

A Derivation of Speech Sounds in English

A Thesis

Presented to

The Graduate School of Language and Culture

Hiroshima Jogakuin University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts

by

Hiromi Uesugi

January 2002

CONTENTS

Introduction.....	1
Chapter I	
Rules of Stress and Rhythm.....	8
Chapter II	
Patterns of Intonation.....	23
Chapter III	
Derivations of Intonation.....	47
Conclusion.....	73
Tape and Bibliography.....	76

INTRODUCTION

Speech is so familiar a feature of daily life that we rarely pause to define it. It seems as nature to man as walking, and only less so than breathing. Yet it needs but moment's reflection to convince us that this naturalness of speech is but an illusory feeling, (Sapir. 1949: 3) because rules are certain to exist in speech.

A great deal of effort has been made on language. What seems to be lacking, however, is every person and students who have speech everyday recognize what speech is, what language is, what their sounds are, how they fall into patterns, and how they change in different circumstances. The writer thinks that to deal with rhythm and intonation in English would throw new light upon these questions.

Before describing Rhythm and Intonation in English, I would like people to read the following two famous quotations as human speaking language.

(1) When we study human language, we are approaching what some might call the "human essence," the distinctive qualities of mind that are, so far as we know, unique to man and that inseparable from any critical phase of human existence, personal or social. (Chomsky 1972:100)

Human language, which is the most excellent characteristic of the human being, different from any other animals, is his ability to communicate to his fellow complicated messages concerning every aspect of his activity. However, human beings don't know

what the language is and don't try to know it because it is too close, natural and ordinary to them: that is, the language exists in our lives. The author thinks that it is very important and precious for us to study what human language is and that we know language is what is indicated, and that it is necessary for us to know it as human. We can get these questions by the study of human language, which is called *Linguistics*. Palermo (1978) talks about language as follows:

(2) As a function of knowing a language yourself, you would obviously know that strange noises the other people uttered were speech, and in that stream of speech there would be words and sentences which have meaning, and you also would know that the sounds people make at various times are language, that language is composed of phonemes, that strings of phonemes make words, and that strings of words are put together in certain way to construct sentence.(Palermo 1978:180-181)

A language is a system of conventional signals used for communication by a whole community. This pattern of conventions covers a system of significant sound units (the phonemes), the inflexion and arrangement of 'words', and the association of meaning with words. An utterance, an act of speech, is single concrete manifestation of the system at work. (Gimson 1970:3)

Linguistic study insists on many fields: Morphology, Syntax, Semantics, Phonetics and Phonology, etc. The writer chooses Phonetics and Phonology as her research among these fields. Then, what is Phonetics and Phonology? Crystal (1991) defines phonetics and phonology as follows:

Phonetics: The science which studies the characteristics of human sound-making, especially those sounds used in speech, and provides methods for their DESCRIPTION, CLASSIFICATION and TRANSCRIPTION.(Crystal 1991:259)

Phonology: A branch of LINGUISTICS which studies the sound SYSTEMS of LANGUAGES. Out of the very wide range of sounds the human vocal apparatus can produce, and which are studied by PHONETICS, only a relatively small number are used DISTINCTIVELY in any one language... The aim of phonology is to demonstrate the patterns of distinctive sound found in a language, and to make as general statements as possible about the nature of sound systems in the languages of the world. Putting this in another way, phonology is concerned with the range and function of sounds in specific languages (and often therefore referred to as 'functional phonetics'), and with the rules which can be written to show the types of phonetic relationships that relate and contrast words and other linguistic units.(*ibid.* p.261)

Following these ideas of Crystal about phonetics and phonology, I would like to continue my own research.

There are three aims in this paper: first, to mention that speech sounds, intonation and rhythm, which are unintentionally produced in languages by human beings, actually have rules, and second, to indicate the structure of sounds: how and why they fall into patterns and how and why they change in different circumstances. In this respect, this paper describes rhythm and intonation of the English language.

First of all, the author indicates that this paper deals with both tree and metrical grid following Liberman & Prince (1977) (henceforth LP) and Hayes (1984) to show stress in

English phrases and sentences metrically. LP describes metrical rhythm as follows:

(3) Our theory will employ two basic ideas about the representation of traditional prosodic concepts: first, we represent the notion *relative prominence* in terms of a relation defined on constituent structure; and second, we represent certain aspects of the notion *linguistic rhythm* in terms of the alignment of linguistic material with a “metrical grid”. (LP, 249)

LP theory shows that first metrical indication is relative prominence on constituent structure, and the second is linguistic rhythm in terms of alignment of linguistic material with a metrical grid. Namely the theory says that rhythm should be pointed out by both trees and metrical grids.

The perceived ‘stressing’ of an utterance, LP thinks (*ibid*.p249), reflects the combined influence of a constituent-structure pattern and its grid alignment. This pattern-grid combination is reminiscent of the traditional picture of verse scansion, so that the theory as a whole deserves the name ‘metrical’. The writer will also use the expression ‘metrical theory’ as convenient term for that portion of the theory which deals with the assignment of relative prominence in terms of a relation defined on constituent structure.

What relative prominence is here, is that describing the strong-weak relation is defined as one component of being two sister-relations.

This simple principle, which LP calls (*ibid*.p315) the Relative Prominence Projection Rule, is almost all that is needed to ensure the correct ‘scansion’ of linguistic material. A more precious statement by LP is given below, phrased in terms of the representation of relative prominence which is developed by the previous theory.

(4) *Relative Prominence Projection Rule* (LP, p.316)

In any constituent on which the strong-weak relation is defined, the designated terminal element of its strong subconstituent is metrically stronger than the designated terminal element of its weak subconstituent.

LP(p.316) says that a metrical grid is 'aligned' with a linguistic phrase by the previously mentioned function, which maps the grid's terminal set one-to-one onto the syllables of the phrase, preserving order. The Relative Prominence Projection Rule (henceforth RPPR) is to be interpreted as a wellformedness condition on such alignment.

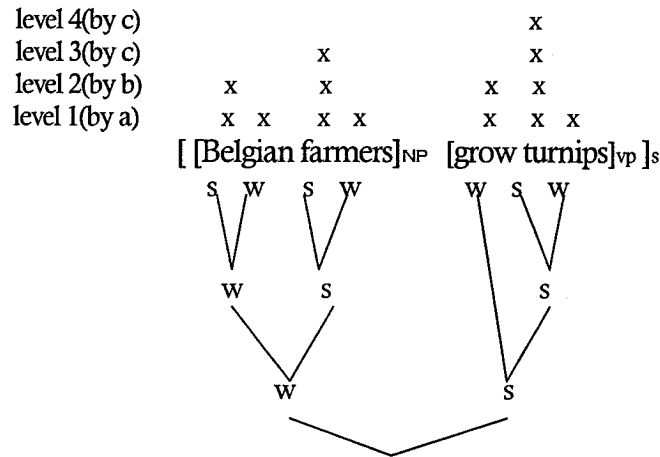
Hayes (1984:34) suggests on his study like this: LP proposes a system of rules constructing metrical grids from metrical tree, along with an explicit formulation of the Rhythm rule. LP programmatically suggests additional functions of the grid, however, their suggestions are not precise enough for empirical testing. In this section, I will review LP's rules, showing that, as they stand, they can't account for the full range of fact. I will then propose a more articulated approach to the problem. Then Hayes suggests substantial modifications of these tree construction rules from tree structures by asset of rules by which grids are derived. Hayes proposes Grid Construction as follows:

(5) *Grid Construction* (Hayes, 1984: 35)

- a. As a place marker, assign every syllable a mark on the lowest level of the grid.
- b. Assign a mark at level two to the strongest syllable of every phonological word.
- c. Assign sufficient additional marks so that the strongest syllable of every constituent labeled S has higher grid column than the strongest syllable of its weak sister.

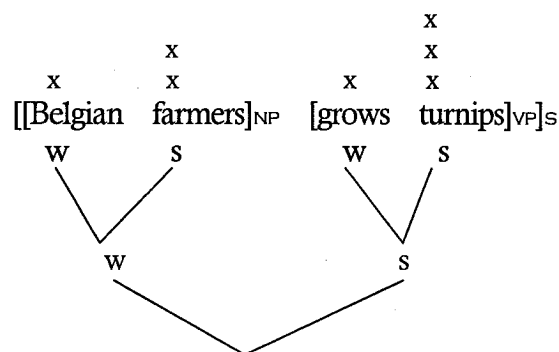
letters the subrules that have applied in creating each column (a-c)

(6)



According to Hayes, Grid Construction is based on “assign every syllable a mark on the lowest level of the grid”, however, in this paper the author shows the strong-weak relation by putting on one grid on one word because this paper deals with sentences of Rhythm and Intonation in English. Nevertheless, notice that every syllable mark would be assigned whenever she needs it. Then, the author graphically represents the rules, RPPR and Grid Construction, by annotating the nodes of the syntactic tree with the symbols *w* (for “weak”) and *s* (for “strong”).

(7)



It is obvious that relative prominence and Grid construction illustrates the rhythm graphically in English.

CHAPTER I

Rules of Stress and Rhythm

1.1 Stress

The terms 'stress' and 'accent' are first introduced at the beginning of the chapter1 because we need to know a large distinction between 'stress' and 'accent' before studying rhythm and intonation in English.

The term 'stress' has been used in different and confusing ways. It has sometimes been used simply to refer to syllable (or vowel) made prominent for linguistic purpose, either in words or sentences. The term 'accent' has also been used to refer to syllables made prominence for linguistic purpose; it commonly implies that such prominence is principally associated with pitch (hence the common term 'pitch accent'). The term 'stress' means 'prominence', however such prominence is achieved. The term 'accent' will be limited to prominences where pitch is involved (hence it is equivalent to pitch accent)(Cruttenden 1986: 16).

A stress is produced by pushing more air out of the lungs. When there is an increase in the amount of air being pushed out of the lungs, there is an increase in the loudness of the sound produced. A stress thus has an increase in respiratory activity. It may also have an increase in laryngeal activity, so that there is an additional increase in pitch. And a stress has a longer vowel. Stress can always be defined in terms of something a speaker does. (Ladefoged 1975: 97-98)

Namely, a stress is a cover term for the combined efforts of loudness, pitch,

length—which result in vowel prominence. In general, English stressed vowels are higher in pitch, longer, and louder than unstressed one.

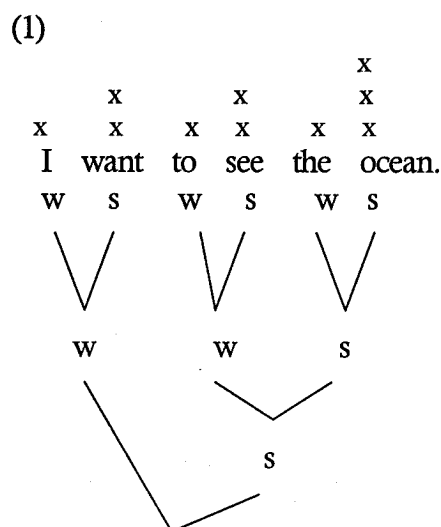
The pitch of the voice is the tension of the vocal cords. If the vocal cords are stretched, the pitch of the sound will go up. Altering the tension of the vocal cords is the normal way of producing most of the pitch variations that occur in speech. (*ibid.* p.224)

As we have seen before, the distinctive between so-called ‘stress accent’ languages and so-called ‘pitch accent’ languages has never been very clearly defined. The term ‘stress accent’ is usually used to refer to languages, like English, using pitch primarily for intonational purposes. It is, however, an unfortunate term since it implies that prominent syllables in such languages are produced primarily by ‘stress’ which in this usage seems to mean breath-loudness and length. Intonation or so-called ‘stress accent’ languages like English are generally contrasted with ‘pitch accent’ languages, of which the best example is Japanese. In the standard Japanese of Tokyo words fall into two classes: accented and unaccented. Words with an accent realize the accent by a high pitch on the accented syllable followed a low pitch on the following syllable, e.g. *ame* [•.] ‘rain’ ; *ongaku* [•.] ‘music’. (Cruttenden 1986: 12-13) And also words with the accent by a low pitch on the accent syllable followed a high pitch on the following syllable, e.g. *ame* [. •] ‘candy’ (large dots indicate high pitch).

The word “strike” ([straɪk]), for instance, has a stress on “i”, so there are an increase of amount of the air, and high pitch, and length on it. However, Hence, note that the differences between stress accent (English) and pitch accent (Japanese) by indicating that a paper in front of our mouth will be flapping at the point of the stress when we pronounce some English word, different from not being in Japanese one.

1.2 Sentence -stress

Stresses on words sometimes become modified when the sentences are pronounced naturally. The most frequent stress modification is the dropping changed stresses. There is a stress on the first syllable of each of the words “*I, want, to, see, the, ocean*” when these words are said in isolation. However, there are normally fewer stresses when they occur in a sentence such as, *I want to see the ocean* not all words are stressed; *I, to* and *the* are unstressed. What sorts of word are stressed, then, what sorts are unstressed? First, all words have stressed syllables. In some circumstances English speakers don’t stress each syllable. Next, one syllable words are generally *not* stressed if they are function words (grammatical words) like pronouns (*I, me, you, he, his, she, her*, etc.), prepositions (*to, for, at, from, by, in*, etc.), articles (*the, a, an, some*, etc.), auxiliary (*may, can, will*, etc.), conjunctions (*but, and, after, before, if, when*, etc.), relative pronouns (*who, which, whose*, etc.) and so on. Other words are stressed if they are content words; for example, full verbs (*eat, like, love, tell*, etc.), nouns (*table, dog, station, boy*, etc.), adjectives (*good, white, short, warm*, etc.), adverbs (*well, frequently, just, not, always*, etc.), interrogatives (*who, what, when, how, where, why*, etc.) and like that. The following example is the sentence stressed by metrical tree and grid:



The above example shows that content words such as *want*, *see*, and *ocean* are stressed, then function words such as *I*, *to* and *the* are unstressed, and also shows that *ocean* has primary stress by rule of “end-focus principle” in English.

However, the proceeding examples show the exception that function words have a strong form, or are stressed:

(2) Function words with stress

a) Negative shortening: He didn't mean to go.

b) Auxiliary which comes at the last of a sentence:

Can you speak English? ---Yes, I can.

c) Preposition which comes at the last of sentence: What are you looking for?

d) Intensive “do” in an affirmative sentence: I do remember you.

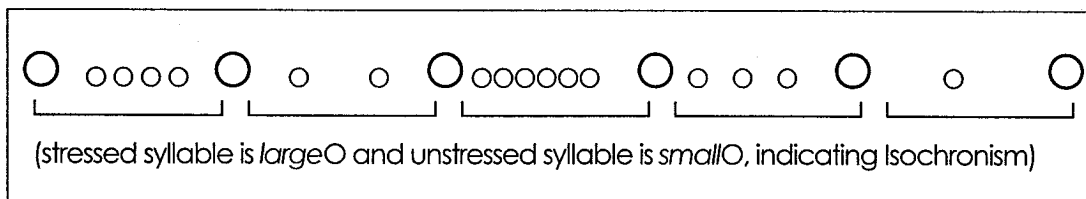
1.3 Rhythm

As the writer has mentioned before, in English sentences there are stressed and unstressed words when the sentences are pronounced in normal speed. The fundamental rule of English rhythm is this: each stress group within a word group is given the same amount of time. As O'Connor (1980:99) advanced, any unstressed syllable *before* the stressed syllable is said very quickly and do not affect the length of syllables before it. We pronounce sentences as quickly as we can so that we can keep equal interval between the stressed syllables. Any unstressed syllable *after* the stress is of courses part of the stress group and shares the available time with the other syllables of the stress group. There is a unit, with a stressed syllable as its core and any unstressed syllable which may come *before* it and *after* it. So, “I was in London” is pronounced as follows:

|| aɪwəzɪn lʌndən ||

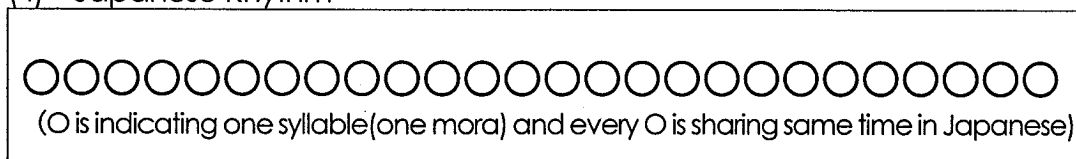
As he indicated, “ ____ ” are shared the same amount of time, hence the words “*I*, *was*, and *in*” have to be pronounced very quickly to share the same amount of time “*London*”, not || aɪ wəz ɪn lʌndən ||. English has isochronism and the writer can represent English Rhythm in a simple diagram as follows:

(3) English Rhythm



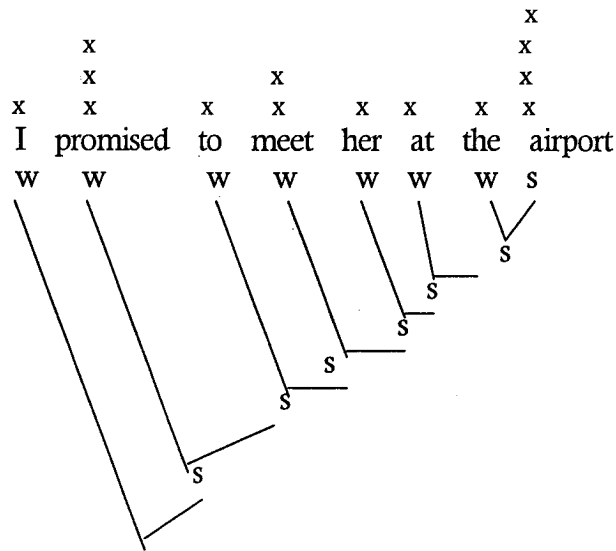
Comparing English Rhythm, note that difference from Japanese, which shares each syllable (mora in Japanese) with same time. *Watashi wa rondon ni ita* (I was in London), for instance, means that *wa*, *ta*, *shi*, *wa*, *ro*, *n*, *do*, *n*, *ni*, *i* and *ta* share same time in Japanese, then the writer can show the Japanese Rhythm in a simple diagram as follows:

(4) Japanese Rhythm



The writer will show English Rhythm, which is illustrated in the following sentence by using tree and grids.

(5)



We can see the Rhythm rule in English that a stressed syllable together with any unstressed syllable which may follow it forms a strong group, then each strong group within a phrase group is given the same amount of time. Hence, any unstressed words (like *I, to, her, at, and the* in the sentence above) before the stressed words (*promise, meet and airport*) are pronounced very quickly and do not affect the length of syllables before it. It also shows that as long as unstressed words before and after stressed words are increased in number these unstressed syllables have to be pronounced more quickly like this:

(6)

Sharing same time (rhythm group)	
	room
the	róom
in the	róom

This diagram shows that even if unstressed syllables (*not, in, the and next*) are much more increased in number, time in stressed syllables is not changed, so we know

unstressed words have to be pronounced quickly. Of course, we can find the same thing in sentence.

(7)

Teacher	answers	questions
My teacher	answers me	the question
My teacher	will answer me	the question

Rhythm group, as we have noted, with a stressed syllable as its center and any unstressed syllables which may come before and after the stressed syllables share the same time.

1.4 Rhythm Rule

1.4.1. Stress Clash

When looking at “thirteen men”, however, stressed syllables occur one after another. We are going to see what will happen to rhythm in English. Hayes defines a stress clash as follows:

(8) *Stress Clash* (Hayes, 1983: 366)

A stress clash occurs when two marks are adjacent on their grid level, with no mark intervening on the immediately lower level.

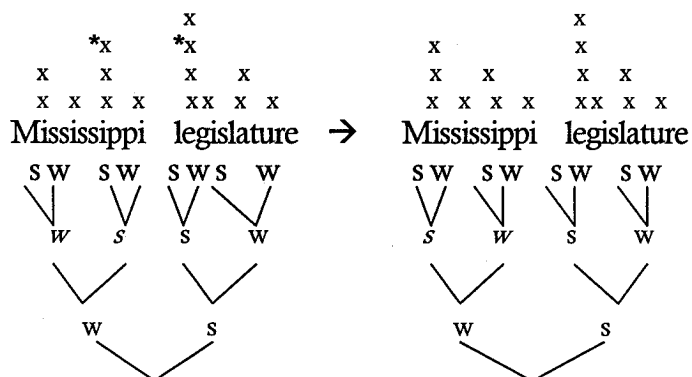
This condition distinguishes the relevant cases. In the examples that follow, the stress clash is marked with asterisks.

		X
*X		*X
X X		X
thirteen		men
W S		S
V		/
W		/
/		/

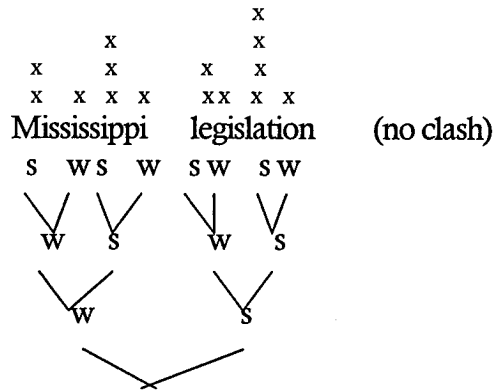
(10) The crucial additional condition on the Rhythm Rule is based on the grid: the rule applies preferentially when alleviates a stress clash, defined as two marks adjacent on their row, with no intervening mark on the immediately lower row.

(Hayes, 1984:36)

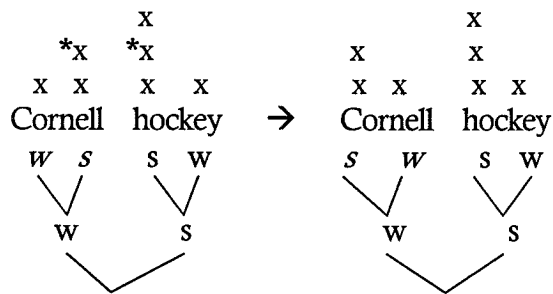
a.



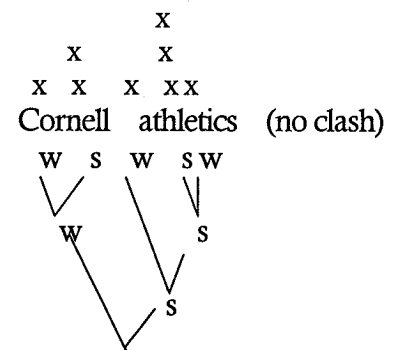
b.



c.

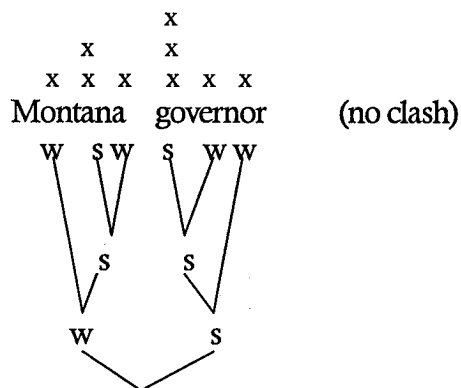


d.



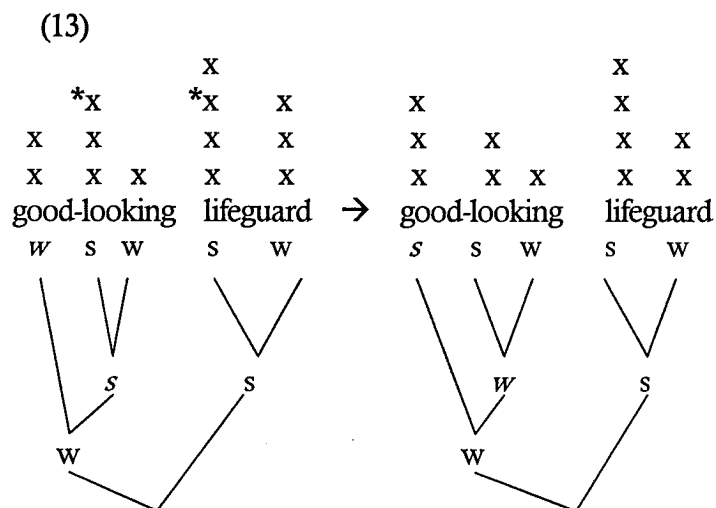
The notion of stress clash also correctly predicts that words with the stress pattern of *Montana* will not ordinarily undergo relabeling (*ibid.* p.37):

(12)

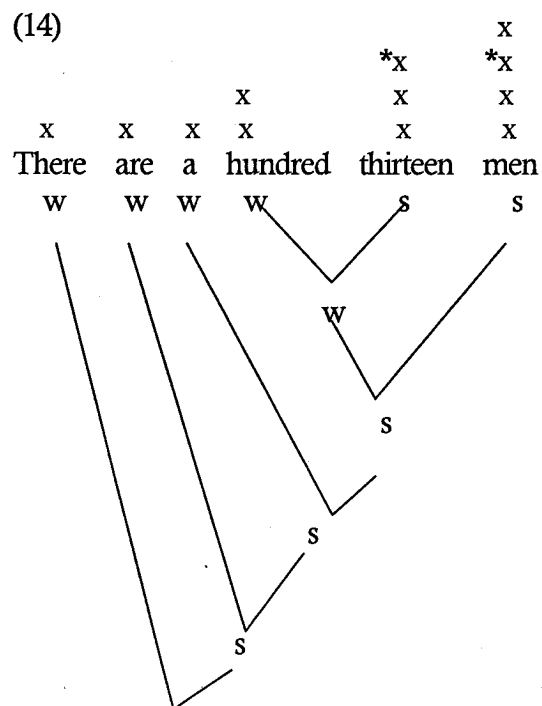


In addition, the stress clash theory provides motivation (beyond mere rhythmic intuitions) for rule (5b) of the grid construction algorithm, as shown by examples like *good-looking lifeguard*. In (10), the extra mark that rule (5b) places on the syllable good

causes rule (5c) to promote the column of *look* into a position that clashes with *life*. The Rhythm Rule accordingly applies, even though good-looking has the same tree shape as *Montana*, under (12)(Hayes 1984:37).



Although the author follows Hayes's rules about stress clash, she puts only one grid on unstressed words.



(14) a.

Figure 1 shows two syntactic trees for the sentence "There are a hundred thirteen men". The left tree represents a structure where "a hundred thirteen" is a single noun phrase, with "a" as a determiner and "hundred thirteen" as a quantifier. The right tree represents a structure where "a hundred thirteen" is a single noun phrase, with "a" as a determiner and "hundred thirteen" as a quantifier. The trees are connected by a double-headed arrow, indicating a transformation or comparison between the two structures.

1.4.2. Beat Addition

18

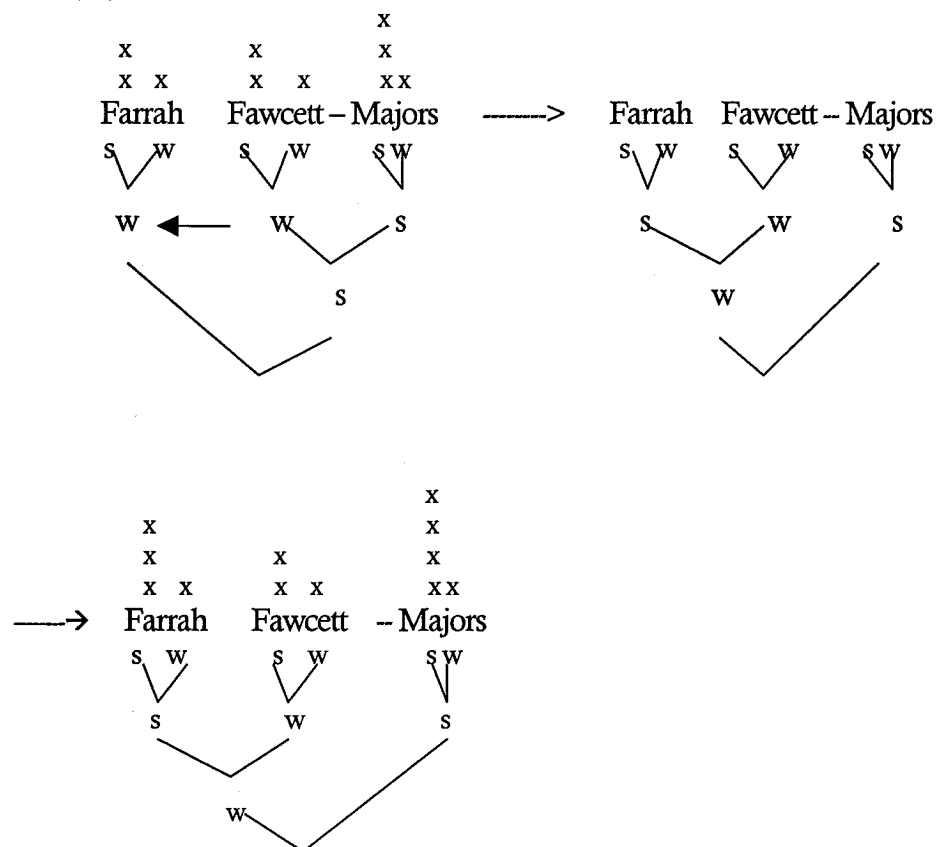
The rule, Selkirk suggests *Beat Addition*, does apply to the tree (15a). Beat Addition is called *Rhythmic Adjustment* by Hayes:

(18) *Rhythmic Adjustment* (Hayes 1984: 64)

In the configuration... X Y...DTE..., adjoin Y to X.

In the case of *Farrach Fawcett-Majors*, the rule would take X to be the constituent *Farrach*, Y to be *Fawcett*, and DTE to be *Majors*. When the rule is applied, the grid construction procedure automatically adds marks to conform to the new tree, thus duplicating the effects Beat Addition (Hayes 1984:64).

(19)



Since there is no difference between Beat Addition by Selkirk and Rhythmic

Adjustment by Hayes, the author uses Beat Addition because first we don't have to change the tree and second, we can figure out which node is stronger than other from the tree.

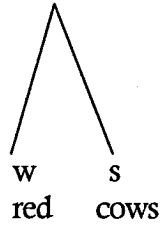
1.4.3. Phrasal Stress and Compound Stress Rules

As we have seen before English has many rules in Rhythm. However, we have to allow for the exception of compounds. It is commonplace observation that the typical stress pattern of phrasal collocations in English (e.g. *red cows*, *Sam left*) differs systematically from that of lexical compounds (e.g. *keel-haul*, *stress-shift*, *blackboard*). Of course, these typical patterns are often overwhelmed by the chiaroscuro of highlight and background in discourse, but they retain the status of null-hypothesis patterns that emerge when there is no good reason to take some other option.

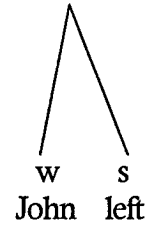
A second important observation about phrasal stress patterns is that relative prominence tends to be preserved under embedding. Thus the compound *whale-oil* (said in isolation) has its main stress on the word *whale*, with *oil* having some lesser degree of stress, and this inequality is felt to be preserved in the phrase *whale-oil lamp*, although main stress of the phrase as a whole now falls on the word *lamp*. (LP 1977:251)

We return this section's beginning, to the observation that relative prominence tends to be assigned one way in lexical compounds, and another way in phrases. Traditional theories represented this relative prominence in terms of some feature of the vowel or syllable where its perceived effect will ultimately lodge. Suppose instead we allow relative prominence to be defined on *constituents*. We may represent this relative prominence graphically, by annotating the nodes of the syntactic tree (*ibid.* p.256).

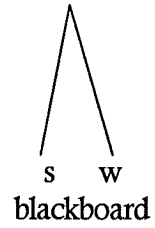
(20) a.



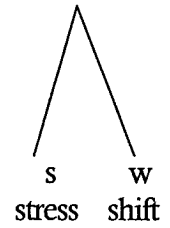
b.



c.



d.



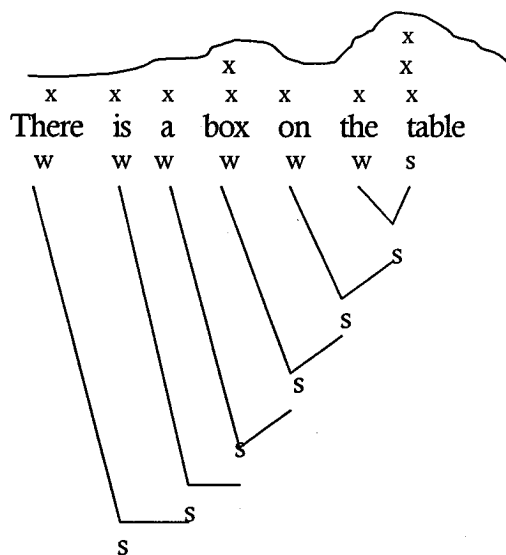
CHAPTER II

Patterns of Intonation

We have seen the rules of stress and rhythm and relationship between them in chapter 1. When these rules are adopted in sentences, intonation is produced. However, not all rules, which we have seen before, are applied, because intonation reflects people's feelings and meanings.

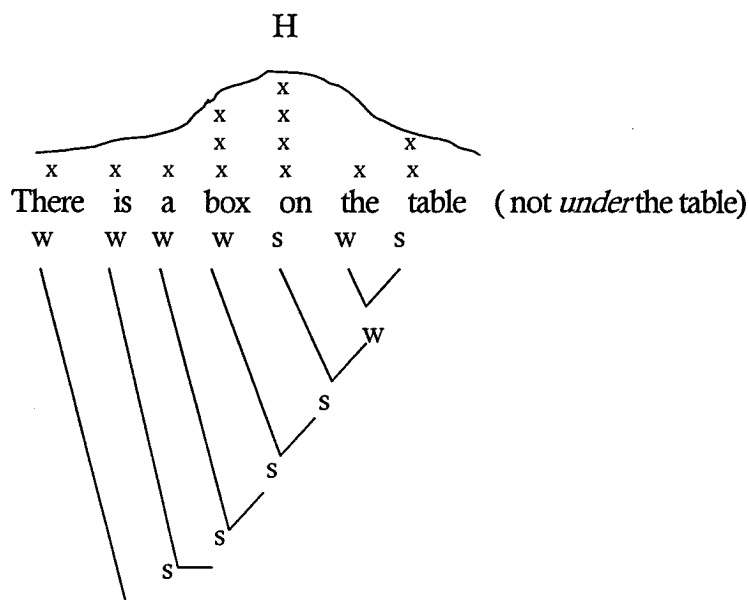
For instance, if we describe and analyze the sentence, *There is a box on the table*, under the rules of stress and rhythm by chapter 1, the intonation will be as follows:

(1)



According to the rules of Chapter 1, the sentence (1) shows that content words (like *box*, *table*.) have usually stress and function words (like *there*, *is*, *a*, *on*, *the*.) don't have stress. However, stress often changes when a speaker wants to emphasize some words, or when a speaker expresses his emotion:

(2)



This speech shows that content words are not always stressed, and function words are not always unstressed. Thus intonation does not always follow the stress rules.

What is "intonation", then? First, I would like to talk about intonation.

2.1. What is "Intonation"?

Frankly speaking, intonation means pitch movement in spoken utterances that is not related to difference in sentence. O'Connor (1980:108) says as follows:

Every language has melody in it; no language is spoken on the same musical note all the time. The voice goes up and down and the different notes of the voice combine to make tunes. In some languages the tune mainly belongs to the *word*, being part of its shape, and if the tune of the word is wrong its shape is spoiled. The Chinese languages are like this and so many others in south-east Asia, Africa and America. In these languages the same sounds said with

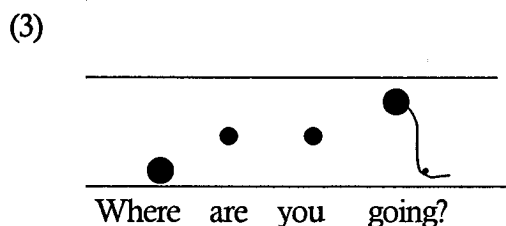
different tunes may make quite different words: in Mandarin Chinese **ma:** said with a level tune means *mother* but **ma:** with a rising tune means *horse*, an important difference! In many other languages, of which English is one, the tune belongs not to the word but to the word group. If you say the English word *No* with different tunes it is still the same word, but nevertheless tune plays an important part in English. We can say a word group definitely or we can say it hesitantly, we can say it angrily or kindly, we can say it with interest or without interest, and these differences are largely made by the tunes we use: the words do not change their meaning but the tune we use adds something to the words, and what it adds is the speaker's feelings at that moment; this way of using tunes is called *intonation*.

Some people imagine that intonation is the same for all languages, but this is not true. You must learn the *shape* of the English tunes, and these may be quite different from the normal tunes of your own language; and you must learn the *meaning* of the English tunes too, because they are important. For example, *thank you* may be said in two ways: in the first the voice starts high and ends low, and this shows real gratitude: in the second the voice starts low and ends high, and this shows a rather casual acknowledgement of something not very important.

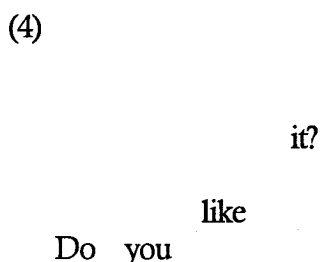
2.2 Transcription of Intonation

Many scholars show intonation by using some kinds of transcription. Cruttenden (1986) in his writing uses a narrow transcription, which is some sort of continuously varying line or series of dots to represent the continuously varying pitch of the speaker.

The type of narrow transcription preferred in his book is often referred to as ‘interlinear tonetic’ and looks like this:



In this type of transcription the top and bottom line represent the top and bottom of speaker's pitch range and each dot corresponds to a syllable, the larger dot's indicating stressed and/or accented syllables. And also O'Connor (1980) in his writing, uses the same transcription as Cruttenden's. In contrast, Bolinger (1986) in his writing, states that: The notion of target pitches is inviting not only to the music-analogist but to anyone who would like to make the moving scene stand still long enough to take its measure, and above all to linguists who want to digitize the elements of language. It would be simpler to analyze a stream of melody if what we needed to account for were not a continuously varying curve but just an array of x number of pitch levels. The gain for notation would be tremendous; instead of the typographical swoops used in the examples of this book [Intonation and Its Part], it would suffice to make the numbers of the pitches in the proper places. (Bolinger 1986: 28-29). And he transcribes a sentence as follows:



As the writer had mentioned before, not all the pattern of intonation follows grid

construction rules because speaker's feeling exists there and stress is not always put on a content word in intonation. Hence, the writer uses the proper transcriptions of both O'Connor's (and Cruttendn's) and Bolinger's when describing intonation and when indicating a contour line of intonation. Intonation, which is the melody spoken by the speaker, expresses his mood or emotion. The writer would like to describe the most natural intonation spoken by the speaker in this thesis.

2.3. Type of Intonation

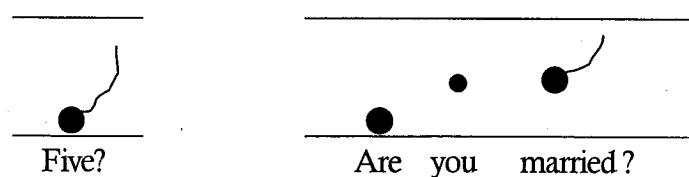
Intonation consists of four patterns largely. (Yada, Noda 1996)

- (5) a. Rising intonation
- b. Falling-intonation
- c. Falling-rising intonation
- d. Rising-plus-falling intonation

a. Rising intonation

This ends with a rise in the voice, but any words and syllables before the rise is low. Usually, a general question, a sentence with kindness, a question with an affirmative form, a sentence of request and a soft command, etc have a rising tone in the end. That is, rising intonation is used when a speaker does not finish the statement or does not have confidence. Examples are:

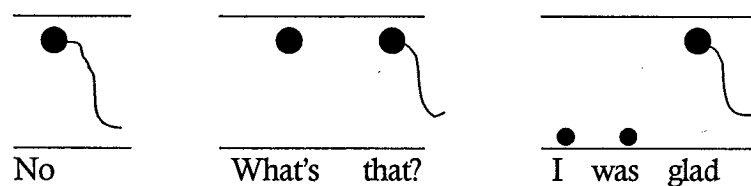
(6)



b. Falling intonation

A falling intonation consists of a fall in the voice from a high pitch to a low pitch. The falling intonation appears in declarative sentence (affirmative sentence and negative sentence), command, exclamation and Wh-question, etc. This intonation appears when a speaker concludes the statement. Examples are:

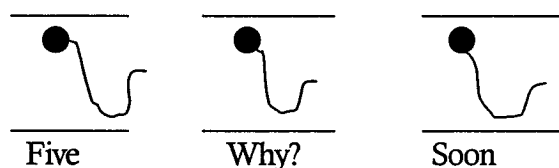
(7)



c. Falling-rising intonation

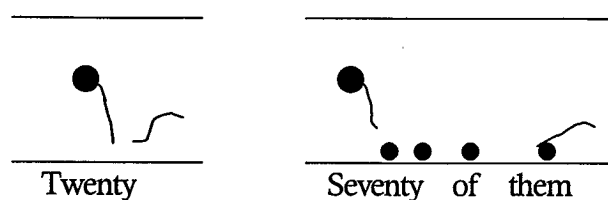
This consists of a fall from a high pitch to low pitch and then rises around the middle of the voice. This intonation is used when a speaker expresses a strong doubt. Example are:

(8)



This fall-rise is connected with a stressed syllable of the last important word. But it is only completed on one syllable. If there are several syllables as follows in the phrases, the fall and rise are separated (O'Connor 1980: 118):

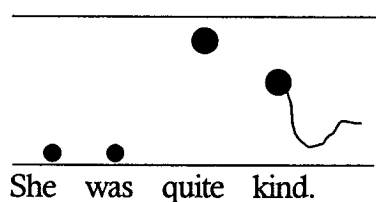
(9)



There are stressed words following the fall, in that case the rise at the end occurs on the final consonants of the stressed syllable. Words or syllables before the fall are pronounced in the same way as for the rising-intonation and falling intonation.

Examples:

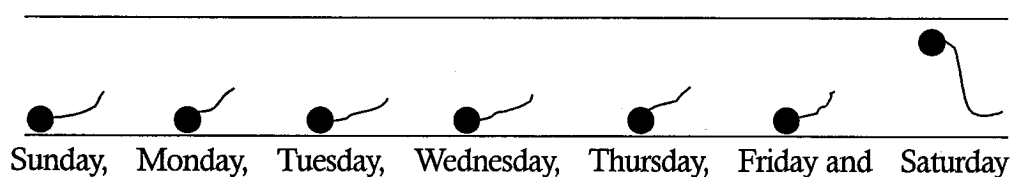
(10)



d. Rising-plus-falling intonation

The following rising intonation is used when more than three words are presented in the row. Every word has rising intonation but the last one.

(11)



2.4 How to use tones

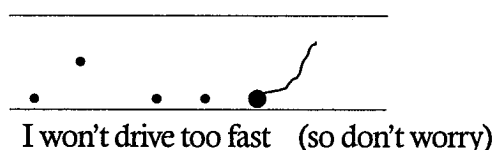
A. Statements

A statement usually has a falling intonation, but it has a rising intonation when it requires the response. I will give five examples as follows, which O'Connor (1980:120-21) gives:

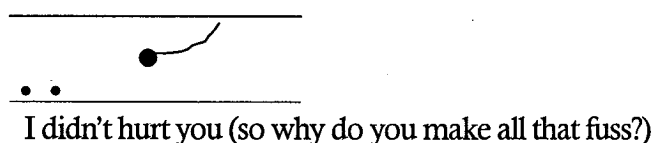
(12) We use the falling intonation for statements which are *complete* and *definite*.



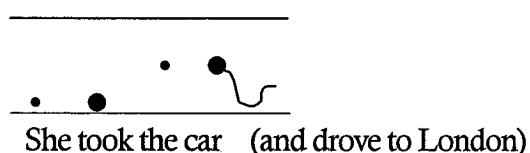
(13) If the statement is intended to be *soothing* or *encouraging*, we use the rising intonation.



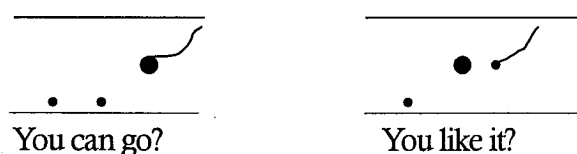
(14) If the statement is *grumble*, we use the rising intonation.



(15) If the statement is *not complete* but leading to the following words, we use the fall-rising intonation.



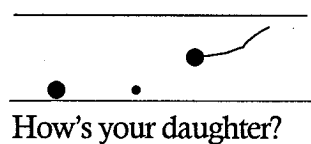
(16) If the statement is intended *as a question*, we use the rising intonation.



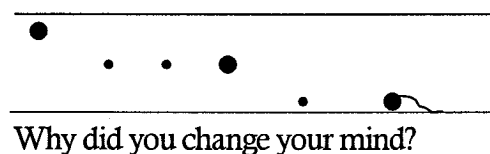
B. Wh-questions

Wh-question means that it starts from the interrogative words like *what, who, whose, whom, which, where, why* and *how*; etc. Wh-question has usually a falling intonation. However, under some conditions, it has a rising intonation. I will give three examples as follows, which O'Connor (*ibid.* p.122) gives:

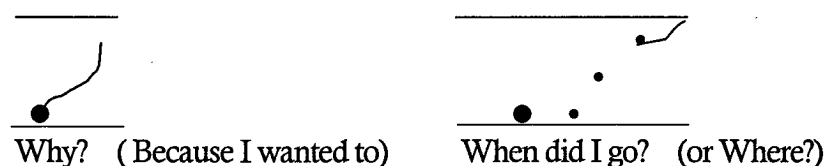
(17) We use the rising intonation if we want to show as much *interest* in the other person as in the subject:



(18) We use the falling intonation if we want the question to sound more *business-like* and are interested in the subject.



(19) For repetition-question, when we are repeating someone else's question or when we want the other person to repeat some information, we use the rising intonation:

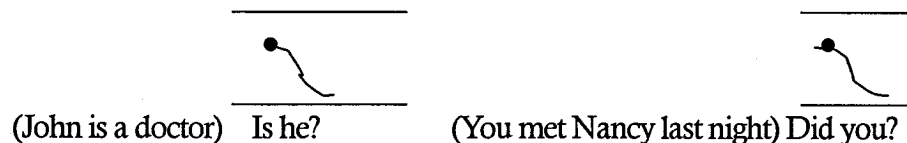


C. Yes-No questions

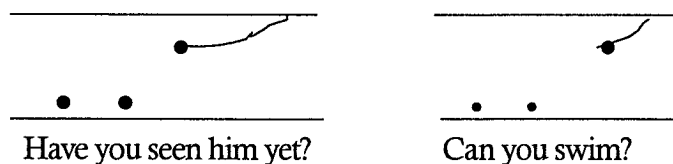
In Yes-No question, we usually use a rising intonation, but sometimes we use a falling intonation. I will give four examples of standard rising intonations (*ibid.* p.123) and

other kinds of intonation in (23):

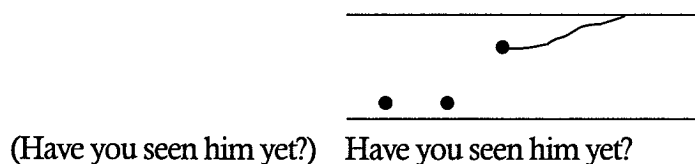
(20) For *short questions* used as responses, like *Did you?*, *Has she?*, etc., use the falling intonation:



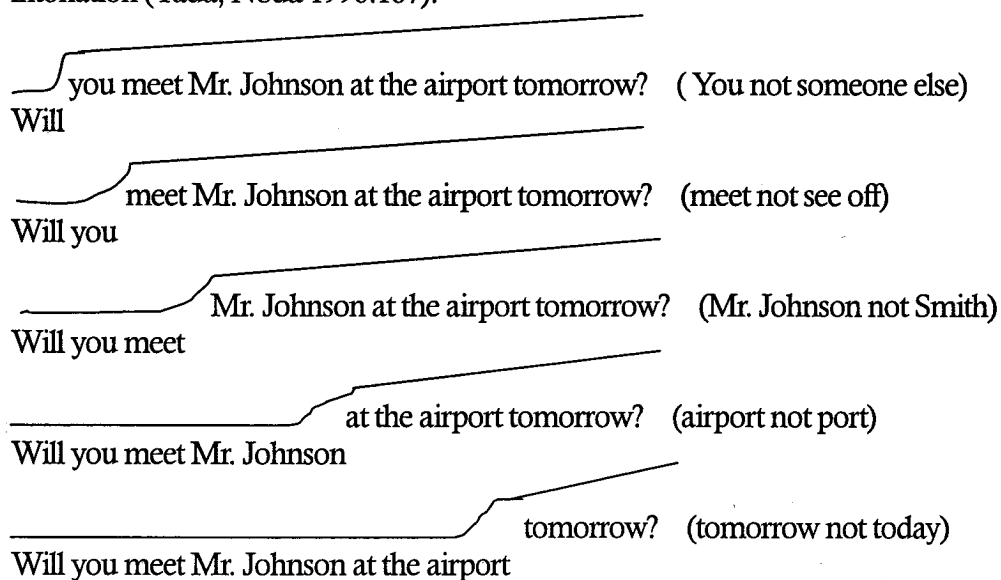
(21) For all other Yes-No questions use the rising intonation:



(22) Rising intonation is also used for repetition-questions of this type:



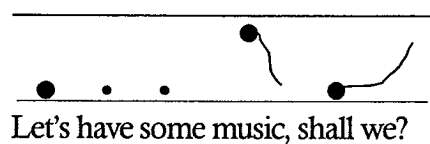
(23) When we put a point on a word in a sentence, all words after the word have rising intonation (Yada, Noda 1996:187):



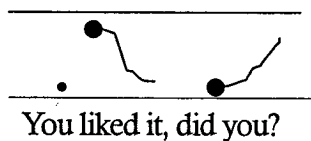
D. Tag-questions

Tag-question consists of a simple question which is produced by adding some statement. Fundamentally, when a speaker needs confirmation or reminds to someone, the intonation of tag-question will be falling intonation. If it needs listener's question, it will be rising intonation. I will show its intonation in detail as follows, which O'Connor (1980:123) gives:

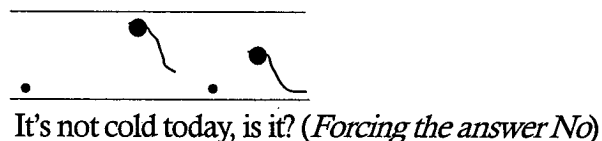
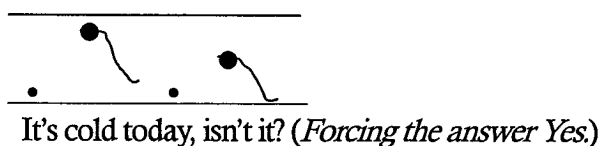
(24) For tag-questions after commands, use the rising intonation



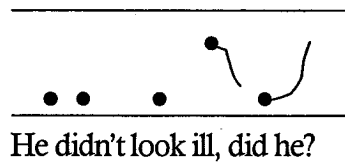
(25) If neither the statement nor the tag-question have the word *not* in them, use the rising intonation:



(26) Where the word *not* occurs in either the statement or the tag-question use the falling intonation to force the other person to *agree* with you:



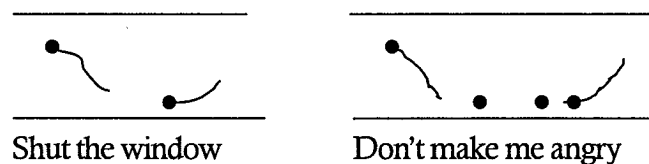
(27) When we don't want the other person to agree with you, but to *give his opinion*, we use the rising intonation:



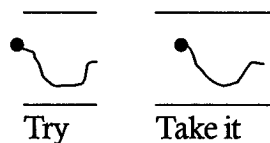
E. Commands

Usually we use a falling intonation when the sentence indicates commands. However, the following examples show that there are a rising intonation and falling-rising intonation besides a falling intonation (*ibid* 1980:124)

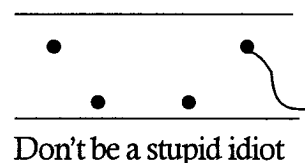
(28) If we want the command to sound *pleading*, more a request than an order, we use the falling-rising intonation, with the fall on *Do* or, *Don't* if they occur, or on the main verb if not, and the rise at the end:



(29) Notice commands with only one important word, then use falling-rising intonation



(30) For *strong commands* use the falling intonation:



F. Exclamations

An exclamation sentence expresses a strong feeling: happiness, sadness, surprising, anguish, and suffering, etc. We will look at a proper usage of a raising or falling intonation in the following examples. Notice that I use the transcription used by Bolinger (1986:5) for indicating the best contour line of intonation for exclamations as follows, which O'Connor (1980:124) gives:

(31) For *strong exclamations* use the falling intonation:

Be
auuuuuuuu ti
f
u
I !!!!!!!

How extra or di
na
ry!!!

(32) *Thank you* comes in this class when it expresses real gratitude, then use the falling intonation:

Th
ank
y
o
u

(33) For greeting and for saying good-bye use the rising intonation:

Good b y e

(34) If the exclamations refer to something *not very exciting* or *unexpected*, we use the rising intonation:

Than k y o u

ooooo
 Goo

(35) If the exclamation is questioning, we use the rising intonation:

Rea

G. Alternative question

Alternative question is used when we ask a few things among some selections.

Fundamentally, this type of question is concluded by falling intonation. However, we will look at other cases as follows:

(36) Alternative question which is A, B, C, or D after Wh-question or Yes-No question, we use every word rising intonation but falling about last one:

Who did you see, Tom , Jack or Bill?

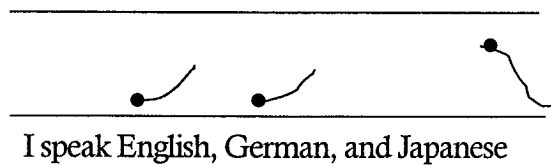
(37) If we indicate that alternative things still go on, we use rising intonation about every word:

Who did you see, Tom, Jack, Bill, Mary...?

H. Series

Series means countering or enumerating, and basically has a rising intonation but has a falling intonation at the end.

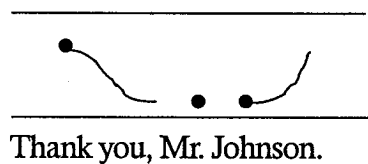
(38) When counting number, enumerating or series, we use rising intonation about every word but falling about last one:



I. Vocative

Vocative shows a familiarity and warmth by adding at the beginning or the end of a sentence, and has a rising intonation:

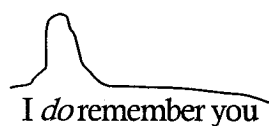
(39) Use the rising intonation.



J. Emphasis

Emphasis is created when a speaker puts a stress on the word.

(40) Use the strong falling intonation.

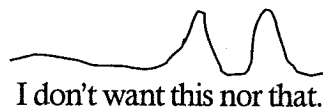




K. Contrast

Two contrast words have stress and nucleus.

(41)) Use the two strong falling intonations:



2.5. Intonation in a discourse

I will discuss about the intonation which can't be explained by looking at the tree and grid, because there is an emotion in the speech. I used the movie film, "THE SIXTH SENSE", to demonstrate the structure of the intonation, and search for the reason it doesn't follow the rules. We can say that the structure of intonations is sometimes explained by mentioning in the above section; 2.4. How to use tones.

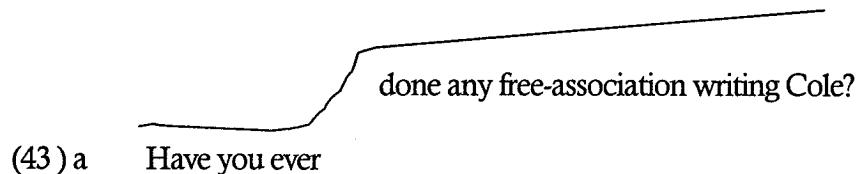
The first example shows Yes-No question, when we put a point on a word in a sentence, all words after the word have rising intonation by (23):

(42) **Malcolm:** Cole, have you ever heard of something called, free-writing? Or free-association writing? It's when you put a pencil in your hand and put the pencil to a paper and you just start writing... You don't think about what you're writing... You don't read over what you're writing... You just keep your hand moving.

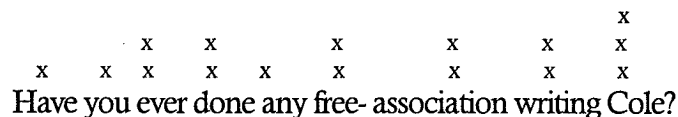
Malcolm: Have you ever done any free-association writing Cole?

(Shyamalan 1999:78)

A speaker puts intonation on the sentence underlined in 42. The following intonation is heard in the film:



b—>???



From the pattern of (23), this intonation shows the contour line of intonation. We don't express the intonation from the tree and grid construction. In (42), Malcolm asked if Cole had ever heard of free-association writing, and he also asked if Cole had done it. What he wanted to ask is whether Cole did free-association writing or not. According to the definition of (23), when a speaker puts a point (*done*) on a word in a sentence, all words (*done, any, free-association, writing, and Cole*) after the word have rising intonation.

However, the following intonation can't be explained from the four types (rising, falling, falling-rising and rising-plus-falling intonation) and from the section 2.4, either. The following intonation patterns (47)-(48) can't be derived from description by Yada and Noda (1996). The writer will pick up some examples form the conversations in the film:

(44) *Stanley Cunningham (a teacher of elementary school), moves between two curtains, and comes to a prop room door in the back. He puts an ear to the door, listens and then knock. After a second, he enters. Mr. Cunningham finds Cole standing in a poor villager costume as a FEMALE TEACHER (she is ghost, nobody can see her but Cole) kneels next to him and makes final adjustments.*

Mr. Cunningham: They're calling for the stable boy.

Mr. Cunningham looks around the room and then directly at Cole.

Mr. Cunningham: Who were you talking to?

Cole: Just practice my line. (ibid. p.202)

(45) INT. AUDITORIUM

The play is full swing... Cole and large group of costumed children are on the stage... Bobby is dressed in a magician's costume. He is Merlin. He steps forward.

Merlin: Only he who is pure of heart can take the sword from the stone.

Merlin looks to the group on stage. Look right at Cole.

Merlin: Let the boy try.

Tommy: (halfheartedly) But he's the stable boy. He cleans after the horse.

Merlin: Silence village idiot! Let the boy step forward.

Tommy turns a deep shade of red and hobbles off the stage. Meriln looks at Cole.

Cole steps forward. (ibid. p. 206)

(46) Cole: Tell you my secrets

Lynn(his mother): What is it?

Cole: You know that accident up there?

Lynn: (confused) Yeah.

Cole: Someone got hurt.

Lynn: They did?

Cole: A lady. She died.

Lynn: Oh my God. You can see her?

Cole: Yes.

Lynn: Where is she?

Cole: Standing next to my window.

Lynn: Cole, you're scaring me.

Cole: They scare me too sometimes.

Lynn: They?

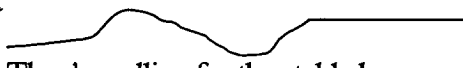
Cole: Ghosts.

Beat


Lynn: You see ghosts Cole?

(*ibid.* p.216)

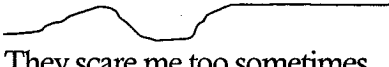
A speaker put intonation on the sentences underlined in (44)-(46) as follows:


(47) a 
They're calling for the stable boy.

b 
They're calling for the stable boy

(48) a 
Let the boy step forward.

b 
Let the boy step forward.

(49) a 
They scare me too sometimes.

b 
They scare me too sometimes

These intonations (47-49.a) above, are defined neither rising-intonation nor falling-intonation. Affirmative sentences (statements) have rising or falling intonation at the end. However, these intonations keep the same tone till the end of the sentences. The end of the intonation in (47a)-(49a) keeps the same height. If these intonations would show by contour line of intonation according to the rule, (47)b, (48)b and (49)b are indicated.

There is something in common with the intonation of (47a)~(49a). The intonation is *lingering in* our ears to stimulate our imaginations. The sentence indicates neither complete statement nor command.

First, talking about (47a), the intonation indicates that the teacher's speech is not direct and positive, either. This intonation means "Cole, I think it's your turn...", and not "It's your turn, Cole!!" The teacher is wondering why Cole is talking to himself when he is talking to the dead. The teacher is looking around the room to see someone whom Cole is talking with, and whom the teacher can't see. That is, intonation (47a) is full of imagination. It shows that the teacher is wondering at his strange attitude which reflects as if there were a person besides Cole, and leads the teacher's speech, "Who were you talking to?"

Next, in case of (48a), the intonation is full of suggestion. Imagine that you have a seat in the auditorium to see a drama as an audience, and the drama is going to start with a narration, and the narrator's speech is going to lead a hero to the middle of the stage to keep the attention from the narrator to the hero. Intonation (48a) shows the narrator's speech which leads a hero, Cole to the middle of the stage without pause.

Third, in case of (49a), the intonation shows that Cole tries to make the clue when he tells her mother the truth of seeing dead people. The lingerer of the intonation shows

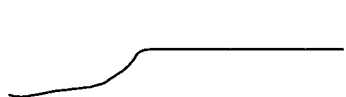

that he leads his mother's speech "(who is) they?" after he says "*they* scare me too sometimes". Cole wants his mother to ask him "who is they?" and want to let her know he can see the dead. Hence, this intonation is full of these suggestions, then the intonation is not rising and falling, either.

Fourth, let's see the intonation of Yes-No question. As we have seen before the intonations of Yes-No question have four types; and every type has either: rising or falling intonation at the end. The following type of intonation, however, is neither falling nor rising at the end. This intonation keeps the same tone at the end. Example is:

(50) Lynn: Cole what's happening to you?

Lynn: Is someone hurting you? ... (*ibid.* p. 178)

Lynn puts intonation on the sentence underlined in (50) as follows:

(51a)  Is someone hurting you? (52b)  Is someone hurting you?

Intonation (51a) shows that it keeps the same tone at the end. We normally have a rising intonation like (51b) for yes-no question.

The reason to have intonation (51a) is that Lynn (Cole's mother) has a quite confidence that his classmates bullied Cole. I will show the evidence that Lynn knows his classmates bullied him:

(53) *Lynn emerges from Cole's room. She turns on the hall light as she moves into her own room and closes the door.*

We hear Lynn pick up a phone and dial. Beat.

Lynn: Hi, this is Lynn Sear, Cole's mother. I wonder if we could talk about your son and his friends keeping their goddamn hands off my boy? (*ibid.* p.128)

Hence, his mother knows that his classmates bullied him, then her intonation is not rising and falling, either to leave the lingerer.

Finally, we will see sentences, where every word has a strong stress of the sentences. It is hard to describe the intonation contour line by adopting the grid construction by Hayes. Let's look at the speech by the film, again:

(54) Malcolm: Do you think what 'Yo no quiero morir' is?

Cole shakes his head, "No."

Malcolm: It's Spanish. (beat) It means... 'I don't want to die.'

Malcolm: What do those ghosts want when they talk to you? I want to think about really carefully Cole...

Cole: Just help

Malcolm: Yes! That's right! That's what I think, too! (*ibid.* p. 172)

(55) INT. AUDITORIUM

The play is full swing... Cole and large group of costumed children are on the stage... Bobby is dressed in a magician's costume. He is Merlin. He steps forward.

Merlin: Only he who is pure of heart can take the sword from the stone.

Merlin looks to the group on stage. Look right at Cole.

Merlin: Let the boy try.

Tommy: (halfheartedly) But he's the stable boy. He cleans after the horse.


Merlin: Silence village idiot! Let the boy step forward. (*ibid.* p. 206)

The speakers put intonations on the sentences underlined in (54) and (55) as follows.

Intonation (56.a) follows Bolinger's transcription and (56.c) follows Hayes's

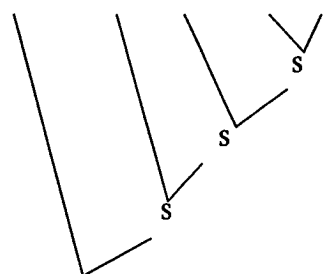
transcription:

(56)
That what I think too!!!

b.

That's what I think, too!!

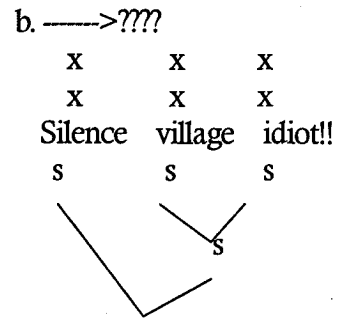
c. —> ???

				X
X				X
X			X	X
X	X	X	X	X
That's	what	I	think,	too!
W	W	W	W	S



(57)

a. _____
Silence village idiot!!



The best description of intonation contour line, in these cases, is the transcription by Bolinger, and we can't indicate these intonations by using trees and grid constructions from Hayes because this intonation includes speaker's strong emotion and every word has a strong stress for emphasis. Speakers pronounce every word with a clear voice.

Thus, there are many kinds of intonation here to indicate speaker's emotion, and there are also some kinds of intonation different from those of 2.4 A~K.

CHAPTER III

Derivations of Intonation

It is gradually getting close to the aim of this paper. Sapir (1949:3) mentions as follows:

Speech is so familiar a feature of daily life that we rarely pause to define it. It seems as nature to man as walking, and only less so than breathing. Yes it needs but moment's reflection to convince us that naturalness of speech is but an illusory feeling.

Although Sapir mentioned the naturalness of speech as above, we have to know that rules are certain to exist. The writer will make speech intonation clear by using some rules and descriptions done in chapter 1~2.

In chapter 2, I have described the structures of speech sound. The writer didn't write clearly the way to derive those intonations and the meaning differences.

In this chapter, the writer would like to mention here that a speech sound has a rule although there are exceptions as the writer showed in chapter 2. However, what we should know is that our language (the writer restrict study of sound: Phonetics and Phonology) actually has rules when we unconsciously use it, and the work the writer has to do is to demonstrate the rules.

To demonstrate the sound system (structure) and rules by which we speak our

language in our daily life, the writer use the film, "THE SIXTH SENSE", again, and she classify the speech structures of sentences by stress rules.

3.1 *Grid construction*

The writer will present the structures of intonation which are made by adopting the grid construction rule (Chapter 1. (5)) by using the film. The following dialogues are taken from M.Night Shyamalan (1999):

(1) Cole: They used to hang people here.

Mr. Cunningham: That's not correct. Where'd you hear that?

Mr. Cunningham: Cole, this was a legal courthouse. Laws were passed here.

Some of the first laws of this country. This building was full of lawyers.

Lawmarkers.

Cole: They were the one who hanged everybody. (*ibid.* p.88)

(2) Girl: I'm feeling much better now.

Cole: Do you want to tell me something? (*ibid.* p.184)

(3) Cole: You ever feel prickly things on the back of your neck?

Malcolm: Yes?

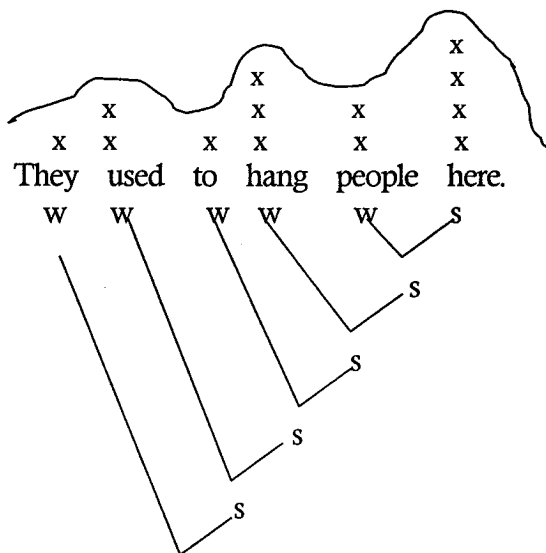
Cole: (whisper) When they get mad, it gets cold.

Malcolm: I don't see anything. Are you sure they're there? (*ibid.* p.136)

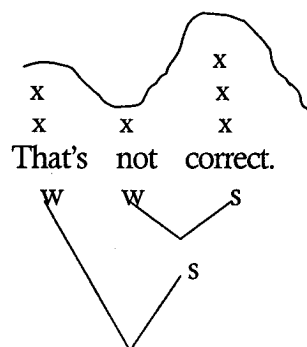
The writer will put the intonations on the sentences underlined in (1)~(3) in order, where she adopts the grid construction rules. The following intonations are heard in the

film, "THE SIXTH SENSE."

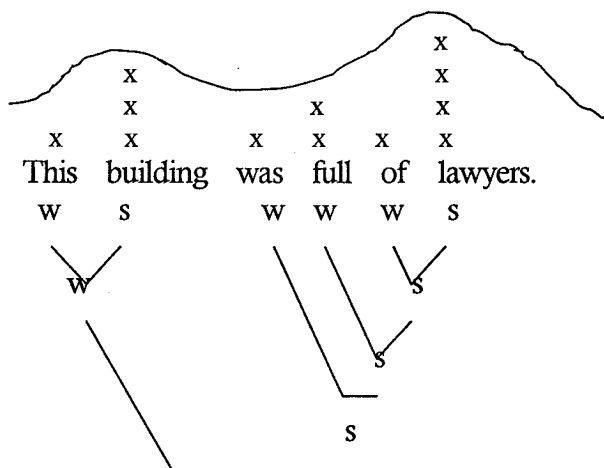
(4)



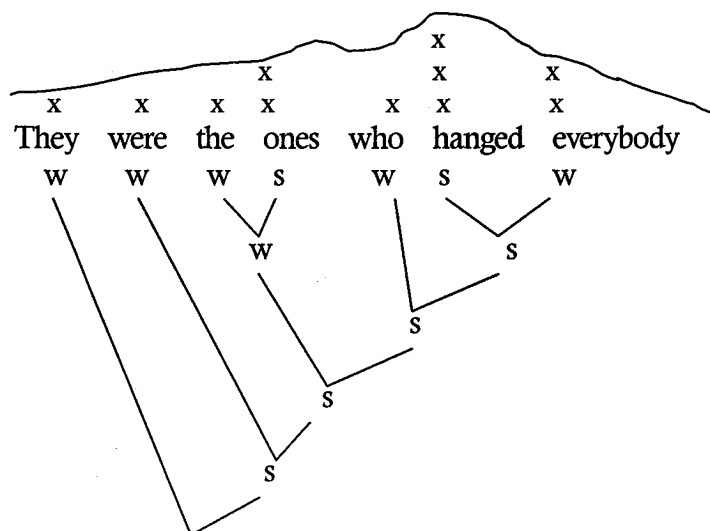
(5)



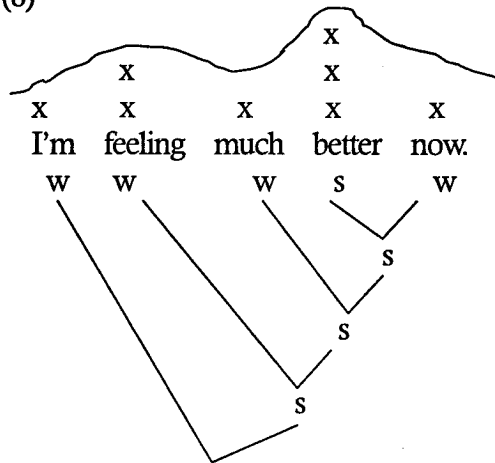
(6)



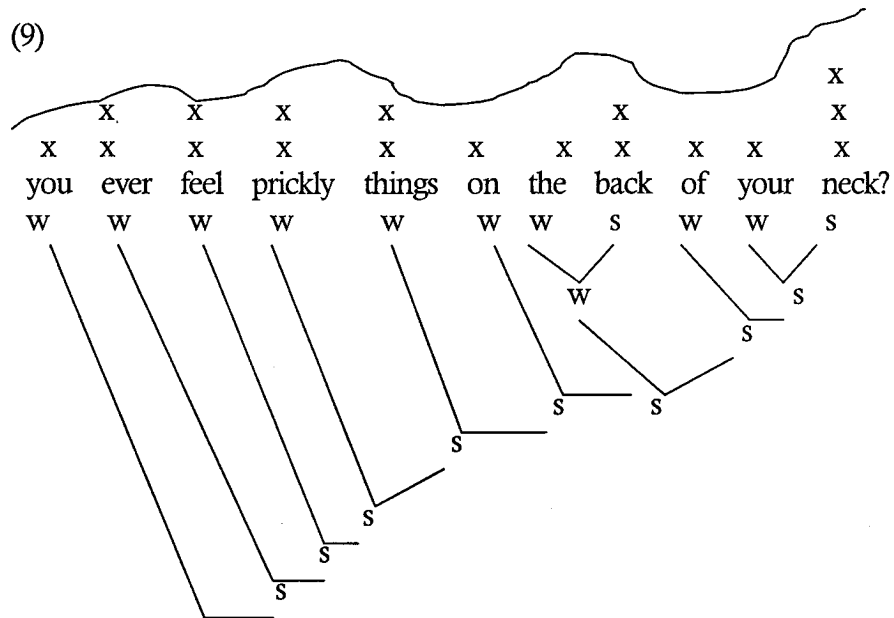
(7)



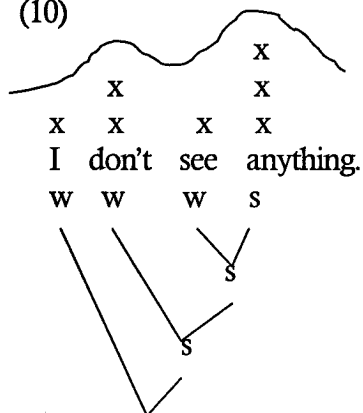
(8)



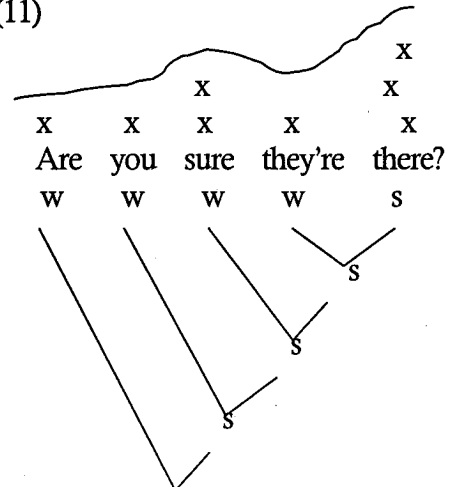
(9)



(10)



(11)



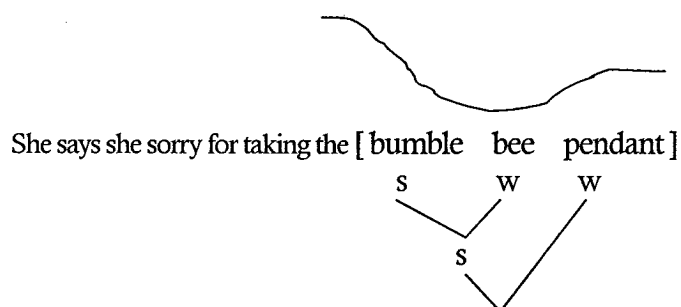
3.2. Compound stress rules

Next, we will see the intonation, which adopts compound stress rule. As the writer have mentioned before (Chapter1, 1.4.3), we have to differ the typical stress pattern of phrases in English (*red cow*, *Sam left*) from that of lexical compounds (*black board*). The intonation of the following sentence is derived by compound stress rule. The intonation of sentence (13.b) is not correct because the phrasal rule is applied.

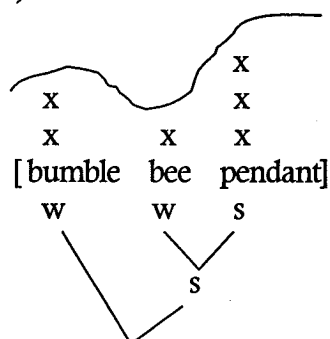
(12) Cole: She says she's sorry for taking the bumble bee pendant.

(*ibid*,p.218)

(13.a)



(13.b)



Hence, we can see the compound stress rule works well on the sentence (12).

3.3. *Focused Element Prominence Rule*

Intonation in discourse is decided by the context. Selkirk suggests that intonation has differences according to the contexts even if the sentences have the same constructions as follows:

(14)

- a. $\begin{array}{c} \text{H} \\ | \\ \text{Truman died} \end{array}$ b. $\begin{array}{c} \text{H} \\ | \\ \text{Johnson died} \end{array}$

..., the normal way of uttering *Truman died* would be as in (14.a) if Truman, aged and forgotten, were not part of the previous discourse, either explicitly or implicitly. (14.b) would be natural if uttered during a period in which Johnson was widely known to be ill. Thus the presence of a pitch accent reflects in some way the “salience” of the accented element in the discourse. (Selkirk, 1984:153)

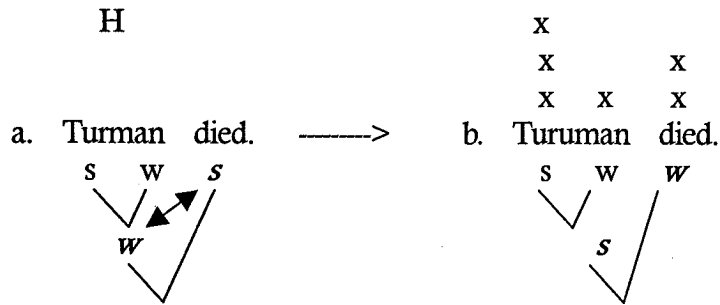
Following the above passage by Selkirk, Kobayashi (1996) suggests the *Focused Element Prominence Rule* as follows:

(15) *Focused Element Prominence Rule (FEPR)* (Kobayashi, 1996:52)

Relabeling takes place between the focused element and the strongest constituent of the phrase.

Kobayashi (*ibid.*p.52) shows the tree structures where FEPR is applied, and the W-S relation changes after FEPR is applied as follows:

(16)



Now, I would like to demonstrate an actual intonation recorded in the film where FEPR is applied. The sentences I choose here are underlined in (17)~(19).

(17) **Malcolm:** Cole, have you ever heard of something called, free-writing?
Or free-association writing? It's when you put a pencil in your hand and put the
pencil to a paper and you just start writing... You don't think about what you're
writing... You don't read over what you're writing... You just keep your hand
moving.

Malcolm: Have you ever done any free-association writing Cole?

(M.Night Shyamalan: 1999:174)

(18) **Cole:** You been running around?

Malcolm nods, "Yes,"

Cole: It make you feel better?

Malcolm nods, "Yes." again.

Cole: I can run around. It's good exercise. (*ibid.* p.170)

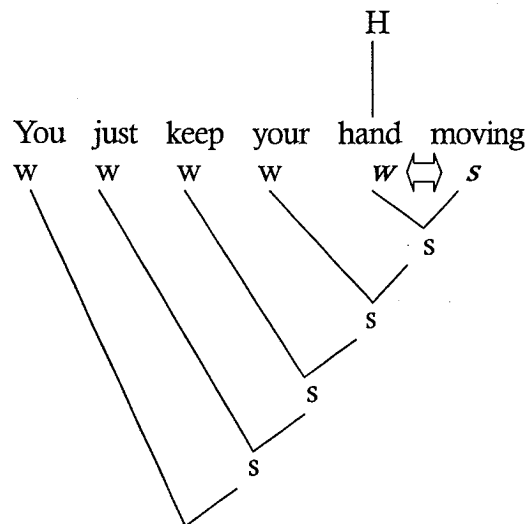
(19) **Cole:** ...Maybe we can pretend we're going to see each other
tomorrow?

Cole: Just for pretend.

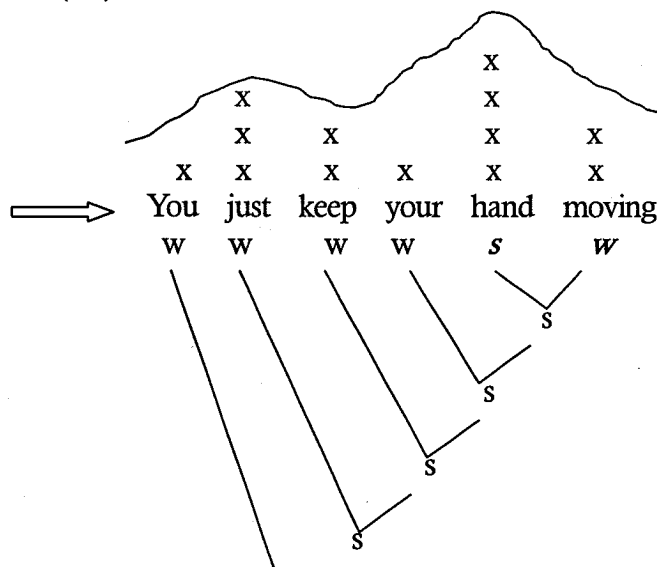
Malcolm: Okay, Cole. See you tomorrow, Cole. (*ibid.* p. 210)

The intonation of the sentences underlined will be shown like (20)~(22) below.

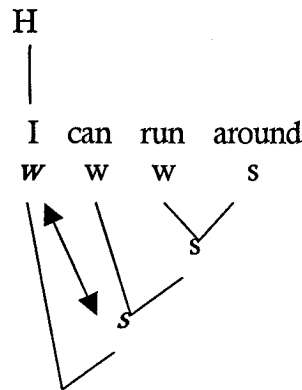
(20)



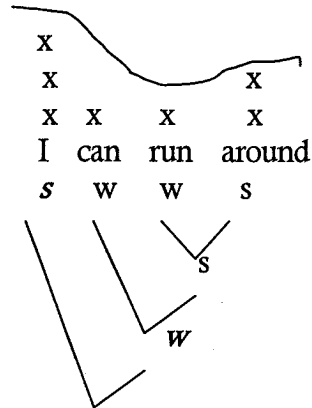
(20')



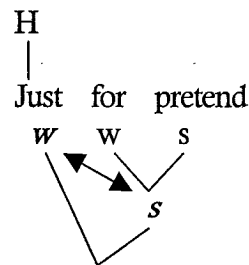
(21)



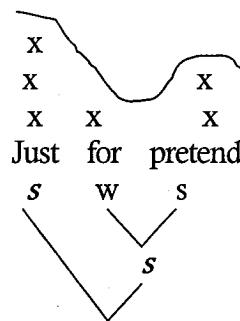
(21')



(22)



(22')



Next, the writer has to mention something important. The intonation after Focused Element Prominence Rule is applied has down drift phenomenon. Selkirk (1984:161-62) suggests the difference between S-structure and Phonetic Form. It is necessary for S-structure to change to Phonetic Form under the different discourse as follows:

- (23) a. (The mayor of Chicago won their support)
 b. (The mayor of Chicago) (won their support)
 c. (The mayor of Chicago won) (their support)

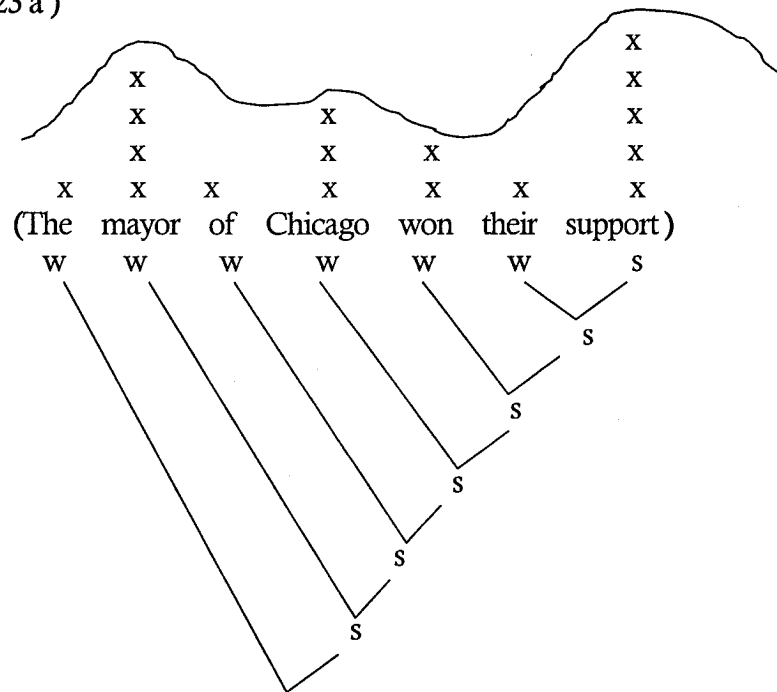
Such facts show that Liberman and Prince's contention that the syntactic structure of a sentence *is* its phonological structure is simply wrong, and that if a metrical tree theory of prominence relations is to be maintained, the metrical tree must be seen as independent of, though defined in relation to, the syntactic

structure of a sentence. Given this, the metrical tree theory enjoys no particular advantage over the metrical grid theory in terms of simplicity or restrictiveness.

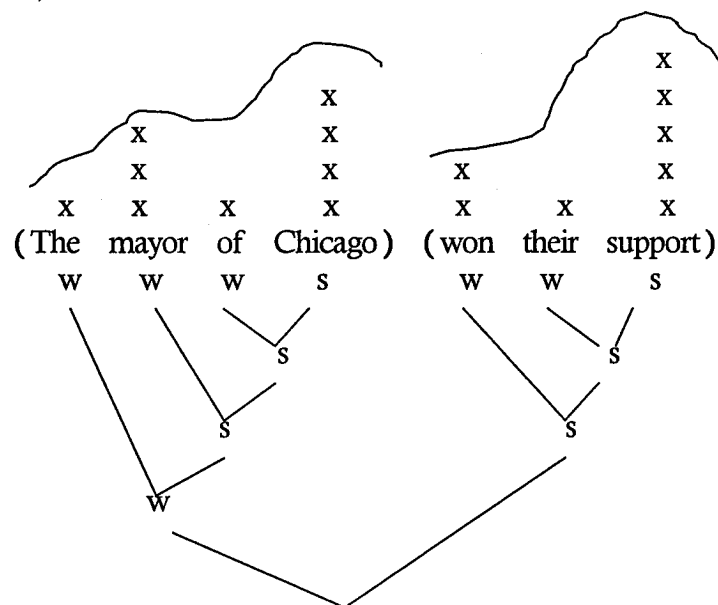
(Selkirk 1984:161-62)

The intonations of (23a:b) will be as follows:

(23 a')

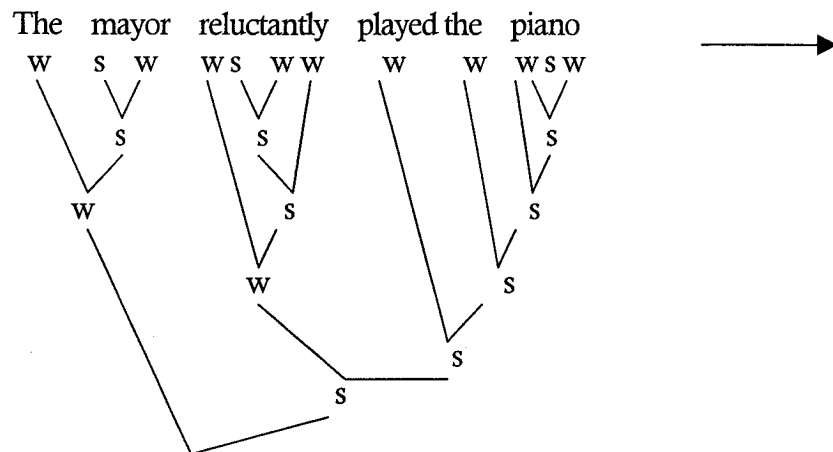


(23.b')

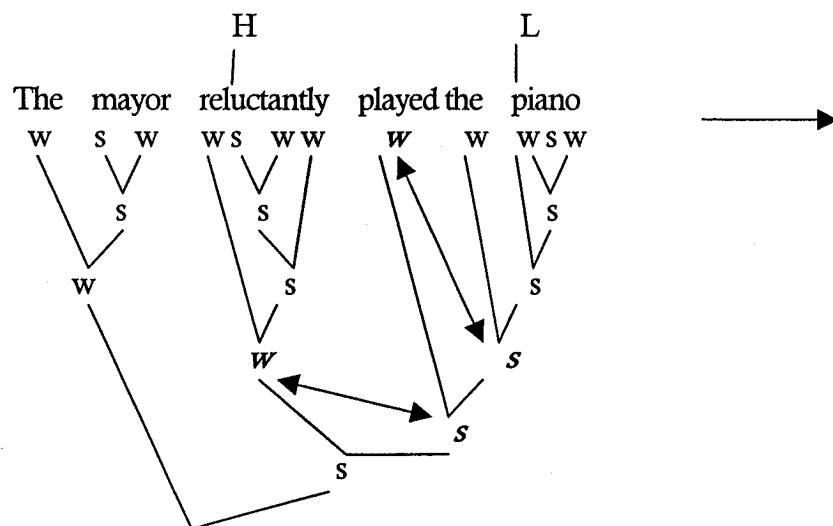


Following Selkirk's indication in (23), Kobayashi (1996:62-63) mentions a down drift phenomenon as (24c): In a sentence *The mayor reluctantly played the piano*, if we put a prominence on the *reluctantly* as (24.b), then *the piano* has a weak stress with the symbol (*L*), and the actual intonation will be as (24.c).

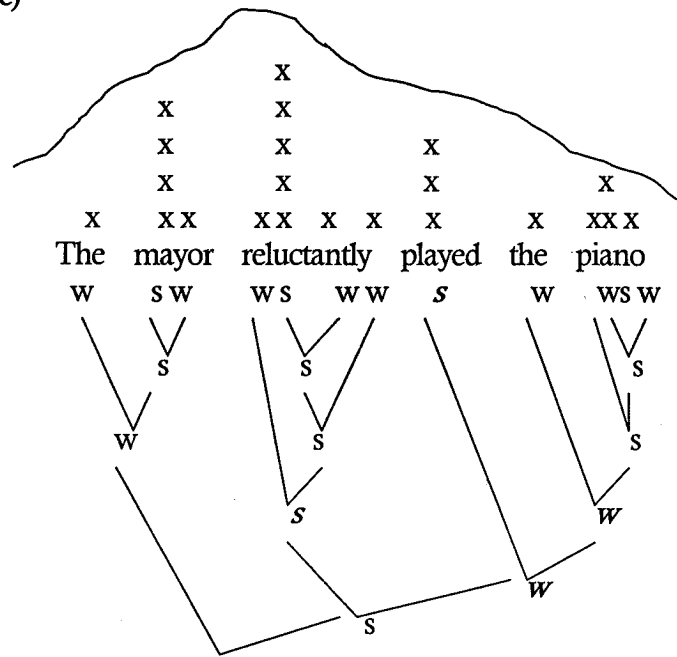
(24 a)



(24 b)



(24 c)



Now, the writer would like to demonstrate the actual intonations recorded in the film where the down drift is applied. The sentences she choose here are underlined in (25) and (26) as follows:

(25) Cole: Don't look at me. (beat) I don't like people looking at me like that.

Malcolm takes in Cole's every gesture and expresstion.

Cole: Stop looking at me.

Malcolm look down.

(M. Night Shyamalan: 1999: 58)

(26) INT. AUDITORIUM

The play is full swing... Cole and large group costumed children are on the stage..... Bobby is dressed in s magician's costume. He is Merlin. He steps forward.

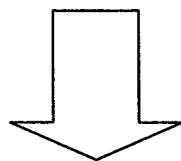
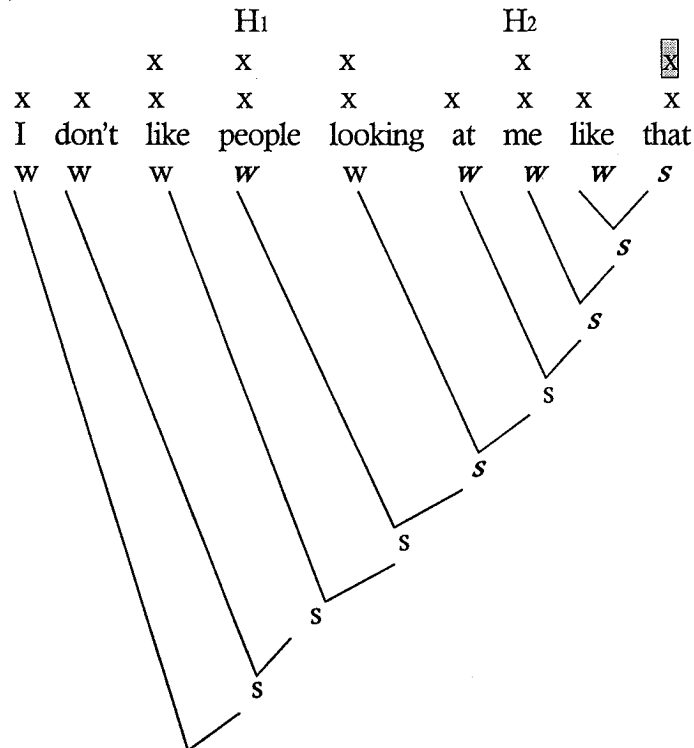
Merlin: Only he who is pure of heart can take the sword from the stone.

Merlin looks to the group on stage Look right at Cole.

Merlin: Let the boy try. (*ibid.* p.206)

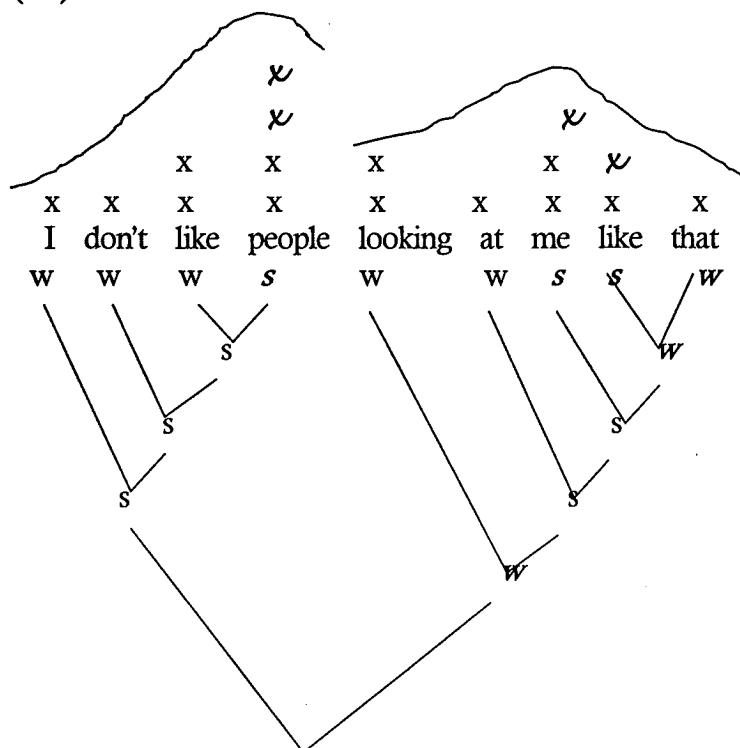
The intonation of the sentences underlined will be shown like (27) and (28).

(27)



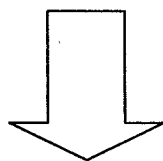
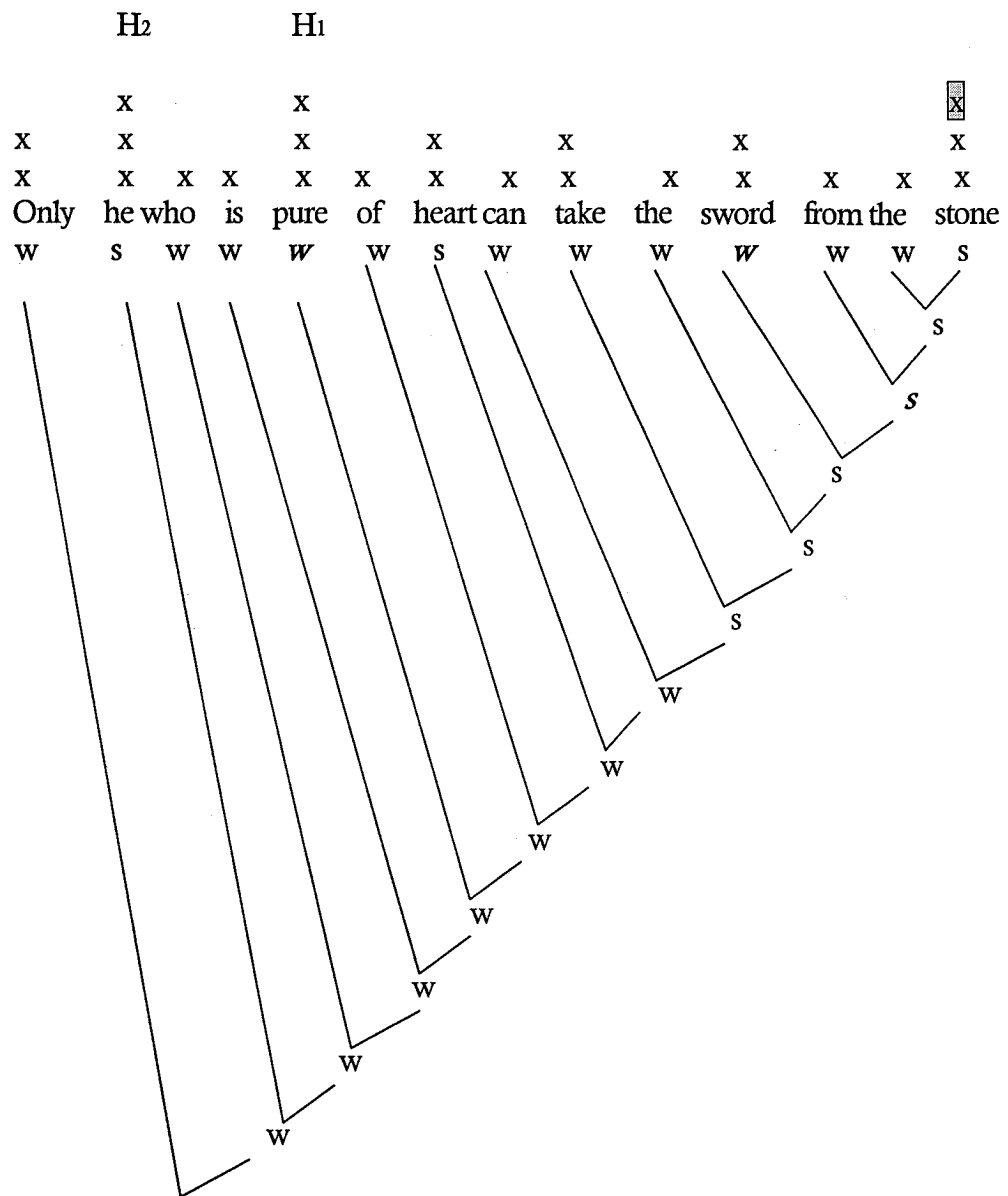
FEPR, Down drift

(27')



In this speech, a speaker, Cole has a secret that he can see dead people, and nobody knows about that. Whenever he frankly speaks about the actual state of things he saw or he says something strange, he is bullied by classmates, and they look at him as if he was a freak. He hates people looking at him like that. Hence, when Malcolm looks at Cole, Cole is afraid of Malcolm's eyes and becomes sensitive to people's behavior. The intonation reflects that Cole really hates *people* looking at *him* as if he was a freak. Intonation contour line (27') which is derived FEPR indicates how much he hates people looking at him like a freak. However, as the writer have introduced the Down drift phenomenon, the intonation shows that after a high prominence the pitch is getting down.

(28)



FEPR and Down drift

[illegible]

At last, notice \boxtimes marks in both grid constructions of (27) and (28) which show the

Down Drift caused by FEPR. Notice the additional grids to stressed words by FEPR and reduction of grids because of Down Drift.

3.4. Stress Pattern in Phrase

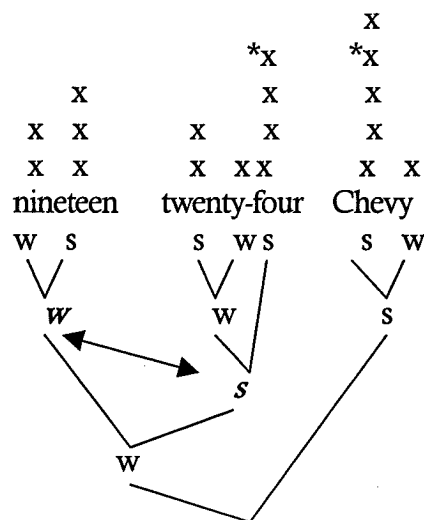
We have seen a phrasal rule in chapter 1 (1.4.3). We have known that there is a difference between a phrasal stress rule and a compound rule, and that a phrasal rule creates rhythmical stress pattern and the rhythmical stress reflects s-w-s stress pattern.

Here, we will see stress patterns in phrases more precisely chapter 1, 1.4.3. Kobayashi (1996) shows four types of stress patterns. We will see the four types in order.

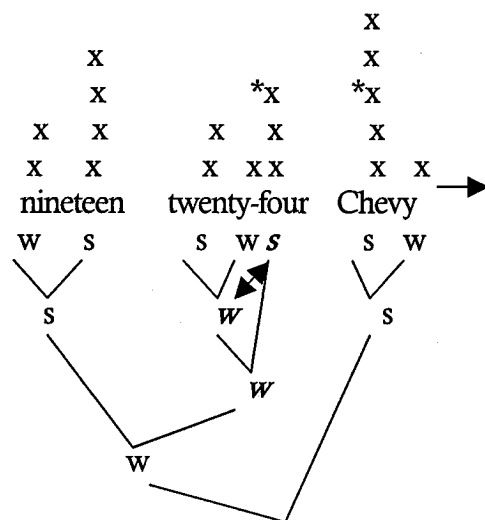
3.4.1 2 3 4 1 stress pattern

The first pattern, is 2 3 4 1 stress pattern. The phrase, *nineteen twenty-four Chevy*, is applied to the rhythm rule three times as follows (Kobayashi 1996: 34):

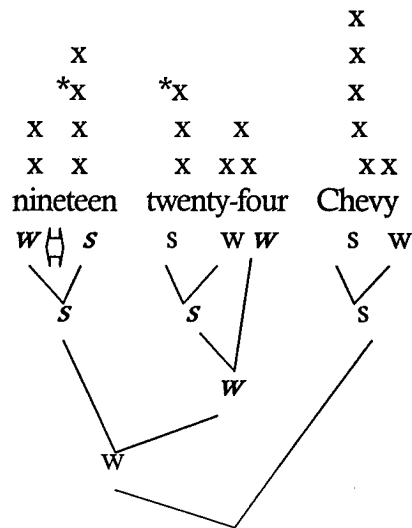
(29) a.



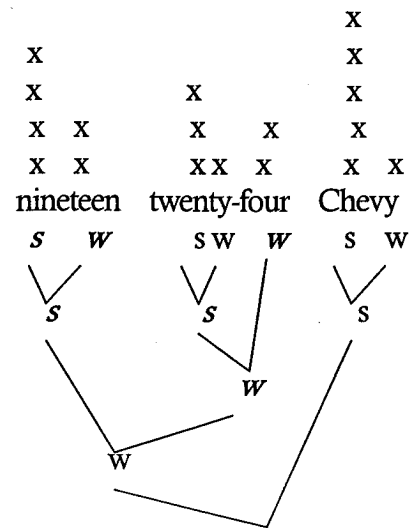
b.



c.



d.



Kobayashi (1996: 35) also mentioned that Hayes (1984), Selkirk (1984), and Prince (1983) give the examples of the 2 3 4 1 stress pattern as follows:

(30) a. $\begin{matrix} 2 & 3 & 4 & 1 \\ [[\text{loving} & [\text{over-baked}]] & \text{bread}] \end{matrix}$

b. $\begin{matrix} 2 & 3 & 4 & 1 \\ [[\text{remarkably} & [\text{well-buttered}]] & \text{toast}] \end{matrix}$

c. $\begin{matrix} 2 & 3 & 4 & 1 \\ [[\text{rather} & [\text{lily-white}]] & \text{hands}] \end{matrix}$

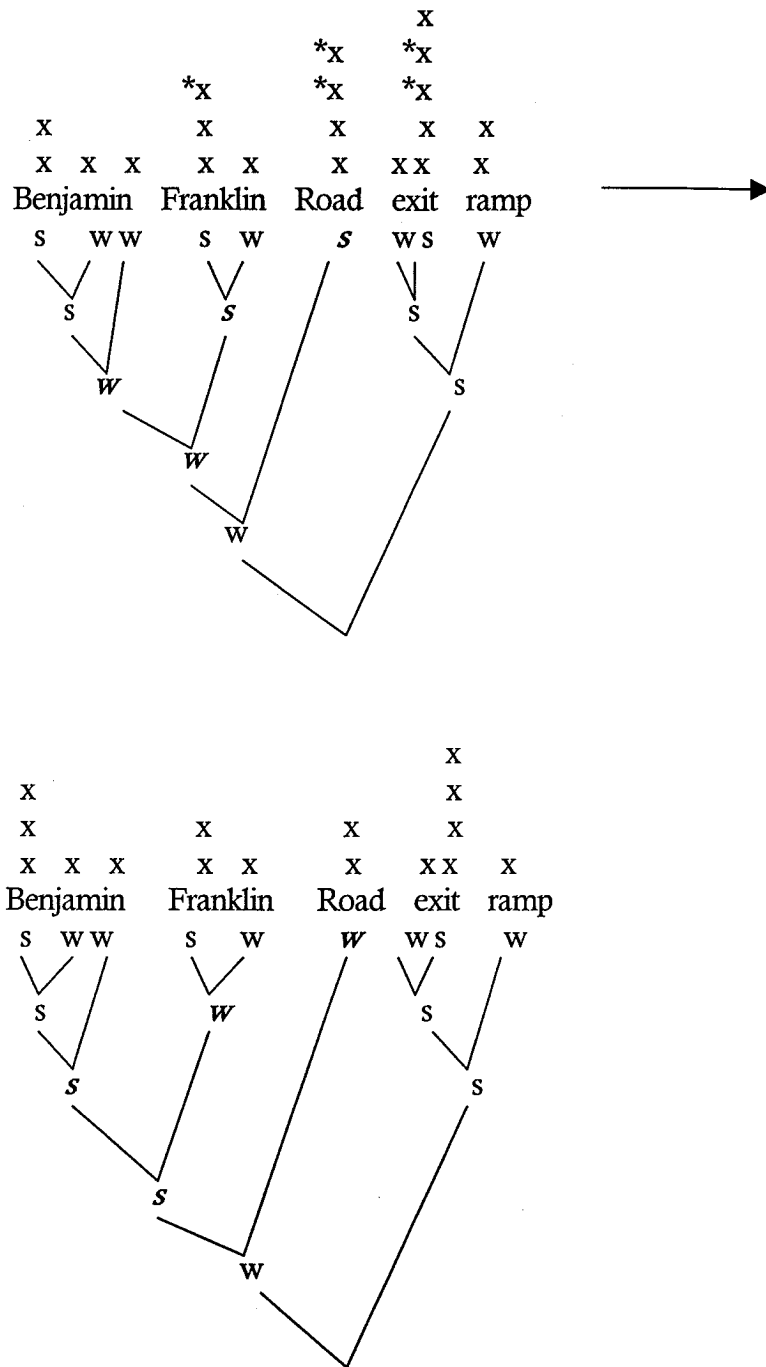
d. $\begin{matrix} 2 & 3 & 4 & 1 \\ [[\text{one} & \text{thirteen}] & \text{Jay Street}] \end{matrix}$

e. $\begin{matrix} 2 & 3 & 4 & 1 \\ [[\text{Maine-New York}] & \text{Railroad}] \end{matrix}$

3.4.2 2 3 3 1 stress pattern

The second stress pattern, which is 2 3 3 1 stress pattern mentioned by Hayes (1984), is shown as second type by Kobayashi as follows (*ibid.* p. 36):

(31)



The phrases of this type are as follows (*ibid.* p. 36):

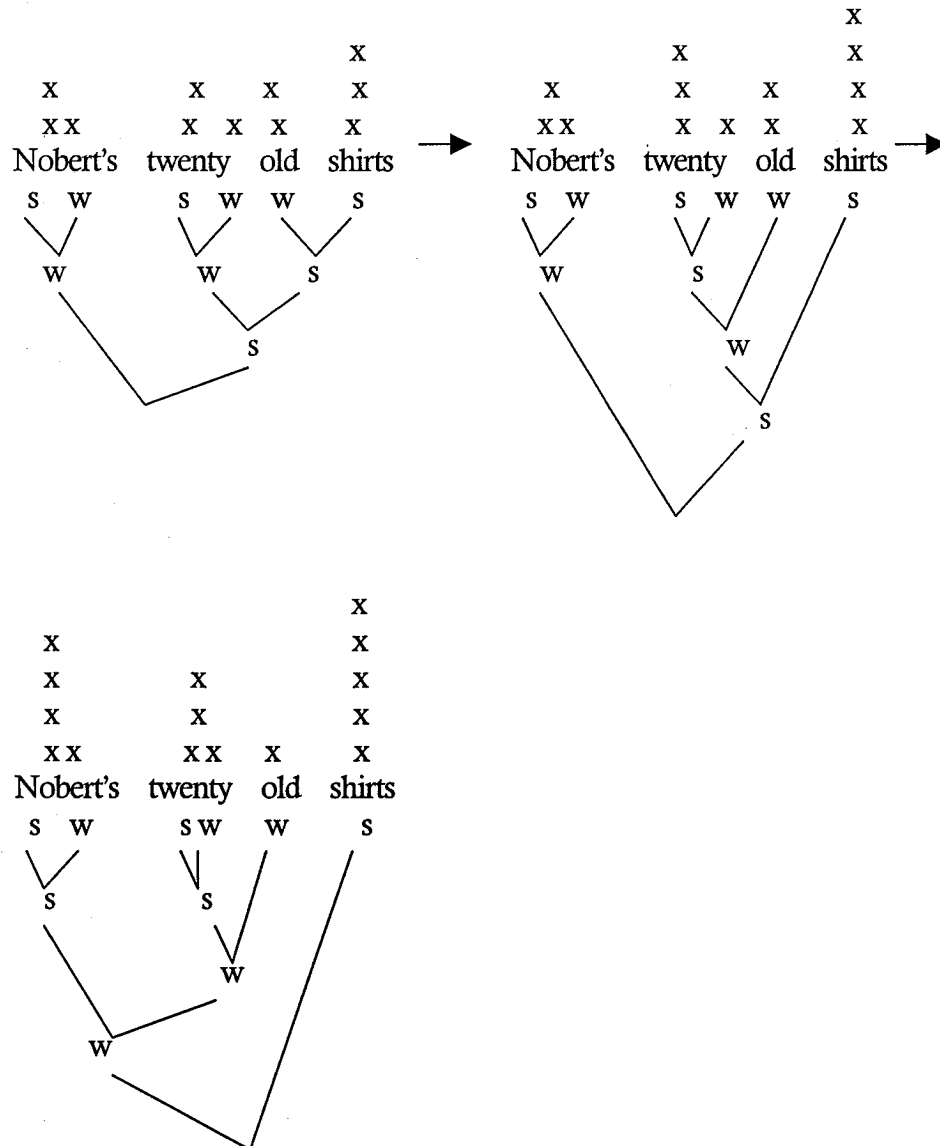
- (32) a. $\begin{matrix} & 2 & & 3 & & 3 & & 1 \\ & [& [& [\text{nineteen} & \text{twenty}] & \text{Ford}] & \text{shop manual}] \end{matrix}$
- b. $\begin{matrix} & 2 & & 3 & & 3 & & 1 \\ & [& [& [\text{Washington-grown}] & \text{apple}] & \text{shipping carton}] \end{matrix}$
- c. $\begin{matrix} & 2 & & 3 & & 3 & & 1 \\ & [& [& [\text{Alewife Brook}] & \text{Parkway}] & \text{subway station}] \end{matrix}$

d. $\begin{matrix} & 2 & & 3 & & 3 & & 1 \\ \text{d.} & [& [& [\text{thirty-two} &] & \text{twenty} &] & \text{blues} &] \end{matrix}$

3.4.3 2 3 4 1 stress pattern

The third stress pattern, which Hayes indicates as 2 3 4 1 stress pattern after applying the rhythm rule is shown by Kobayashi (*ibid.* p.43-44) as follows:

(33)



The examples of this type are shown below (*ibid.* p. 44) :

(34) a. [Benjamin [didn't [see Alise]]]

b. [Oliver's [ten [little kids]]]

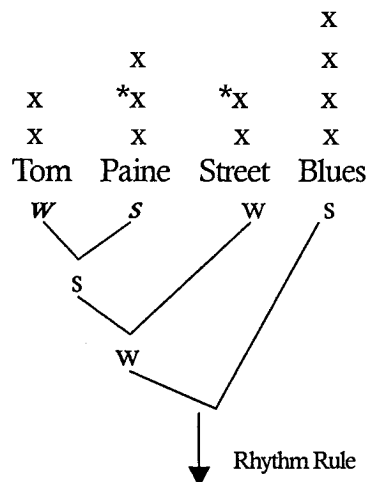
c. [thirteen [Japanese [bamboo tables]]]

3.4.4 4 2 3 1 stress pattern

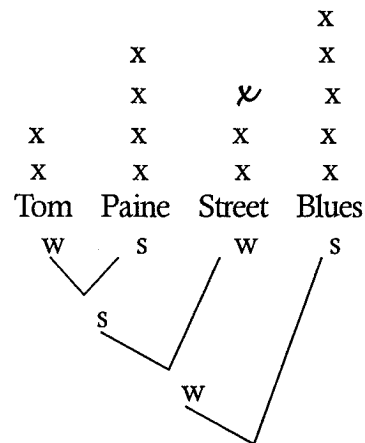
Finally, we see 4 2 3 1 stress pattern, which is derived from 3 2 3 1 stress pattern.

Kobayashi (*ibid.* p. 45) writes the derivation as follows:

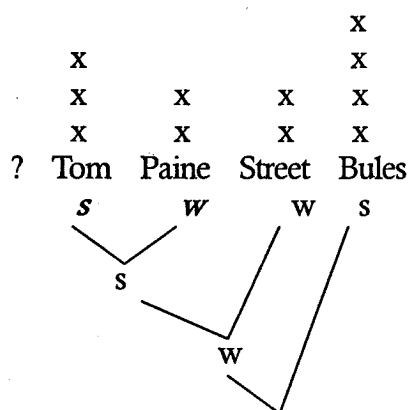
(35) a.



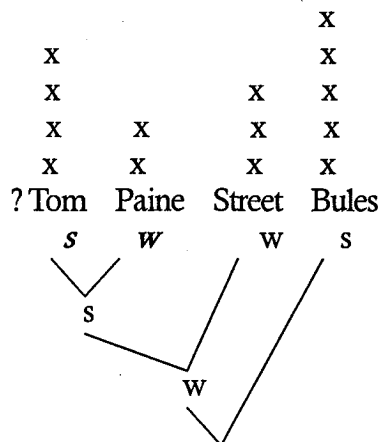
b.



c.



d.



The examples are (*ibid.* p. 45):

(36) a. 4 2 3 1
 [[[antique shop] zoning] board]

b. 4 2 3 1
 [[[kangaroo] rider's] saddle]

c. 4 2 3 1
 [[[free verse] club] art festival]

Now, we will confirm the stress patterns mentioned above from the film, where the actual speech is recorded. Let's look at the dialogues (37~40 in the film:

(37) INT. ANTIQUE STORE-DAY

We are in an antique store. Filled floor to ceiling with furniture and knick-knacks. Anna, Malcolm's wife stands with a young couple. All three lean over and peer into a glass cabinet. An antique engagement ring sits on a velvet stand.

Anna: It's Edwardian. Beautifully worked. With a mine cut diamond and an actual color Burmese Sapphire...

Young man: You got anything a little plainer?

Young woman: Plainer? You want a plain ring to go with your plain fiance. Is that how it is? (M. Night Shyamalan 1999:150)

(38) Malcolm: Have you ever done any free-association writing Cole?

Cole head nods, "Yes."

Malcolm: What'd you write?

Cole: Upset word.

Malcolm: Did you ever write any upset words before your father left?

Beat

Cole: I don't remember.

(*ibid.* p. 78)

(39) INT. SCHOOL CORRIDOR -AFTERNOON

Cole and Malcolm walk down an empty hall.

Cole: Did you think the play sucked big time?

Malcolm: What?

Cole: Tommy Tammisimo acted in a cough syrup commercial. He thought everybody was self-conscious and unrealistic. He said the play sucked big time.

(*ibid.* p. 134)

(40) Cole: I don't like people looking at me like that.

Mr. Conningham (Cole's school teacher): Like what?

Cole: Stop it!

Mr. Conningham: I don't know how else to look-

Cole: You're a stuttering Stanley!

Mr. Connigham: Excuse me?

(*ibid.* p. 88)

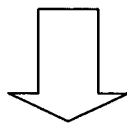
The speakers pronounce sentences underlined in (37)~(40) with the following intonations:

[illegible]

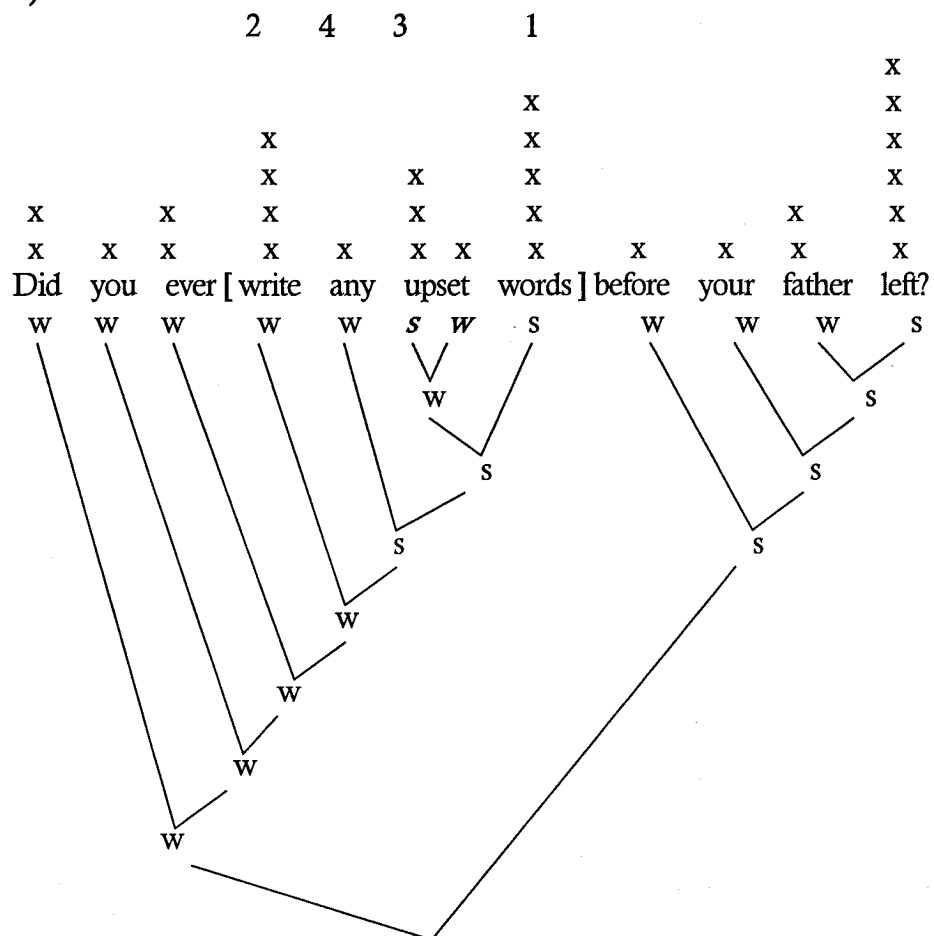
The diagram illustrates the syntactic structure of the sentence "Did you ever [write any words] upset words before your father left?". The words are arranged in a grid, and arrows indicate the hierarchical groupings into phrases. The structure is as follows:

- Top Level Groupings:**
 - "Did you ever" (w, w, w)
 - "[write any words]" (w, w, w)
 - "upset words" (w, s)
 - "before your father" (w, w, w)
 - "left?" (s)
- Intermediate Groupings:**
 - "Did you ever" and "[write any words]" are grouped together (w, w).
 - "[write any words]" and "upset words" are grouped together (w, s).
 - "before your father" and "left?" are grouped together (w, s).
- Final Groupings:**
 - The first two intermediate groups are grouped together (w, s).
 - The third intermediate group and the first two intermediate groups are grouped together (w, s).

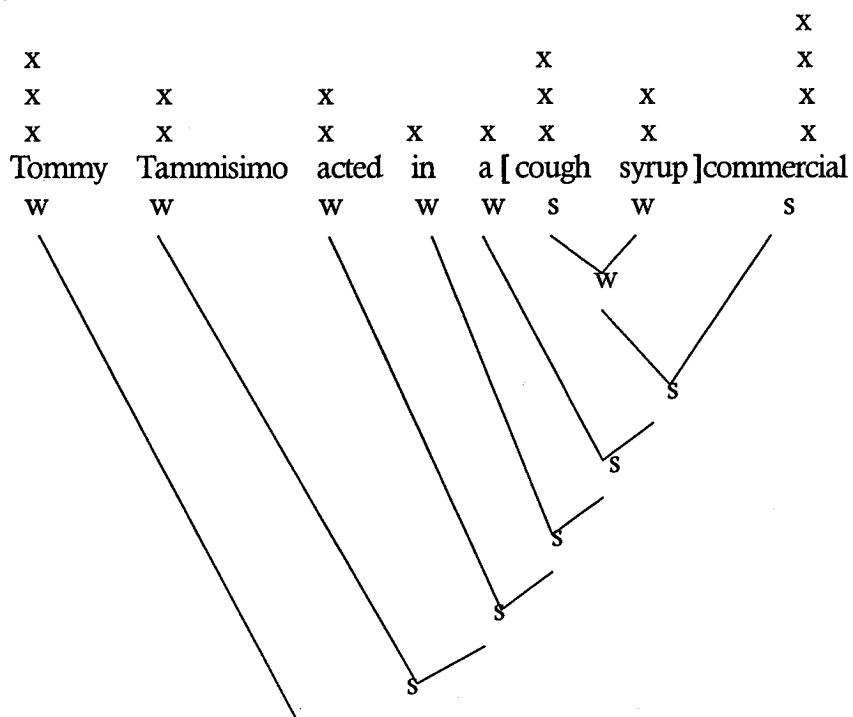
The diagram uses various labels (w, s, H) and arrows to indicate the flow of syntactic structure, showing how the words are grouped into phrases and then into larger syntactic units.



(42')

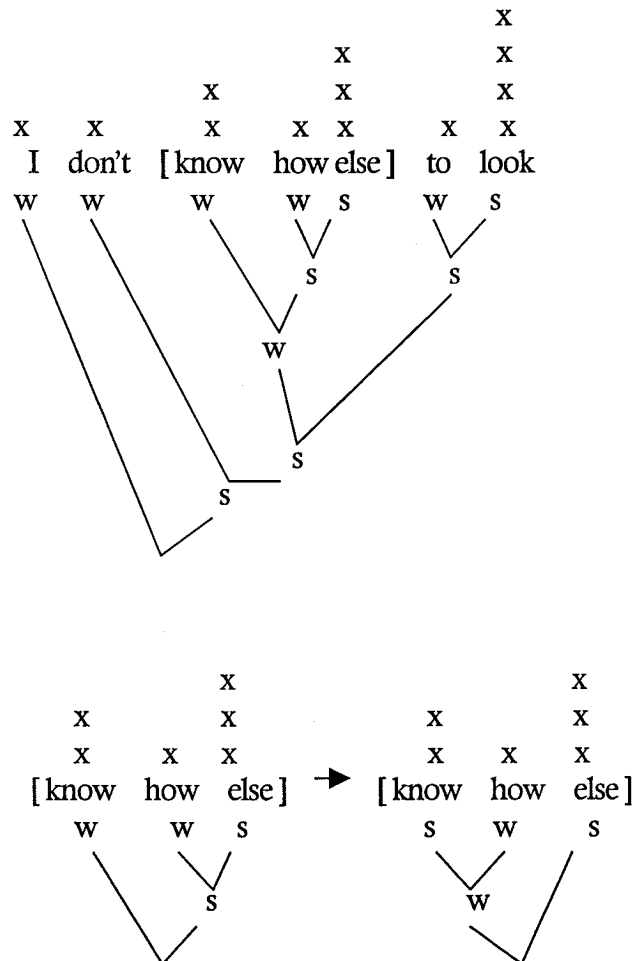


(43)



First, since [cough syrup] is compound noun, Compound Rules (s-w) is applied to it in (43). Second, if beat addition is applied to the sentence, then the word “Tommy” has more grid than “cough”.

(44)



First, the intonation (41) indicates 2 3 3 1 stress pattern, which we have seen in 3.4.2, and also the intonation (42) indicates 2 4 3 1 stress pattern. Moreover, the intonations (43), and (44) are applied to phrase rules.

CONCLUSION

In this paper we addressed three questions: first, we mentioned that speech sounds, intonation and rhythm, which are unintentionally produced in languages by human beings actually have rules, second, we indicated how and why the structure of sound falls into patterns and how and why they change in different circumstances.

A speech sound, which is so familiar in our daily life that we rarely pause to define, is an actual utterance of a sentence which consists of words and phrases. A speech sound in a discourse is derived by the rules discussed so far.

What we have to confirm is that when we speak something in English, there exist stress rules. We have seen before what English stress is and what pattern has, and what is different from Japanese language. And the second is that there is importance concerned with stress and rhythm. When we speak something in English, we have to remember that there is not only stress but also rhythm. When we communicate with someone in English, there exist not only stress and rhythm but also intonation.

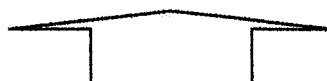
The theories of LP (1977), Hayes (1984), Selkirk (1984) and Kobayashi (1996), who mentioned Grid Construction, Stress Clash, Beat Addition, Rhythm Rule, Focused Element Prominence Rule, Downed Lift and Phrasal stress and Compound stress Rule, led the present writer to a successful way to describe the derivation of intonation of speech sound produced by human beings in their daily life. However, only thing the writer could not describe is the derivation of intonation where speaker's strong emotion, mood, personality, and attitude, etc are included. The writer couldn't derive the

exceptional intonation by applying the theories above because speaker's strong emotion, mood, personality, and attitude bring an irregular intonation: monotonous intonation with mutter, high flat intonation of strong emotion, or petered intonation with no confidence, etc.

As a future study, the writer would like to mention the derivation of every intonation by applying the rules of Human language.

To sum up, I will sketch the derivation of intonation, which I have mentioned in this paper in figure 1. There are actually rules for speech sounds although we speak sentence unconsciously, and also we don't notice how and why speech sounds fall into a pattern. The essential derivation of speech sounds which the writer has discussed in this paper is pictorially represented in the following figure 1.

ACTUAL SPEECH SOUNDS (INTONATION)



PHONETIC APPROACH: PATTERN OF INTONATION

SENTENCE:

A. Statements, B. Wh-questions,
C. Yes-No questions, D. Tag-questions,
E. Commands, F. Exclamations,
G. Alternative questions, H. Series, I. Vocative,
J. Emphasis, K. Contrast 2.4

rising/ falling/ falling-rising/ rising-plus-falling
intonation

sentence stress, rhythm 1.2, 1.3

SENTENCE:

exceptions
of intonation



speaker's strong
emotion, mood,
personality,
attitude, etc. 2.5

PHRASE: Rhythm 1.2



WORD: Stress 1.1



PHONOLOGICAL APPROACH: DERIVATION OF INTONATION

SENTENCE:

Grid Construction 3.1
Focused Element Prominence Rule 3.3
Down Drift 3.3
Beat Addition 1.4.2
Stress Clash 1.4.1

PHRASE:

Stress pattern in Phrase 3.4
Rhythm Rule 1.4
Stress Clash 1.4.1
Beat Addition 1.4.2
Grid Construction 3.1
Phrasal stress and Compound stress Rules 1.4.3

WORD:

Stress 1.1

* The numbers put after the terms indicate chapters and sections I have ever mentioned.

Figure 1.

Tape

The Sixth Sense (video tape). 1999. Pony Canyon.

Bibliography

Bolinger, Dwight. 1986. *Intonation and Its Parts: Melody in spoken English*.

Stanford: Stanford Univ. Press.

Chomsky, Noam. 1972. *Language and Mind*. New York: Harcourt Brace Jovanovich.

Cruttenden, Alan. 1986. *Intonation*. Cambridge: Cambridge Univ. Press.

Crystal, David. 1991. *A Dictionary of Linguistics and Phonetics* (Third edition).

Oxford: Basil Black Well.

Gimson, A.C. 1970. *An Intonation to the Pronunciation of English*. London: Edward

Arnold.

Hayes, Bruce. 1984. "The Phonology of Rhythm in English," *Linguistic Inquiry* 15,

33-74.

Horiguti, Shuniti. 1996. *Gendai Eigo Onseigaku* (*Modern English Phonetics*).

Eichosha.

Ikemoto, Akira. 1997. *Rizumuron wo Tyushintoshita Eigoonseigaku* (*English*

Phonetics in Rhythmic Theory). Tokyo: Sugiyama Syoten.

Kobayashi, Yasuhide. 1996. *Eigo Kyoseiron* (*A Theory of English Stress*). Kyoto:

Shugakusha.

- Ladefoged, Peter. 1975. *A Course in Phonetics*. New York: Harcourt&Bruce Jovanovich. Inc.
- Liberman, Mark. and Alan Prince. 1977. "On stress and Linguistic Rhythm," *Linguistic Inquiry* 8, 249-336.
- Mizono, Kazuo. 1995. *Eigo Onseigaku Kenkyu: Riron to Oyo (A Study of English Phonetics: Theory and Application)*. Tokyo: Lazuhiro Shuppan.
- O'Connor, JD. 1980. *Better English Pronunciation* (New Edition). Cambridge: Cambridge Univ. Press.
- O'Grady, William. and Dobrovolsky, Michael. 1998. *Contemporary Linguistic Analysis: An Introduction II*. Tokyo: Shohakusha.
- Palermo, David S. 1978. *Psychology of Language*. Dallas: Scott, Foresman and Co.
- Sapir, Edward. 1949. *Language: An Introduction to the Study of Speech*. New York: Harcourt, Brace & World, Inc.
- Selkirk, Elisabeth O. 1984. *Phonology and Syntax: the Relation between Sound and Structure*. Cambridge: MIT Press.
- Shyamalan, M. Night. 1999. *The Sixth Sense*. Tokyo: Aiikusha.