

A Comparative Analysis of the Rhythms of English and Japanese

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keywords: isochrony, prosodic transfer, stress, syllable, mora, vowel reduction, eurhythmic, legato, staccato

Introduction

It is an unavoidable tendency that the native language plays a critical, frequently declining role in learning to hear and speak a foreign language. This is clearly demonstrated by the fact that the spoken message of a non-native speaker almost always reveals the traits of the speaker's own language in the prosodic features. This is what is called "prosodic transfer" which causes various problems as "negative transfer".

Although there are broadly two phonemic accomplishments, that is, segmental and suprasegmental phonemes to be acquired, the latter seems to be attached rather less importance. One of the most difficult areas of spoken English for Japanese students to master is "rhythm". The errors involving features of stress and rhythm cause incomprehensibility more often than those in the pronunciation of individual segments or of intonation. Among the suprasegmental phonemes—accent, intonation, rhythm, pause, this paper intends to explore "rhythm" which has been so often underestimated and undertaught in English education in Japan. I will also point out some of the difficulties encountered in teaching English rhythm, and suggest some ways of improving the student's auditory perception and production of the rhythmic patterns of English.

"Stress-timed" Rhythm and "Syllable-timed" Rhythm

The languages in the world have traditionally been classified into two categories according to whether they have "syllable-timed" or "stress-timed" rhythm. Languages of the former type are based on a periodicity of pulses which synchronize with the even time spacing of syllables, the latter, on a periodicity of uniformly spaced stresses. These two trains of pulses — both isochronous—are mutually exclusive.

English is classified according to this theory among the stress-timed languages. There is no room for objection to the notion of syllable-timed rhythm, which implies that all syllables are of all equal length. Syllable-timed rhythm is easy to define and measure, and is experimented and proved by many phonologists. But their theories as to stress-timed rhythm do not always agree, at least as far as English is concerned. English speech rhythm in general, and English syllable quantities in particular, can be accounted for by the theory of stress-timing. This

notion, however, is not unanimously accepted, because it is difficult to give objective evidence as to the rhythm classification into two categories, i.e. stress-timed and syllable-timed. The reconsideration of this classification is suggested based on various experimental results in recent years.

As suggested by Mitchell (1969), there is no language which is totally syllable-timed or totally stress-timed—all languages display both sorts of timing; languages will, however, differ in which type of timing predominates. Crystal and Quirk (1964) demonstrate that different types of timing will be exhibited by the same speaker on different occasions and in different contexts. Roach (1982) suggests that the distinction between stress-timed and syllable-timed seems at the present to depend mainly on the intuitions of speakers of various Germanic languages all of which are said to be stress-timed; examination of the subjective feelings of speakers of languages usually classed as syllable-timed should be carefully studied if the distinction is to be maintained as a respectable part of phonetic theory.

In spite of various opinions of phonologists, for the purpose of teaching the characteristic rhythm of English, it will be appropriate as well as comprehensible to the students to classify English into "stress-timed" and Japanese into "syllable-timed" (strictly speaking, "mora-timed"). The term "stress-timed rhythm" is still a useful one, provided we do not take it too seriously and think it rather as "non-syllable-timed rhythm".

English Rhythm

The rhythm of English is more difficult to teach than other aspects of phonology for several reasons. The notion of linguistic stress is entirely strange to speakers of syllable-timed languages such as Japanese, in which each syllable occurs isochronously, or at equal intervals of time in an utterance whether spoken at slow or rapid rate of speed. Stress-timed languages such as English have stressed syllables occurring at approximately equal time intervals, regardless of how many unstressed syllables occur between them. It might be expected that speakers of syllable-timed languages would tend to produce syllable-timed rhythm in English. If an impression of syllable-timed rhythm is being produced in English, then this must mean that the difference in length between stressed and unstressed syllables is not being made sufficiently distinct.

The failure to make a sufficient difference in length between the vowels in stressed and unstressed syllables is probably the basic cause of the syllable-timed rhythm among the students. The conclusion is confirmed by recent findings by Adams (1979) and Munro (1978). In the course of a major investigation comparing the English speech of native and non-native speakers it was found that, although there was little difference between the native speakers and the non-native speakers in the duration of stressed vowels, the non-native speakers had significantly longer unstressed vowels. This contrast between stressed and unstressed syllables emerges as one of the most significant phonetic differences between English and Japanese. Since English rhythm units have different numbers of syllables, but a similar time value, the longer syllables are crushed together and pronounced very rapidly within the time limitation. Unlike most other aspects of phonology, this is a feature that must be taught from the very

beginning.

From the point of view of the perception and production of English rhythm, it is notable that there is sometimes no measurable difference in loudness between stressed and unstressed syllables, although stressed syllables are normally louder than the surrounding unstressed ones. Length, on the other hand, is a reliable marker of stress, and is the variable that most students find easier to control. Stressed syllables in English have been estimated to be about three times longer than unstressed syllables, whereas in a syllable-timed languages like Spanish, the difference is only about $1\frac{1}{2} : 1$ (Delattre 1966).

Since stressed syllables tend to recur at fairly regular intervals of time, in speaking at a given overall tempo, irrespective of the number of unstressed syllables, if there are few or no unstressed syllables, the rate of speech is slightly slowed down. If there are many, they are squeezed in fast, with vowels approaching schwa /ə/, in other words, "vowel reduction" occurs. Here are three sentences with stresses marked.

- (1) Dógs éat bónes.
- (2) The dógs will éat some bónes.
- (3) The dógs will be éating some of their bónes.

As for the number of syllables, sentences (2) and (3) have twice and three times more than sentence (1) respectively, but the stressed syllables in each sentence are the same in number. When students read these sentences, it takes them twice as long for sentence (2), three times as long for sentence (3), as compared with sentence (1). They fail to "obscure" the vowels in unstressed syllables into "schwa". They pronounce all the vowels with clear and equal stress. This is especially noticeable in sentence (3).

When numbers are counted ; one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty ... , rhythm continues at the same tempo in which stressed syllables occur isochronously regardless of whether or not there are unstressed syllables. The existence of two syllables such as "seven, thirteen, etc." and three syllables such as "eleven" has no influence on the whole rhythm. This is because English speakers tend to be in favor of the "eurhythmic" tempo where stressed syllables are repeated isochronously.

The theory of avoiding stressed syllables being adjacent to each other also leads to what is called "rhythmical variation" or "shifting of accent", for example, as follows.

- New York [nju:jdæk] + City → New York City [nju:jdæk síti]
Chinese [tʃáini:z] + cabbage → Chinese cabbage [tʃáini:z kæbrɪdʒ]
thirteen [θə:ti:n] + states → thirteen states [θə:ti:n stéits]
afternoon [æftənu:n] + tea → afternoon tea [æftənu:n tí:]
unfounded [ʌnfáundid] + rumor → unfounded rumor [ʌnfáundid rú:mə]

English poetry also gives us a typical example of stressed-timed rhythm. In a syllable-timed language like Japanese, a line of a poem such as 'haiku' or 'waka' is determined by counting the total number of syllables. Lines containing the same number of syllables are felt to be of the same length. In a line of an English poem the number of sentence stresses is more important than the number of syllables. Here are the beginning two lines of a famous lyric poem by Alfred Tennyson.

"Bréak, bréak, bréak,
Ōn thŷ cōld grāy stōnes, Ō Sēa!"

From the viewpoint of the "iambic trimeter" rhythm throughout this poem, these two lines may apparently be considered irregular in two points. Three "break"s in the first line seem to be the succession of three stressed syllables. But if they are read with three unstressed syllables before each "break" like " $\underline{\quad} \underline{\quad} \underline{\quad} , \underline{\quad} \underline{\quad} \underline{\quad} , \underline{\quad} \underline{\quad} \underline{\quad}$ ", they consist of "iambic trimeter". The succession of two unstressed syllables in "Ōn thŷ cōld" in the second line can be read fast so that they make "iambus" in time value.

The unstressed syllables are so unimportant, rhythmically speaking, that it is not necessary to count them. When a person recites these lines, it may take as long to say the first as the second, even if the first contains only three syllables and the second is made up of seven. This leads to a significant observation regarding English rhythm.

The following is one of the well-known modern poems which are written in a colloquial style close to daily dialogue.

Stopping by Woods on a Snowy Evening

Robert Frost

Whōse wōods thēse āre Ī thīnk Ī knōw.
Hīs hōuse ĩs ĩn thē vīllāge thōugh;
Hē wīll nōt sēe mē stōppīng hēre
Tō wātch hīs wōods fīll ūp wīth snōw.

Mŷ līttlē hōrse mŭst thīnk ĩt quēer
Tō stōp wīthōut ā fārmhōuse nēar
Bētweēn thē wōods ānd frōzēn lāke
Thē dārkēst ēvenīng ōf thē yēar.

Hē gīves hīs hārnēss bēlls ā shāke
Tō āsk ĩf thēre ĩs sōme mīstāke.
Thē ōnlŷ ōthēr sōund's thē swēep
Ōf ēāsŷ wīnd ānd dōwnŷ flāke.

Thē wōods āre lōvelŷ, dārk ānd dēep,
Bŭt Ī hāve prōmīses tō kēep,
Ānd mīles tō gō bēfōre Ī slēep,
Ānd mīles tō gō bēfōre Ī slēep.

The rhythm is exact "iambic tetrameter" with its end rhyme of " aaba / bbcb / ccdc / dddd / .
This poem will be an instructive example for students to understand English rhythm as well as

rhyme.

When we sing a song in English, we actually realize the basic and distinct difference between the rhythms of both languages. Since the fixed syllables of a song must be pronounced within a fixed time limit, it will, as a logical consequence, be impossible to finish singing if we pronounce each English syllable as accurately as we do in Japanese counterparts. English songs provide us a favorable opportunity to understand the fundamental principle of English rhythm. Here are three charming songs from the spectacular musical "My Fair Lady" produced by Alan Jay Lerner and Frederick Loewe.

*Í hāve óftēn wālkēd dōwn thīs strēet bēfōre;
Bút thē pāvemēnt ālwāys stāyed bēnēath mý fēet bēfōre.
Áll āt ónce ām Í
Séverāl stōrīes hīgh.
Knōwīng Í'm ón thē strēet whēre yōu līve.*

*Áre thēre flāc trēes īn thē hēart óf tōwn?
Cān yōu hēar ā lárk īn āny óthēr pārt óf tōwn?
Dōes ēnchāntmēnt pōur
Óut óf év'rý dōor?
Nó, īt's júst ón thē strēet whēre yōu līve!*

*Ānd óh! thē tōwerīng fēelīng
Júst tó knōw sōmehōw yōu āre nēar!
Thē óvērpowērīng fēelīng
Thāt āny sēcōnd yōu māy súddenly āppéar!*

*Péoplē stōp ānd stāre. Thēy dōn't bōthēr mé.
Fór thēre's nōwhēre ēlse ón éarth thāt Í wōuld ráthēr bē.
Lēt thē tíme gō bý,
Í wōn't cáre īf Í
Cān bē héré ón thē strēet whēre yōu līve.*

————— *On the Street Where You Live*

This is a beautiful melody with regular alternations between strong and weak stresses. For the purpose of keeping the steady rhythm, [tə] in "often [ó:f(tə)n]" in the first line is pronounced, and moreover "I'm" in the fifth line, "just" in the tenth line and "here" in the last line are all kept time to the rhythm by prolonging vowels.

*Don't talk of stars
Burning above;
If you're in love,*

Show me!

Tell me no dreams

Filled with desire.

If you're on fire,

Show me!

Hère we are together in the middle of the night!

Don't talk of spring! Just hold me tight!

Anyone who's ever been in love'll tell you that

This is no time for a chat!

Haven't your lips

Longed for my touch?

Don't say how much,

Show me! Show me!

Don't talk of love lasting through time.

Make me no undying vow.

Show me now!

Sing me no song!

Read me no rhyme!

Don't waste my time,

Show me!

Don't talk of June!

Don't talk of fall!

Don't talk at all!

Show me!

Never do I ever want to hear another word.

There isn't one I haven't heard.

Hère we are together in what ought to be a dream;

Say one more word and I'll scream!

Haven't your arms

Hungered for mine?

Please don't 'expl'ine,'

Show me! Show me!

Don't wait until wrinkles and lines

*Pop out all over my brow,
Show me now!*

———— *Show Me*

All through this song Eliza (Audrey Hepburn) sings with intense feelings and each of the four underlined lines is sung at a breakneck tempo of almost one second per line. In spite of this astonishing speed the stressed-timed rhythm of English is strictly kept. Even a Japanese professional announcer who excels in a tongue twister can never finish this line in a second or two, if he follows the syllable-timed rhythm of Japanese. This kind of line of a song could be an optimal example for students to master the English rhythm.

*I could have danced all night!
I could have danced all night!
And still have begged for more.
I could have spread my wings
And done a thousand things
I've never done before.*

I'll never know
What made it so exciting;
Why all at once
My heart took flight.
I only know when he
Began to dance with me,
I could have danced, danced, danced all night!

———— *I Could Have Danced All Night*

This is a joyful song representing a typical example of this musical. Its tempo is moderate enough for students to practice the strong and weak stresses of English rhythm. This would be gilding the lily, but they might sing, "I could have studied all night! I could have studied all night! And still have begged for more."

Japanese Rhythm

As stated before, Japanese has "syllable-timed" rhythm where each syllable is pronounced isochronously, that is, in the same duration proportionate to the number of syllables in the utterance. This mathematical accuracy is the reason why English spoken by Japanese is often criticized as "unusually precise". English "stress-timed" rhythm takes about the same duration to get from one primary stressed syllable to next, irrespective of the number of intervening syllables. Such a difference in rhythm is most distinctly detected in verse, songs or words in a classic drama on stage. The followings are the words spoken by a juvenile actress on the stage of "*keisei Awanonaruto*" by Chikamatsu Hanji.

"To-to-sa-ma-no-na-wa-A-wa-no-Ju-u-ro-be-e-to-mo-o-shi-ma-su."

Then Awano Jūrobe asks in great agitation.

"Shi-te, ka-ka-sa-ma-no-na-wa?"

She answers,

"Ka-ka-sa-ma-no-na-wa O-yu-mi-to-mo-o-shi-ma-su."

Although this is a climax scene of this drama, typical Japanese rhythm reveals itself derived from its successive monotonous tone with all the high-pitched sounds. Different from the wavy line of English rhythm, Japanese rhythm sounds something like succession of dots. In musical terms, the former is "legato", the latter "staccato".

The comparison between English and Japanese "nursery rhymes" gives us a handy clue to explain each characteristic feature of rhythm.

Twinkle, Twinkle, Little Star

Ann & Jane Taylor

*Twinklĕ, twinklĕ, littlĕ stār!
Hōw Ī wōndĕr whāt yōu āre!
Ūp, ābōve thĕ wōrld, sō hĭgh,
Lĭke ā dĭamōnd ĩn thĕ skŷ.*

*Whĕn thĕ blāzĭng sūn ĩs gōne,
Whĕn hĕ nōthĭng shĭnes ūpōn,
Thĕn yōu shōw yōur littlĕ lĭght,
Twinklĕ, twinklĕ, āll thĕ nĭght.*

The English nursery rhyme above consists of a regular alternation of stressed and unstressed syllables: $\overset{\cdot}{\text{u}} \ \overset{\cdot}{\text{u}} \ \overset{\cdot}{\text{u}} \ \overset{\cdot}{\text{u}} \ \overset{\cdot}{\text{u}} \ \overset{\cdot}{\text{u}} \ \overset{\cdot}{\text{u}}$. In English prose, content words (nouns, verbs, adjectives, adverbs, demonstratives and interrogatives) are usually stressed, and function words (articles, prepositions, pronouns, relatives, conjunctions, and the like) are left unstressed unless the speaker wishes to call special attention to them. In verse, this stress situation being reversed often occurs, as is noticed in this nursery rhyme. English nursery rhyme, in any case, is one of the appropriate materials for students to learn English rhythm.

On the other hand, Japanese nursery rhyme "*Tsuki no sabaku*" has no stress of any kind as a typical example of syllable-timed rhythm. When we sing or hear this Japanese nursery rhyme, the existence of 7-5 syllable "meter" does not cross our mind.

Tsuki no Sabaku

*Tsu-ki-no-sa-ba-ku-o (7) ha-ru-ba-ru-to (5)
ta-bi-no-ra-ku-da-ga (7) yu-ki-ma-shi-ta (5)*

ki-n-to-gi-n-to-no (7) *ku-ra-o-i-te* (5)
fu-ta-tsu-na-ra-n-de (7) *yu-ki-ma-shi-ta* (5)

Similar examples of Japanese poems such as *hyakunin isshu* and the like follow.

A-ma-tsu-ka-ze (5) *ku-mo-no-ka-yo-i-ji* (7)
fu-ki-to-ji-yo (5) *o-to-me-no-su-ga-ta* (7)
shi-ba-shi-to-do-me-n (7)

Shi-zu-ka-sa-ya (5)
 i-wa-ni-shi-mi-i-ru (7)
 se-mi-no-ko-e (5)

Ma-da-a-ge-so-me-shi (7) *ma-e-ga-mi-no* (5)
ri-n-go-no-mo-to-ni (7) *mi-e-shi-to-ki* (5)
ma-e-ni-sa-shi-ta-ru (7) *ha-na-gu-shi-no* (5)
ha-na-a-ru-ki-mi-to (7) *o-mo-i-ke-ri* (5)

It is the 5–7 or 7–5 syllable "meter" in verse that has nourished the fundamental rhythm of Japanese. Japanese rhythm is composed of "mora" as a basic prosodic unit. "Mora" has unconsciously been included in our linguistic aspects of life. This is eloquently proved by "janken" (the equivalent of tossing a coin to decide who is a winner) in our childhood. A winner by "gū" (rock) goes forward three steps, saying "gu-ri-ko"; a winner by "pā" (paper) six steps, saying "pa-i-na-tsu-pu-ru"; a winner by "cho-ki" (scissors) six steps, saying "chi-yo-ko-re-e-to". Even the children who know nothing about "mora" divide a word into "moras", and count the word by their number. Since each "mora" with the same length forms a basic unit of rhythm, Japanese is classified as a "mora-timed" language.

Conclusion

I had once carried on research to find students' defects concerning supra-segmental phonemes (research bulletin : Keio University). The tested material is the opening narration of the movie "Sabrina" starring Audrey Hepburn. The research was made by comparing the recitation by Audrey with the tapes recorded by 20 students who had been handed the scripts a week before so that they could have enough time to practice. The summary of the present paper together with the results obtained through the above-mentioned research bulletin suggests the following.

1. In a stress-timed language, the stress feature is regarded as the primary factor in prosody, especially in the formation of "rhythm". As far as rhythm and stress are concerned, syllable duration has a direct relation to the rhythmic patterns of English and also to the rhythmic difficulties encountered by students. The duration of a given syllable varies according to the

context and thus the actual number of syllables in a rhythm unit is no real index of the duration of the interval. The number of syllables in the several rhythm groups of an utterance may vary considerably, but the impression of isochronous intervals is maintained. It is this variability of syllable duration which makes the rhythm of English so difficult for students. They invariably fail to recognize the significance of the timing of syllables and as a result, produce an anomalous rhythm which impairs the intelligibility of their utterance. The rhythm anomalies of students appear to result from superfluous and random placement of stresses and pauses together with failure to neutralize the unstressed syllables of the utterance.

According to some interesting experiments, notably by Klatt (1975), vowels in stressed syllables are significantly longer than in unstressed syllables. This finding is related to the tendency for stressed syllables to occur at roughly equal intervals of time. The more unstressed syllables there are between stressed ones, the more frequently unstressed vowels are reduced. This vowel reduction is the weakest and the most difficult point for students to master. Correct application of the principle of "vowel reduction" will almost automatically result in acceptable rhythm being achieved.

In addition more attention needs to be paid to the various features of assimilation, elision and linking which native speakers use in order to reduce unstressed syllables and to maintain a smooth rhythmic flow.

2. Sense and breath groups coincide in any language, regardless of stress-timed or syllable-timed. Activities based on the timing and organization of the sense and breath groups are crucial for the acquisition of speech rhythm. But students tend to punctuate words disorderly at a slow tempo and insert needless pauses. This uneven and jerky rhythm results in the main from incorrect grouping, presumably through failure to scan the passage properly and thus to divide it up correctly, that is, faulty division into sense and breath groups.

3. Intonation may well be less of a problem for students than the features of rhythm and stress, but the fundamental patterns must be learned. English intonation can be described as the combination of stress (primary, secondary, tertiary, weak), pitch (extra high, high, mid, low), and terminal juncture (falling, rising, level). Students' intonation is narrow in range and lacks inflection.

4. It is obvious, though not often explicitly recognized, that the influence of English spelling system should be taken into account even in achieving oral competence in rhythm. English provides no means of differentiating between the quality of vowels in stressed syllables and that in unstressed syllables. Each written symbol, or letter of English, is not pronounced in the same way each time it occurs as it is in Japanese. Students, often used to a phonemic writing system in Japanese, are apt to regard English spelling as a phonemic system. But it is explicitly recognized that English spelling is based on morphemes rather than phonemes. Since the principles of stress depend heavily on morphology, the spelling gives very little clue about which vowels should be reduced and which should not.

5. The propositions for the teaching of spoken English can be summed up as follows.

Teaching methods are broadly divided into two categories: "bottom-up" and "top-down". The bottom-up method starts from the minimum phonetic unit, that is, segmental phonemes and steps up to morphemes, words, phrases, clauses and sentences. This method poses some controversial problems, e.g. a question as to the effectiveness of automatic drill exercises on individual sound segments including allophonic variation, minimal pairs and so forth without giving adequate consideration for the meaning of a language from its context.

The teacher who concentrates his attention on the segmental features of the sound system and the isolate word form tends to speak so slowly in order to make himself understood that the sentence stress and rhythm are distorted. If the difference in the duration of stressed and unstressed syllables is lost, he turns stress-timed English rhythm into something much closer to the syllable-timed rhythm of Japanese.

The top-down method takes the standpoint that language is made up and understood in a broad context, in other words, human utterance is not made in step-by-step order like phonemes, morphemes, ... sentences, but is based on syntactic and semantic unity. In the actual utterance drill, suprasegmental phonemes such as stress, rhythm or intonation are of primary importance and individual phonetic units are of secondary importance. The principal aim of this top-down method is to achieve the basic ability of communication, therefore systematic pronunciation drills are minimized, although not intended, and as a result the permissible range of pronunciation will be extended to a lower limit.

Pennington (1989) gives a detailed explanation of this top-down method placing great importance on three areas: prosody, phonological fluency and voice quality which lay emphasis on the continuity of phonetic aspects.

Considering the multifariousness of teaching spoken English, and the merits and demerits of both methods, the choice of one method solves no problem. From the pedagogical point of view, the top-down method should be more positively employed and explored by more teachers, because a foreign accent in the segments and in certain features of intonation does not seem to hinder the intelligibility of the students' speech if they closely follow the rhythmic patterns of English.

It is no exaggeration to say that the improvement of the students' auditory perception and production of spoken English cannot be expected without a ready command of prosody, especially "rhythm".

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日英語リズムの比較分析

鳥居 英男

世界で英語を公用語、準公用語としている国は191カ国中52カ国。英語は母語話者の手を離れ様々な "Englishes" が存在し、Singlish や Taglish なる単語も辞書に掲載されている。今や英語は誰のため、何のために学ぶのかではなく、世界に人がいるから学ぶ時代である。

学生にとっての英語はコミュニケーション能力としての習得が必要である。ところが TOEIC の受験者数はアジア圏で日本が圧倒的に多いが、平均スコアは最下位あたりを低迷している。その原因として、社会生活上の必要性、学校教育、入試制度などが論点となる。しかし、言語学的観点からは、日英両言語の音韻上の相違が大きな障壁となっていることも否めない。前号(紀要No.13)では「音節」での比較分析を述べたが、今回は prosodyの中から rhythm の基本的相違を比較した。

両言語のリズムの相違を身近に実感するものの一つに「歌」がある。一定の時間内に一定の音節を発音し切ってしまうなければならないので、英語の各音節を日本語並みに正確に発音していたのでは歌え切れず、極端に音節を省略してしまったりする。英語の stressed-timed rhythm と日本語の syllable-timed (正確には mora-timed) rhythm の比較語学の見地からは、「歌」も英語発音の根本原理を理解する好個の教材となる。