Pairs 3 and 4 are not-contrastive, and it is the form (ii)

15) Whether one perceives the relative pitches on the syllables or perceives the pitch change between the syllables is not discussed here.

which is the most frequent.¹⁶ Then, if we take (ii) as representative of 3 and 4, we get

(II)

	1	2	3	4
(a)	<u>k</u> <u>a</u> <u>k</u> <u>i</u>	<u>h</u> <u>a</u> <u>n</u> <u>a</u>	<u>o</u> <u>n</u>	<u>h</u> <u>o</u> <u>o</u>
(b)	<u>k</u> <u>a</u> <u>k</u> <u>i</u>	<u>h</u> <u>a</u> <u>n</u> <u>a</u>	<u>o</u> <u>n</u>	<u>h</u> <u>o</u> <u>o</u>

In Pairs 3 and 4 the first syllable in (a) does not contrast to that of (b). The low-high pitch sequence in (1,b) and (2,b) is paralleled by the high-high pitch sequence in (3,b) and (4,b). Then, what is common to all cases in (b) is the high pitch on the second syllable. The pitch of the first syllable in (b) is not contrastive to the high pitch in (a), because the former is either low-pitched as in 1 and 2, or high-pitched as in 3 and 4. When the second syllable is high-pitched, the pitch information of the first syllable in (b) must be redundant, or else we would not get two noncontrastive forms in (3,b) and (4,b). Then, the contrast between (a) and (b) must lie in the different positions of the last high pitch.

16) Cf. Hattori 1960 p.246. But see the arguments by Han (1962) and Weitzman (1970). Cf. also Mase (1969 p.144).

Though Kindaichi admits the existence of forms like (3,b,ii) and (4,b,ii), he does not show them in the "phonological" notation, since the even-pitched pronunciation does not occur in 'deliberate' speech (1967 p.367-91, esp. p.373-74). Kawakami (1966) is strongly against Kindaichi, saying that the two forms are just two free variants of one accent pattern. The low-high pitch pattern of (b,i) when it occurs, occurs only phrase-initially, therefore, the low-pitch is interpreted as a kind of intonation. Further, there are many standard dialect speakers who have no low-high pitch pattern for words like (3,b) and (4,b), says Kawakami.

If we mark only the distinctive last high pitch, we can show the pairs of words as:

(III)

	1	2	3	4
(a)	<u>kaki</u>	<u>hana</u>	<u>on</u>	<u>hoo</u>
(b)	kaki	hana	on	hoo

The distinctive last pitch in words (a) is of course the high pitch on the first syllable.

This analysis, however, which is basically that of the pitch-level theory, does not tell the truth. As mentioned in the preceding section, a bound mora cannot be an accent-bearer in this dialect. But in (3,b) and (4,b) above, the accent is put on the bound mora, i.e., on /n/ and the second /o/, respectively.

What the real situation is, becomes clear when we add the particle ga after the noun. This particle indicates roughly the subject case, and has no fixed accent.

(IV)

	1	2	3	4
(a)	<u>kakiga</u>	<u>hanaga</u>	<u>onga</u>	<u>hooga</u>
(b,i)	<u>kakiga</u>	<u>hanaga</u>	<u>onga</u>	<u>hooga</u>
(b,ii)	-	-	<u>onga</u>	<u>hooga</u>
(c)	<u>kakiga</u>	<u>hanaga</u>	-	-

((1,b) 'persimmon', (1,c) 'fence', (2,b) 'nose', (2,c) 'flower'.)

In the above list (IV), the third pattern (c) is not found for Pairs 3 and 4. That is, /n/ in (3,c) and the second /o/ in (4,c) do not occur in the position where the distinctive last high pitch is put.

If we put only the distinctive accent mark in the way shown in (III), we get:

(V)

	1	2	3	4
(a)	$\overline{\text{kakiga}}$	$\overline{\text{hanaga}}$	$\overline{\text{onga}}$	$\overline{\text{hooga}}$
(b,i)	kakiga	hanaga	$\overline{\text{onga}}$	$\overline{\text{hooga}}$
(b,ii)	-	-	$\overline{\text{onga}}$	$\overline{\text{hooga}}$
(c)	$\overline{\text{kakiga}}$	$\overline{\text{hanaga}}$	-	-

Then, we take off the particle, keeping the accent mark on the noun word.

(VI)

	1	2	3	4
(a)	$\overline{\text{kaki}}$	$\overline{\text{hana}}$	$\overline{\text{on}}$	$\overline{\text{hoo}}$
(b)	kaki	hana	on	hoo
(c)	kaki	$\overline{\text{hana}}$	-	-

Notice that the nouns (1,b) and (1,c), and (2,b) and (2,c) have the same phonetic pitch contour, i.e., [$\overline{\text{kaki}}$] and [$\overline{\text{hana}}$], respectively (cf. lists (I) and (IV)), but in lists (V) and (VI) they are shown differently. This is a crucial point. The high pitch on the second syllable (= the second mora) in words (b) is not followed by a syllable with low pitch on it (here, one-syllable morpheme ga), while in (c) it is followed by a low-pitched syllable.¹⁷ On the other hand, (a) and (c) of 1 and 2 are distinguished by the position of the last high pitch, or in other words, by the position of the high pitch immediately followed by a low-pitched syllable.

Leaving problems of detail to later pages, we now go to Hattori's definition of the accent.

17) Actually, the pitch on ga depends upon the accent of the foregoing noun. Cf. McCawley 1968 p.138 ff., accent rules for nouns.

5. The accent-kernel theory

Hattori says that in order to describe the accent patterns of a dialect (or a language) phonologically, we should only take up their distinctive features. If we define a high pitch immediately followed or that may be immediately followed by a low pitch as the "accent kernel",¹⁸ then the distinctive features of accent patterns in the standard dialect are:

1. whether there is an accent kernel (in the accent pattern), or not, and
2. if there is, on which mora¹⁹ it is.

The accent pattern which has no accent kernel is usually called "even" or "level" pattern, and that which has an accent kernel is called "uneven" or "falling" pattern, or pattern with a kernel.²⁰

When we show the syllable with accent kernel with the accent mark "ˊ" on it, list (VI) above appears in the following way.

(VII)

(a)	k̄aki(ga)	h̄ana(ga)	ōn(ga)	h̄oo(ga)
(b)	kaki(ga)	hana(ga)	on(ga)	hoo(ga)
(c)	kaki(ḡa)	hana(ḡa)	-	-

That is, the distinctive feature (1) is found in the opposition between (a,c) and (b), and the distinctive feature (2) is found in the contrast between (a) and (c). (NB. 3 and 4 are one-syllable words.)

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- 18) The accent kernel in any dialect of Japanese is the high pitch immediately before the low pitch, so that we can say that the Japanese accent is, so to say, a "falling" or "descending" accent. (Hattori 1961 p.8). But cf. McCawley 1968 p.19off.
- 19) "Mora" should be "syllable". But it is not contradictory. In Hattori's theory a bound mora cannot take an accent kernel, then it is only a free mora in the phonological syllable which can take the accent kernel.
- 20) Hattori 1960 p.249-51; p.268; p.363-64.

The first mora in the syllable with the kernel has phonetically higher pitch, and often greater intensity and greater duration than all the following. The lower pitch on the first mora in the first syllable in (b) and (c) patterns above is a redundant feature in this dialect, since it is conditioned by the place of occurrence: when the first syllable has no kernel, the first mora is lower-pitched. Both distinctive and redundant features should be realized in the accent pattern in actual speech in order to make it different from other patterns and to make it sound natural.²¹

6. Even (=non-falling) and uneven (=falling) patterns

As mentioned in 5., in the kernel theory the accent patterns of hana ('nose' - (2,b)) and hana ('flower' - (2,c)) are functionally distinguished, even though, it is true, they have phonetically one and the same pitch contour, in any circumstance²² - whether they occur as single-word utterances or as part of a longer phrase consisting of the word plus a particle.²³ On the other hand, in the pitch-level theory both words have the same toneme combination, i.e., /low-high/ (and, as a matter of course, have the same phonetic pitch contour), i.e., they have one and

21) Hattori 1960 p.250-52

22) It is not impossible to make the two words phonetically (and phonemically) different. The pitch difference is greater, i.e. the second syllable is a little higher, in hana ('flower' (2,c)) than in hana ('nose', (2,b)), especially if the words are spoken with emphasis (Neustupný 1966 p.84; Han 1962 p.112). This difference may serve to establish a phonological contrast between bisyllabic words of the two accent types for some speakers who either keep up or try to keep up the difference. But this is probably rather rare (Neustupný 1966).

23) This "phonetic" neutralization occurs when the final syllable of the concerned types is short (i.e., one mora in length). See later in this section.

the same accent pattern. In the pitch-level theory, they do not say it this way. But they should say so, or else the pitch-level theory loses its *raison d'être*. To give the reason why they should is the purpose of this section.

Recently, Weitzman (1970) set up a new pitch-level theory based on the method of autonomous phonemics. He defines a mora as a structural syllable (p.6-7), and describes accent patterns by different combinations of two "tactic phonemes" (of accent) which are put on the sequence of moras (p.7-8; and Chap. VII). According to him, his theory is "more abstractly conceived" than the other theories, but I cannot see any real difference between his and the pitch-level theories. The reason why I call his theory 'new' is that he is so consistent that he does not admit any accent pattern for one syllable (=one mora) words.²⁴

Now, Weitzman argues against Hattori's theory as follows:

"Hattori...distinguished three accent patterns for two-mora words, or, in general, $n+1$ contrastive accent patterns for words n mora in length." (p.16)

"In the treatment of the actual accent patterns themselves and of how those patterns differ phonologically, the representation of a word that takes into account morphophonemic considerations is not of relevance. Therefore, as single-word utterances, hana ('nose') and hana ('flower') have the same accent pattern. This fact, however, does not vitiate the basic idea of the accent kernel theory, but only (1) forces a modification of it in regard to the number of accent patterns that need to be described by the theory and (2) places a restriction on the location of an accent kernel to any place except the final mora of an utterance." (p.18)

A problem here is that of so-called biuniqueness in the description. It is true that hana ('nose') and hana ('flower') invariably have the same pitch contour as sin-

24) "...the nature of Japanese [accentual phenomenon, H.M.] is that it normally can be observed only in utterances two or more moras in length. Normally no accentual distinctions are observed in utterances only one mora in length." (Weitzman 1970 p.94)

gle occurrences. This fact, however, does not and should not lead to the conclusion that both words have one and the same accent pattern, since they evidently behave functionally differently when they occur in a phrase consisting of the word plus an enclitic.²⁵ If we say that both words have the same accent pattern, we must still make a rule that the second (strictly speaking, the last) syllable of hana ('flower') is, let us say, accented, therefore the following enclitic ga which has no fixed accent,²⁵ should be, let us say, unaccented and low-pitched, not high-pitched, or/and that the second syllable (i.e., the last syllable) of hana ('nose') is unaccented, so that the following enclitic ga should keep the same pitch (i.e., high pitch) as the last syllable of the preceding unaccented word. (NB. As is clear here, the "unaccented" syllable is not equal to a syllable with "low toneme" or with "low pitch", or to a syllable with "high toneme" or with "high pitch".)

As long as we stick to the pure pitch-level theory, we cannot find any motivation or reason why the toneme /high/ should be followed by an enclitic ga which has the toneme /low/ in the case of hana ('flower') and why the toneme /high/ of hana ('nose') should be followed by the toneme /high/. If one insists on avoiding a mixture of levels, one cannot describe accent patterns of single words. One should take morphophonemics into consideration in order to represent accent patterns of single words. In the lexicon hana ('nose') and hana ('flower') should be marked as having different accent patterns.

In the pitch-level theory in Japan, hana ('nose', /hana/ in the notation of kernel-theory) and hana ('flower', /hanā/ in the notation of kernel-theory) are shown as hav-

25) Particles are included in the morpheme category "enclitics". Not all the enclitics lack a fixed accent. See, for example, McCawley 1968 p.134 ff.

ing different accent patterns. Hana ('nose') is shown as /hanā/ and hana ('flower') as /hanā/.²⁶ Even one-syllable (one-mora) words are given two different accent patterns, for example /ha/ ('leaf') and /hā/ ('tooth')²⁶ (/ha/ and /hā/, respectively, in the notation of the kernel-theory). Such descriptions are contradictory to the "toneme" idea. If one admits the difference of accent patterns between /hanā/ and /hanā/, then how can one describe the difference

/hāna/, /hanā/ and /hanā/,

by different combinations of two tonemes? If one admits the difference between /hanā/ and /hanā/, it is simply another version, and a poor one, of the accent-kernel theory. Consequently, if one is a consistent advocate of the pitch-level theory, one should have virtually the same viewpoint as Weitzman's.

Another problem is that of possible accent patterns of words and phrases consisting of n syllables (not n moras!) in length. There is a serious mixture of "syllable" and "mora", and of "single word", "single-word utterance" and "utterance" (= "phrase" in my usage) in Weitzman's statement cited above. See list (VIII) on the following page. Hana ('nose') and hana ('flower') as single-word utterances cannot be distinguished phonetically. This "phonetic" neutralization occurs between two accent patterns where one has no accent and the other has its accent on the final syllable of the word. But this occurs only when the final syllable is one mora in length. When the final syllable has two moras, the two accent patterns are manifested in different phonetic forms, for example, [satōo] ('gradation') and [satōo] ('sugar') (i.e. /satōo/ and /satōo/ in the notation of the kernel theory). (Cf.

26) See Kindaichi (1958).

p. 139, l. 2 from bottom, read: But the first mora of the unaccented first syllable...

(B), and (E) in list (VIII).)

Two facts should be mentioned concerning possible accent patterns. First, the number of possible underlying (or functional) word-accent patterns is $\underline{n}+1$ for words of \underline{n} syllables (not \underline{n} moras) in length.²⁷ Second, when a phrase consists of more than two morphemes,^{27a} the number of possible underlying and surface accent patterns is \underline{n} for phrases of \underline{n} syllables in length. For this second reason, it is often said that Japanese accents function essentially at the phrase level.²⁸ As for the single-word phrases, it depends upon the number of moras in the last syllable whether the word of \underline{n} syllables are "phonetically" distinguished in $\underline{n}+1$ ways.

(VIII)

Possible accent patterns of n-syllable nouns^{28a}

	<u>single word</u>	<u>phrase</u>	<u>meaning</u>
A) <u>1-syllable, 1-mora nouns:</u>			
1) \overline{ha}		\overline{ha} -ga	'tooth'
2) ha		ha-ga	'leaf'
B) <u>1-syllable, 2-mora nouns:</u>			
1) \overline{on}		\overline{on} -ga	'favour'
2) on		on-ga	'sound'

27) Actually the noun is the only morpheme class where all possible accent patterns are found.

27a) A compound word is taken here as one morpheme.

28) Cf. Shibata (1955).

28a) The notation of examples is phonemic, the accent marks being placed according to the kernel theory. "-" shows the syllable boundary. Phonetically, pitches are kept high up to and including the first mora of the accented syllable. But the first mora of the first syllable is usually low pitched. Other syllables are low pitched.

	<u>single word</u>	<u>phrase</u>	<u>meaning</u>
C)	<u>2-syllable, 2-mora nouns:</u>		
1)	há-na	há-na-ga	'girl's name'
2)	ha-na	ha-na-ga	'nose'
3)	ha-ná	ha-ná-ga	'flower'
D)	<u>2-syllable, 3-mora nouns:</u>		
i)	<u>2-mora syll. + 1-mora syll.:</u>		
1)	kán'-zi; hén'-zi	kán'-zi-ga; hén'-zi-ga	'secretary'; 'accident'
2)	kan-zi	kan-zi-ga	'Chinese letter'
3)	hen-zí	hen-zí-ga	'reply'
ii)	<u>1-mora syll. + 2-mora syll.:</u>		
1)	sá'-too	sá'-too-ga	'the oppo- sition party'
2)	sa-too	sa-too-ga	'gradation'
3)	sa-too'	sa-too'-ga	'sugar'
E)	<u>2-syllable, 4-mora nouns:</u>		
1)	sen'-koo	sen'-koo-ga	'incense rod'
2)	sen-koo; sen-see	sen-koo-ga; sen-see-ga	'flash'; 'oath'
3)	sen-see'	sen-see'-ga	'teacher'

Since a bound mora cannot be an accent-bearer in this dialect, the number of possible accent patterns (of single-words and of phrases) will not be consistent, if we say that the mora is the structural syllable. Examples (C,D,E) are all two-syllable nouns, so that they have 2+1 possible word accent patterns. Examples in (D) have 3 moras, and those in (E) have 4 moras. If the number

of possible accent patterns is calculated on the basis of mora (D) should have $3+1$ patterns, and (E) should have $4+1$ patterns, but in reality they have only 3 possible patterns.

Weitzman requires a modification in regard to the number of accent patterns which are set up in the kernel theory. I do not think a modification is necessary. One should only keep in mind the distinction between the word and phrase accent patterns, and between the single-word phrase and the phrase consisting of two or more morphemes. The second modification required by him is that the accent kernel can be put to any place except the final mora (should be "syllable") of an utterance. Here again, it depends upon the character of "an utterance", whether the modification is possible or not. This matter of modification is not a trifling matter. On the contrary, this matter is the most essential one in the description of the accent system of this dialect.

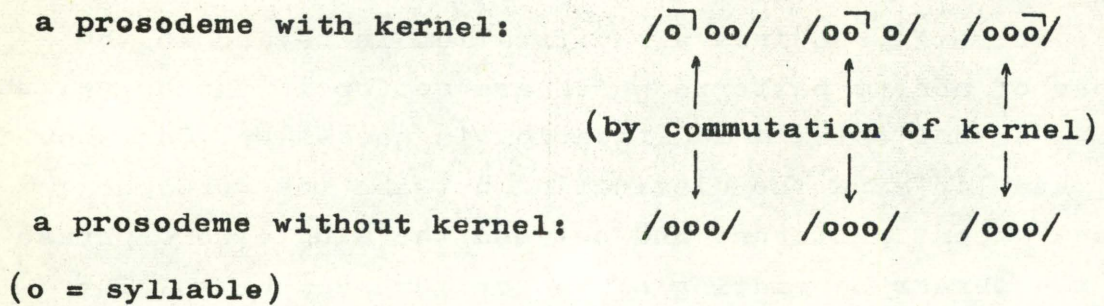
7. Paradigmatic and/or syntagmatic function of accent

I take it for granted that such difference of accent as in /hana/ ('nose') and /hanā/ ('flower'), i.e., difference between words with and without accent kernel, is necessary in the description of functional accent.

According to the pitch-level theory, accent patterns of words are contrasted with each other by permutation of tonemes which are put on a sequence of syllables.²⁹ This "accent pattern" corresponds to Hattori's "prosodeme" (in his own terminology). Just the same as the accent pattern, a prosodeme is a functional unit which integrates a sequence of syllables into one accent-phrase (Cf. Hattori 1960 p.268). But prosodemes are different from accent patterns in that they are distinguished from each other by

29) A sequence of syllables should be understood to include the case where a sequence consists of one syllable.

virtue of the two heterogeneous distinctive features of accents, mentioned earlier.³⁰ First, a prosodeme with kernel is opposed to a prosodeme without kernel, i.e.,



In this case we are dealing with "opposition" or "commutation".

Secondly, prosodemes can be distinguished by the location of the kernel, and in this case we are dealing with "contrast" or "permutation", i.e.

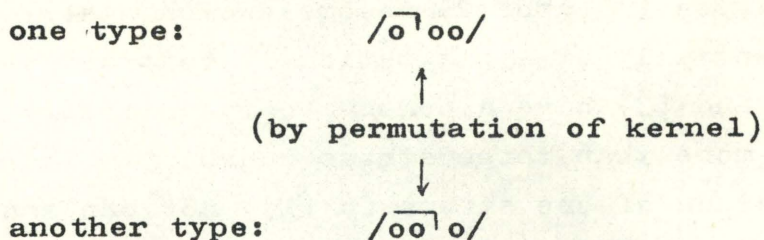
30) In this connection, I would like to say that Weitzman (1970) misunderstands some of Hattori's ideas.

Weitzman says that the prosodeme "is similar to the Akusento no kata [= accent patterns, H.M.] in that it is something superimposed upon a sequence of "moras."

He is right in this point.

He continues, "The Akusento-so, however, is more encompassing in that it is manifested not by pitch alone, as the Akusento no kata is said to be, but by other phonetic features as well." (p.15)

It seems to me that Weitzman considers that the difference between the Akusento no kata and Akusento-so lies only in the phonetic substance. But the difference lies, as I am discussing above, in their different formal approach.



As is clear here, the kernel theory is based on a completely different concept from that of the toneme. In the kernel theory Japanese accents are considered to have both commutation and permutation function. This theory tells us the nature of accent in Japanese, at least that of the standard dialect.

Characteristic features in the accent system of this dialect are that the system has a formal (but not necessarily phonetic) characteristic of the so-called tone language, such as Chinese, since accents are commutable, and that it has a feature which is similar to that of a stress-accent language, since accents are permutable. However, I hesitate to state that an accent feature of this dialect is just the same as that in Chinese, since in Chinese an accent is put on the syllable, but not on the sequence of syllables as is done in Japanese.

8. Tone languages and stress-accent languages

In this dialect of Japanese maximally one accent is put to a phrase, i.e., to a sequence of syllables, and separate information about individual syllables is not necessary.

Concerning the accent phenomenon, McCawley (1968) distinguishes three types of languages, (1) a stress-accent language such as English, (2) a pitch-accent language such as Japanese, and (3) a true tone language such as Chinese. Types (2) and (3) resemble each other, for they use the

same "substance" i.e., pitch movements, to realize functional accents.³¹ Types (1) and (2) resemble each other, since accents are essentially of syntagmatically contrastive nature. Types (1) and (3) have a common formal similarity in that, admitting more than three stress degrees in the type (1), not the position of one stress in (1), nor one tone in (3), is predictable from the position of another stress, nor another tone. Thus, he suggests "either grouping of types 1 and 3 or the position that type 1 is intermediate between types 2 and 3." (p.136-37)

As a conclusion, he says,

"A language with a "pitch accent" system like Japanese and a language with a "stress accent" system like Russian have the formal similarity that the accentual information which must be recorded in dictionary entries is at most the location of some accentual phenomenon, rather than separate information about individual syllables, as is needed for pitch in the dictionary entries of a true tone language like Chinese." (p.182)

"I feel that the above considerations give a rather convincing case that "stress accent" and "pitch accent" are merely two manifestations of the same linguistic phenomenon and that it consequently is a mistake to label as "tone language" those languages which have a "pitch accent" system such as Japanese." (p.183)

That is because, in addition to the above reason, cyclic accent reduction rules are applied to both "stress-" and "pitch-" accent languages, but not to a tone language. For

"Pitches in a tone language, on the other hand, is not subject to "reduction" rules but merely to the same kinds of rules as affect segmental features (assimilation, dissimilations, etc.). (p.183)

31) But, it is known today that there are many "stress-accent" languages where the acoustic fundamental frequency is a distinctive cue for stress perception.

As has been discussed, nouns have "n+1" accent patterns. Using McCawley's expression, the accent of nouns is put on the first, second, ..., or no syllable. (But it is true that the noun is the only morpheme class in which the location of accent is completely free. In verbs and adjectives, which are the only morpheme classes with inflections, there are only two possible accent patterns: with or without accent.)

Instead of saying that an unaccented morpheme has accent on no syllable, McCawley defines accent as occurring between the syllables, so that an unaccented morpheme is defined to have "pre-accent".³² Thus, the three hana's are specified in the underlying notation in the forms:

ha'na	(= Hattori's /ha'na/)	'girl's name'
'hana	(= " /hana/)	'nose'
hana'	(= " /hana'/)	'flower'

Then, the possible places of accentuation in n-syllable morphemes are equal to n+1 syllable boundaries. (p.169-70) The argument here is that Japanese accent is described most generally (or economically) as to its function, when one specifies accent and describes manifestation rules in the way of generative phonology.

A characteristic feature of accent placement in Japanese should be mentioned. In one morpheme class (i.e., nouns) restriction to two possible places of accent applies to one-syllable morpheme only, while there are two and only two possible places of accent for morphemes in another class (i.e., verbs and adjectives), independent of the syllable number of the morphemes.

32) There are "pre-accented" nouns and "pre-accented" affixes. Affixes are governed by the "pre-accentuation" rule, but pre-accented nouns are not.

When compared with a "stress-accent" language, Japanese morphemes with one syllable (i.e., nouns) have, then, two possible accent placements, while in a stress-accent language one-syllable morphemes in a class have no difference of accent placement, i.e., they are simply "accented" (or, possibly, only "unaccented"). This fact shows a basic difference between Japanese and stress-accent languages.

All of the above discussion has been about the standard dialect. When we take other dialects into consideration, we are not so sure about the extent of the formal similarity between Japanese as a whole and a stress-accent language as a whole. This matter will be mentioned in Section 10.

9. The role of mora

It seems to be true that the mora plays some functional role in Japanese, but no Japanese linguist gives a clear argument for its functional role.

Hattori says that the mora is a phonological unit but not a phonological syllable. (Cf. Section 3.) He does not say that the kernel occurs on the syllable, but says that it occurs on the mora. In the Kyoto dialect the phonemes /N/ and the second vowel of a sequence of two identical short vowels can be accent-bearers. But they are still "bound" moras in that they always occur in syllable-final position.³³ (see Section 10). If we take Hattori's phonological syllable to be the unit which can best describe segmental combinations, then the phonological syllable will be valid to almost all, if not all, the dialects in Japanese. If the phonological syllable is to be a unit which has to do with both "accent" and "segmental combinations", then it is not applicable to all the dialects. He might be taking an "over-all" description into account. But, as far

33) Actually, in the Kyoto dialect a sequence of two identical vowels belong always to two different syllables. (Cf. fn.36.)

p. 147, l. 16-17, read: "Japanese has phonological rules which depend on the number of moras, but none to my knowledge which depend on the number of syllables. For example..."

as the accent phenomenon and the phonotactic combinations of the standard dialect are concerned, we do not find any strong motivation in his theory that the mora is a phonological unit.

McCawley (1968) says, "There are many reasons why the notion of mora must be used in describing standard Japanese." (p.131) The reasons are:

- (1) "the mora functions as the unit of length in the language; not only is the length of a phrase roughly proportional to the number of moras it contains ..., but the meters of Japanese are based on the number of moras per line". (p.131)
- (2) "the acoustic realization of Japanese accent can only be described by stating which moras are high or low pitched." (Ibid.)
- (3) "Japanese has phonological rules which depend on the number of syllables. For example, in a certain class of foreign loan words the accent is put three moras from the end of the word. The mora is thus the "unit of phonological distance" in Japanese." (p.133)

But McCawley emphasizes that the "prosodic unit of Japanese is the syllable and not the mora", since "there is no contrast between "accented first mora" and "accented second mora" in a long syllable" (p.134). Thus, Japanese is a "mora-counting syllable language" (Ibid).

The role of mora in metrics is definite and important. But, sometimes "bound" moras do not seem to be counted as an independent unit (here, syllable) in poems, especially in modern ones. At the same time, we also find one (but rarely more) extra free mora (here, syllable) in a line. It is difficult to say whether the surplus bound moras are meant to be extra moras or violence to the rigid metrics.

McCawley's point (2) is an evident fact, at least auditorily. It does not, of course, necessarily mean that

the pitch contour on one mora acoustically keeps the same pitch level all through the mora.³⁴

In regard to point (3), McCawley says,

"rules such as the one putting accent three moras from the end of foreign words will put the accent on the fourth mora from the end if the third mora from the end happens to be the second mora of a long syllable; the correct form of the rule is thus "place accent on the syllable containing the third from last mora."" (p.134)

Another example from McCawley is a rule which "operates at the distance of one mora". An accent attraction rule for the verbal infix morpheme of the "provisional" mode operates only when the morpheme is one mora in length (i.e. /CV/), but when the morpheme is more than one mora in length (i.e. /CVC-/) the attraction rule does not operate. This rule is quite important in his rules. The morpheme with /CVC/ structure is governed by a (consonant) deletion rule, but this rule should be applied after the accent attraction rule.³⁵

Taking all three points together, I think that the mora is a functional unit.

10. Some remarks on accent in the Kyoto dialect compared to that in the standard dialect

As I have mentioned in a couple of places, the Kyoto dialect has some features that differ from those of the standard dialect. The so-called syllabic n (/N/) in the

34) Cf. Weitzman (1970), Chap. IV; Mase (1969)

35) In this connection, I would like to say that in Japanese the syllable and morpheme boundaries do not always coincide. Therefore, the following description by Garde (1968 p.25) is incorrect: in French "les limites de syllabes et de morphèmes ne coïncident pas ... Mais en japonais toute limite de morphème coïncide avec une limite de syllabe, donc la syllabe est incluse dans le morphème."

Kyoto dialect can be accent-bearer: "oNna" ('woman'), "koNbaN" ('tonight'). This holds true also of the second vowel in the sequence of two identical short vowels:

"keeba" ('horse race'), "keesi" ('disregard'), "keezi" ('policeman'), "keezi" ('notice').³⁶

In two-syllable nouns we find four accent patterns:

K .-a.	K.-b.	Hat.	McC. ³⁷	
1) <u>hana</u> , <u>hana ga</u>	hana	hana	hana	('nose')
2) <u>yama</u> , <u>yama ga</u>	ya ¹ ma	┌ya┐ma	ya'ma	('mountain')
3) <u>sora</u> , <u>sora ga</u>	┌sora	└sora	'sora	('sky')
4) <u>saru</u> , <u>saru ga</u>	┌saru┐	└saru┐	'saru'	('monkey')

In this dialect, the pitch on the first mora is phonologically distinctive (cf. fn.16). According to Hattori, the accent system of the Kyoto dialect is described by three distinctive features:

- 1) with or without kernel,
- 2) where is kernel, and
- 3) low- or high-initial.

36) Examples are from Hirayama (1960) As for /Q/, I found under the head-word "ke-" and "ko-" in Hirayama (1960) such types as "geQka" and "keQka", but not "keQka", or "keQka" types. It seems to me that there is not contrast between /VQ/ and /VQ/, or between /VQ/ and /VQ/. /Q/ in Japanese as a whole occurs only phrase-medially, except some peripheral cases (i.e., in exclamatory words and onomatopoeia). The phrase-medial /Q/ is obtained from the underlying oral obstruent segment (except /Q/, which occurs in some onomatopoeia (cf. McCawley (1968))). Thus, we perhaps need not set up /Q/.

37) Examples are phonemic notation. But K.-a. system shows actual pitch patterns.

K.-a. = Kindaichi 1960 p.255; K.-b. = Kindaichi 1960 p.305; Hat. = Hattori 1961 p.4; McC. = McCawley 1968 p.192.

Even in the pitch-level theory, unidimensional tonemes cannot describe the accent patterns of the Kyoto dialect. In order to distinguish (3) and (4), one must put a single /high/ toneme on the second syllable of (3) and a two-toneme combination /high-low/ on the second syllable of (4) (—K.-a.). Or else, one must apply "pre-accentuation" (—K.-b.).³⁸

In any event, one must assign two accents to the accent-phrase of the dialect. It should be well noticed that all the combinations of the higher and lower registers are found in underlying two-syllable nouns.

hana

yama

sora

saru

The accent system of this dialect does not particularly resemble that of a stress accent language. But it is true that the same kind of reduction rules as for the standard dialect and stress languages will apply to this dialect, too.

Japanese accent is described as functioning syntagmatically in the pitch-level theory, paradigmatically and syntagmatically in the accent-kernel theory, and syntagmatically in generative phonology. The difference between the three approaches is that of levels of description. The method of the pitch-level theory is that at the first stage one should identify accent function mainly at the phonemic level. The method of the kernel theory is the next stage: identifying the accent function at the morphophonemic level. The method of generative phonology is applied to describe the accent function based on the results of the first two ana-

38) Shibata (1955) criticizes Kindaichi, saying that Kindaichi's toneme-conception is incompatible with his idea of "pre-accentuation". (See Shibata 1955 p.53-55)

lyses. One should not take it for granted that the method of generative phonology is the best one, since different methods could be applied at different stages of linguistic analyses.

References

- Bloch, Bernard 1950: "Studies in Colloquial Japanese IV, Phonemics", Language 26, p. 86-125.
- Garde, Paul 1968: L'accent (Paris).
- Han, Mieko Shimizu 1962: Japanese Phonology, An Analysis Based upon Sound Spectrograms (Tokyo).
- Hattori, Shiro 1951: Onseigaku ('Phonetics') (Tokyo).
- " " 1960: Gengogaku no hoohoo ('Methods in Linguistics') (Tokyo).
- " " 1961: "Akusento-so, onsetsu-koozoo, koo'on-onso" ("Prosodemes, Syllable Structure, and Laryngeal Phonemes"), Study of Sounds IX, p. 1-21.
- Hirayama, Teruo 1960: Zenkoku akusento jiten ('Accent Dictionary of Japanese Dialects') (Tokyo).
- Hockett, Charles F. 1955: A Manual of Phonology (Baltimore).
- " " 1958: A Course in Modern Linguistics (New York).
- Kawakami, Shin 1966: "Teineina hatsuon to akusento no kata" ("The Deliberate Pronunciation and the Word-Pitch Pattern"), Kokugogaku 64, p. 1-10.

- Kindaichi, Haruhiko (ed.) 1958: Meikai nihongo akusento jiten ('Japanese Accent Dictionary') (Tokyo).
- " " 1967: Nihongo on'in no kenkyuu ('Studies in Japanese Phonology') (Tokyo).
- Martin, Samuel E. 1967: "On the Accent of Japanese Adjectives", Language 43, p. 246-277.
- Mase, Hideo 1969: "Acoustic Cues for the Perception of Accent in Japanese when the Accented Vowel is Devoiced", ARIPUC 3/1968, p. 143-176.
- McCawley, James D. 1968: The Phonological Component of a Grammar of Japanese (The Hague-Paris).
- Neustupný, J.V. 1966: "Hana ('flower') to hana ('nose') no hatsuon wa hatashite chigau ka" ('On the Difference of Pronunciation between hana ('flower') and hana ('nose')'), Gengo seikatsu 172, p. 80-87.
- Pike, Kenneth L. 1948: Tone Languages (Ann Arbor).
- Shibata, Takeshi 1955: "Nihongo no akusento-taikei" ("Accent Systems of Japanese Dialects"), Kokugogaku 21, p. 44-69.
- Weitzman, Raymond S. 1970: Studies in the Phonology of Asian Languages IX. Word Accent in Japanese (Acoustic Phonetic Laboratory, University of Southern California).