INTONATION IN THAI

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To Father & Mother

and to Polrard, this work is dedicated.
ABSTRACT

An attempt has been made in this thesis to look at intonation as pitch contours of information units. Each information unit has one intonation, which is the product of many interrelated systems: (a) phonological accents of the words composing the information unit realized as rhythmical variation of stressed and unstressed syllables; (b) the syntactic and pragmatic structure of the information unit in relation to other information units of an entire speech realized as variation of pause and prominent stressed syllable placement; and (c) the two systems of pitch fluctuation, namely, the tone which is the inherent property of the syllable used to convey word meaning and the tune which is the property of an utterance used to convey syntactic and attitudinal meaning.

The thesis consists of five chapters. Chapter I deals with the theoretical problems concerning the study of intonation in tone languages, and those problems particular to Thai. This is followed by the author's suggested solution. An overview of Thai phonology, morphology, and syntax which is needed for the discussion in later chapters is given to help readers unfamiliar with the Thai language.

Chapter II describes the accentual system or the phonological system of potential stress placement restricted to the lexical level. This chapter is essential for the understanding of rhythmical variation and pitch fluctuation caused by stresses in real speech. The accentual system of monosyllabic words, monomorphemic polysyllabic words, compounds, and different types of reduplicative particular to the Thai language is given. The description suggests that words in Thai have a favoured accentual pattern i.e. the double accented pattern. Although the primary accent is always assigned to the final syllable of a word, the assignment of the secondary accent varies according to the types of word.
Chapter III which is a study of the tonal behaviour of one-word utterances, attempts to find answers to the following questions. What is the behaviour of the five contrastive tones when different intonations are superimposed on them? Does the system of intonation contaminate the system of tone? How many contrastive intonation contours or 'tunes' are there in Thai? Are there universal 'Falls' and 'Rises'? The answers to these questions are drawn from experiments on one-word utterances with different syntactic functions and different attitudinal meanings elicited from three subjects. The cue-card technique, which is the combination of the reading and questioning method of elicitation, is used. Both acoustic and auditory analyses are done to give the clearest view of the interrelationship between tone and intonation.

Chapter IV describes intonation in Thai connected speech. The author divides speech into units of information using phonetic, syntactic, and pragmatic cues. Each information unit is a unit of intonation or a 'tone group'. A tone group is divided into units of rhythm or 'feet'. A foot is divided into stressed and unstressed syllables. There are five sections in this chapter. The first section is a phonetic analysis of connected speech in terms of pause-defined units and prominent stressed syllables. The second section is the phonological postulation of intonation units. Section 3, 4, and section 5 are a description of Thai intonation in terms of 'tonality', 'tonicity', and 'tune' contrasts respectively.

Chapter V deals with 'stylized intonation' which has definite phonetic characteristics i.e. pitch levelling and lengthening of duration. This intonation conveys the core meaning of the utterances in terms of stereotype and predictability. The study covers both stylized forms of speech such as chanting, recitation, calling, etc. and non-stylized forms of speech such as normal conversation and reading.
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Chapter I

INTRODUCTION

1.1 Purpose and Scope

Linguists have been discussing and describing how pitch fluctuation is used in languages for quite a long time. They have also tried to classify languages according to whether they utilize pitch fluctuation to convey lexical meanings, "word tone" or "word intonation" or "tone", or make use of "sentence tone" or "sentence intonation" or "intonation" to modify the general meaning of the sentence. Languages are classified with reference to this linguistic phenomenon, into "tone languages" and "intonation languages". Beach (1924) proposes the term "tonetic" for the scientific analysis of pitch fluctuation, which he calls "tone", in speech. He postulates three different types of "tones" according to their functions, i.e. "semantic tones", "syntactical tones" and "emotional tones". According to this postulation one could say that Beach considers that all languages are tone languages. At that time Pike was not satisfied with this concept, as he stated: "It would appear preferable, however, to keep tonal and intonational types distinct in nomenclature." Later, in the year 1975, the members of the Summer Institute of Linguistics produced a volume called "Studies in Tone and Intonation". Pike states clearly in the Introduction:

"Tone and intonation were never held in sharp, dichotomous partition—in the tonal material, word tone was recognized for Norwegian, for example, and in languages of typical tonal style, one

2 This is Pike's interpretation (Pike : 1948, 3n). I have a different interpretation which I shall discuss later, in Chapter 1.2.
found intonational overlay as a separate system ... But in the main, they were treated separately in the early materials. Various later discoveries began to put pressure on this system:...

We can see that after years of working with language all over the world, the SIL group is aware that the concept of tone and intonation needs to be reconsidered through more research on different languages. Meanwhile, this sharp dichotomy is still used among contemporary linguists and phoneticians (O'Connor: 1973, 190-191; Hartman and Stork: 1975, 117; Catford: 1977, 111, for example).

Linguists who have had experience in working with tone languages seem to be aware that tone languages do have intonation. For example, in one of his early publications, Pike said: "All tone languages have intonation of the emotional type, with the general height of voice affected and so on, but I have not seen reported for them a highly organized contrastive system with a limited number of relative levels controlling the formation of intonation that carry shades of meaning. The phrase melodies of tone languages do not change the basic register-tone or contour system of the language, even though they may modify the phonetic character of the tonemes or temporarily obliterate their contrasts, or even constitute narrative versus interrogative contours, and the like, which are superimposed on the lexical pitches." This statement has been supported by many linguists who are familiar with tone languages and have done some work on them, for example, Chao on Mandarin (1933, 1956), Søren Egerod on the Lungtu dialect of Chinese (1956), and Chang who studied the tone and intonation of the Chengtu dialect of

2 1948. pp. 16-17.
Chinese at length (1954). All of the examples just given are tone languages of the "contour type". Tone and intonation of the "register tone languages" have also been investigated by many African language scholars such as Beach who worked on Xosa (1924) and Carnochan who worked on Yoruba (1964), two outstanding examples.

Tone and intonation in Thai have been analysed and described by many scholars, in particular tonal analyses of Thai lexical tones from various aspects have been done by Henderson (1949, 1951, 1964), Abramson (1962, 1975), and Gandour (1975, 1976). Intonation in Thai has also been investigated by many scholars, most of them using a phonemic approach; there is one prosodic approach. In the literature on Thai intonation, it cannot be said that any of the analyses are thoroughly satisfactory. Intonation is a complex linguistic phenomenon: for the man in the street, intonation may mean the rise and fall of pitch in speech, but a linguist, describing this phenomenon, must take into consideration many factors which affect the variation of pitch. Linguists must describe not only what the pitch variations are, and how many contrastive intonations there are in a language, but also what factors are involved in pitch variation, and how the speakers exploit these pitch variations to convey meanings in a language.

In 1956, Terd Chuenkongchoo did an intensive study of the "intonation carriers" or the "particles" in Thai. His interest is in the

1 Pike postulates 2 basic types of tone languages; the "contour tone languages" in which glides are basic to the system, and the "register tone languages" in which level tonemes are basic to the system. See Pike, K.L. (1948 : pp. 5-13).

2 See details in Chapter 1.3.

3 A particle is a term used in grammatical description to refer to an invariable item with grammatical function especially one which does not readily fit into a standard classification of parts of speech. (Crystal : 1980, 258). In Thai, particles are used in spoken language to soften a command, to indicate a question, to make a request, to tell the sex or the social status of the speaker etc.
complex prosodic characteristics of these particles in spoken Thai. He also observes that the complexes\(^1\) are sometimes superimposed on words other than particles as well, as he states: "It may be noted here that there is a tendency nowadays in facetious or very familiar conversation to use a rising or high level pitch on words other than particles to indicate interrogation or request.\(^2\)

The term "familiar" seems to be much more appropriate than "facetious" conversation, as I have noticed that in normal (I mean not affected) speech people do not use these "intonation carriers" with every utterance they make.\(^3\) In very formal speech situations such as lecturing, radio or television news reading, making a public speech, the occurrence of final particles is very rare. In informal speech situations or everyday conversational speech, the final particles are always dropped if the persons in the speech situations know each other well, and are equal in social status, for example speech between close friends, husband and wife, brother and sister, cousins. In speech situations where the speakers are not sure about their social status in relation to the listener, or are quite sure that they are superior to the listeners in social status, they also tend to drop the final particles. The interesting point is that when we drop these 'intonation carriers', how are these meanings represented without the particles.

1 The final particles in Thai have different phonetic characteristics which Chuenkongchoo (1956) postulated as complexes; he described these complexes in terms of quantity (long or short), intonation (falling, rising, high, mid, low), and "manner of termination" (glottalized or non-glottalized).


3 The variation of the occurrence of particles, especially the final particles, from my observation, is very interesting sociolinguistically. Many particles studied by Chuenkongchoo do not occur in the earliest dictionary of Thai (Bradley, D. 1873. Dictionary of the Siamese Language, Bangkok). Research on particles in Thai still needs to be done.
Chapter 1.2 of the present research is intended to clarify some theoretical problems in describing the intonation of a tone language. This will be done through discussion of theoretical frameworks which linguists have used to describe intonation in general and in tone languages.

According to the literature there are two main approaches used in the analysis and description of Thai intonation: the phonemic approach (Haas: 1964, Noss: 1964, Rudaravanija: 1965, Abramson: 1962) and the prosodic approach (Henderson: 1949, Chuenkongchoo: 1956). These will be reviewed in Chapter 1.3 in order to point out some basic principles and problems which I want to bring into discussion of my own research.

Rhythmical variation of stressed and unstressed syllable in connected speech caused by different placement of pauses and phonological accent plays an important role in Thai sentence prosody. I will deal with the accentual system of Thai words in detail in Chapter 2 of this thesis.

As I stated previously, although Thai has final particles to carry the intonations of the utterances, there are many speech situations in which speakers do not use these particles. If one observes the tonal behaviour of ordinary words (I mean not particles) used as one-word utterances, one will hear different tonal features of these words when they have superimposed upon them different 'intonational meanings'. There are many questions to be answered here: 1) What are the tonal behaviours of each contrastive tone in words used as one-word utterances under different 'intonational meanings'? 2) Will the five contrastive tones behave in the same way under the same intonational meaning or do they behave differently? 3) Will the intonation overlaid on these contrastive tones contaminate the "inherent pitch" of the lexical tones?
or not? In Chapter 3 I will investigate the tonal behaviour of the contrastive tones in one-word utterances when these lexical tones have different intonational meanings superimposed on them. The investigation is based on the analysis of the pitch variations of one-word utterances performed in a controlled context of situation, by three different subjects.

In Chapter 4 I will show how rhythmical variation (determined by phonological accents and phrase-group differences) and the tonal behaviour of the "tonic" or the focus of information in an utterance combine to form the whole contour of the utterance. This will be done through the analysis of utterances with different grammatical structures, different foci of information and different intonational meanings, in terms of tone groups, feet, tonic placements and tonal behaviour of the tonic.

One function of intonation is to convey syntactical or grammatical meaning. Like other linguistic elements, intonation also has its expressive and indexical functions; it is used to express what the speaker thinks and feels or what he wants to appear to think and feel. While describing the phonetic aspect of intonation I will also discuss how we categorize intonational meanings grammatically and expressively and what the "meaning potentialities" of these categorized intonational meanings in real contexts of situation are.

1 Trubetzkoy states: "Since the prerequisites for human speech are always a speaker, one or several hearers, and a topic to be discussed, each linguistic utterance has three aspects: it is at once a manifestation (or an expression) of the speaker, an appeal to the hearer or hearers, and a representation of the topic. It is to the great merit of Karl Bühler that this apparently simple, yet so long overlooked, fact was put into its true perspective" in Trubetzkoy. N.S. 1939, Principles of Phonology, translated into English by A.M. Baltaxe (1969), University of California, p. 14. Discussions on the functions of language can be found in Halliday (1973) and Lyons (1977, ch. 4).
Another interesting aspect of intonation is the intonational patterns found in stereotyped or stylized forms of speech. These patterns have a common phonetic characteristic and they show some interesting semantic features. I will analyse Thai stylized intonation in some styles of speech and show how these stylized patterns are brought into conversational speech to convey meanings, in Chapter 5.

Conclusions and related discussions will be given at the end of the chapters. Most chapters can be consulted separately.

1.2 Theoretical Framework

Preliminaries

In discussing and describing intonation, especially of a tone language, one is faced not only with the problem of finding an appropriate theoretical framework upon which the analysis is going to be based, but also the problem of the terminology and the notation one is going to use in the presentation of the analysis.

Linguists have been discussing and describing intonation for hundreds of years, but we are still not satisfied with it, to quote Malecot:

"This is certainly one of the most nebulous aspects of linguistics. Its analysis is complicated by the fact that several systems are superimposed one upon the other. The presumably invariable sets of grammatical intonation are thus altered by implication pattern, asseverative stress, and emotion. In view of the fact that absolutely uncontaminated prosaic grammatical patterns rarely occur in natural speech, and that we cannot be certain when they do, conclusive experimental study is perhaps impossible. Also, the problem of how intonation should be analyzed and described has not yet been solved." (1974 : 2511)

There are many different approaches in intonation analysis. Three comprehensive surveys of the literature on intonation studies are found

1 The first description of the intonation of English is said to be by John Hart (1569). (cf Pike (1945) and Crystal (1969).)
Pike (1945, 3-19), Magdics (1963) and Crystal (1969, Ch. 2).

Pike discusses the approaches in terms of technique of analysis: auditory or perceptual analysis, and instrumental analysis which investigate the articulatory and acoustic aspects of intonation. He points out the problems of the analysis which are caused by the relation between absoluteness and relativity of pitch in intonation analysis, and the problems of the analysis arising from the many overlapping phonetic features related to intonation, such as, intensity, duration and rhythm.

Magdics, following Bolinger's view (1949) on the problems of intonation analysis, reviews and points out many alternative approaches used in the analysis of intonation: the deductive vs the inductive approach, intonation as a single contrastive unit, or the phonemic approach vs. the polysystemic approach, the analysis which starts from form to function vs the one which starts from function to form. Her review is very clear and points out the main problems arising from different theoretical frameworks.

Crystal reviews past work on prosodic features of English showing the chronological development of both British and American schools. His critical remarks lead to his proposal to develop an integrated parametric approach in the study of intonation i.e. the approach which shows how pitch fluctuation and other prosodic features interplay to convey meanings. His approach, though it sounds very phonetic, is actually very phonological. In Lieberman's review of Crystal (1969), he states:

"The study of intonation is perhaps more difficult than the study of segmental phonology because it impinges on the 'emotional' aspects of vocal communication. The expression of emotion is difficult to quantify and is perhaps more variable than other aspects of language. However, we can hope to gain some insight by applying careful and objective acoustic, psychological, and psycho-acoustic techniques. The collection and interpretation of data is often tedious, and meaningful hypo-
theses are hard to formulate; but it is clear that some progress can be made. Unfortunately, Crystal does not provide a coherent view either of objective acoustic and psycho-acoustic analyses of prosody, or of a new auditory approach." (1976, 510)

Lieberman's remark on Crystal's work, in my view is not wholly justified. Crystal states clearly (1969, 7) that he will use the term 'technique' only to refer to auditory and acoustic aspects of the study of intonation, but the term 'analysis' will be restricted to the structural description of a contrast which will be carried out through postulations of a set of prosodic systems within which the contrasts may be defined and interrelated. However, I agree with Lieberman that Crystal developed a theoretical basis for the study of intonation without any solid instrumental data either to begin with or to support his hypothesis.

If one looks at intonation in terms of a monosystemic contrastive system of pitch, one might end up with a very narrow view of it. On the contrary, if one looks at intonation in terms of a complex of bundles of contrastive systems, undoubtedly one will have a better description of the phenomena. However, different monosystemic contrastive systems which are combined to give the pitch fluctuation of an information unit called intonation need to be explicitly described before one goes on to describe the complex of the whole, or else one will end up with an unduly wide and inconclusive description of intonation in a language. I entirely agree with Pike, who as the proponent of tagmemic approach, states:

"Perhaps the assumption most crucial to the tagmemic approach is that language structure - and all of life behavior is far too complex to be seen completely through any one simple model .... Nor is one perspective independent of another. The insights gained are neither

1 There are three perspectives in tagmemic analysis: particle, wave and field. In the analysis of intonation as particle, one perceives intonation as static bits and finds intonation phonemes; the wave perspective gives the view of intonation as related to other phonemic points such as nuclei of contours, ends of contour; and the field perspective gives the view of intonation in a context (Pike: 1965).
separable from each other, nor simply additive. When one approach comes into focus, the other two must necessarily comprise its background." (Pike : 1965, 105)

In this part of Chapter I, I should like to discuss some problems concerning the terms, techniques, approaches and notations used in intonation analysis, then put forward the rationale of the principles used in this present study.

1.2.1 The Use of the terms 'Pitch', 'Tone' and 'Intonation'.

Since I started working on this research, I have been asked many times questions like: 'Do you have intonation in Thai?', 'Isn't Thai a tone language?' etc.. These questions were not asked by linguistically naive people but by linguists. I used to be puzzled as to why they were so surprised at my research topic but since I have studied the literature on 'tone' and 'intonation', I am now aware of the problem and need to put forward my view on these two terms before I go on to describe 'intonation' in my own language.

In the earlier literature, the terms 'pitch', 'tone', and 'intonation' were used interchangeably. To begin with Sweet, for example, Henderson in her study of Sweet's work remarks:

"In Sweet's varying use in these extracts of such terms as 'pitch', 'tone', 'tones', intonation', one recognizes the same groping after acceptable expositive language... 'Pitch' is seemingly equated sometimes with 'tone' sometimes with 'key', while 'tone' is sometimes equated with 'intonation'." (1971, 175)

Another term which Sweet used is 'inflexion' as he states:

"Thus by a simple inflexion of the voice a single word will often express what in other languages could only be adequately stated in a complete sentence. We may therefore call this kind of tone 'sentence tone'. The Greek tones on the other hand are strictly 'word-tones': such word has but one tone which is absolutely inherent in it, being as much essential part of it as its consonantal or vowel structure." (1913, 349)

A comprehensive selection of Sweet's writings on pitch, tone and intonation is found in Henderson (1971, 127, 131-137, 175-187).
Here, Sweet used the term 'inflexion' in a general phonetic sense (cf David Abercrombie's pitch fluctuation (1967, 107-110)), and introduced two phonological terms in accordance with the functions of the 'inflexion of voice', i.e. 'sentence tone' and 'word tone'.

In 1924, D.M. Beach, an outstanding African language scholar, proposed the term 'tonetics' designed as the scientific study of 'tone' in speech. For Beach, 'tone' is defined as follows:

"A tone is the relative pitch or change of pitch of a minimum significantly complete unit of speech melody." (1924, 84)

The problem is how can we discover what is the minimum significantly complete unit of speech melody of a language? Beach states:

"It would be impossible to prescribe any exact procedure by which in a given language the minimum significantly complete units of speech melody are to be discovered. The tonetician will have to use all his powers of observation and judgement, he will have to note carefully what sequences of pitch seem to repeat themselves frequently; he will have due regard for the instinct of the particular language whose tonetic analysis he is making; he may have to use the trial-and-error method of taking a certain portion of speech-melody as a tentative unit and of adding to it or subtracting from it as his observations continue; above all he will keep clearly in mind the semantic value of each part of the speech extracts which he analysed, and endeavour to discover if certain classes of semantic groups have not a definite mode of intonation". (1924, 83)

Beach states clearly that in languages like Chinese, Sudanese and Bantu, the minimum significant element of speech melody coincides with the syllable and in most European languages, the significant unit is a sense group of an indefinite number of syllables. He then distinguished three types of 'tones' by their functions in speech:

1. Semantic tones or tones which are used to differentiate fundamental ideas denoted by words or phrases. This corresponds to Sweet's 'word tones'.

2. Syntactical tones or tones which are used to show the relation

The term 'intonation' was used by Beach as a general term for pitch variation in speech.
of one idea to another. He gave a clear example from English that the
word 'pumpkin' when is said by itself to give the notion of a certain
kind of vegetable will have a high falling tone; but if the word or the
notion 'pumpkin' is to be connected with some other idea which is to
follow (as in 'a pumpkin and an onion' or 'the pumpkin is yellow'), it
will be said with a high level tone. So if the tone is used to connect
idea to idea or ideas it is called 'syntactical tone'.

3. Emotional tones are tones which show the effect upon the
speaker's emotions of something which has just been thought or felt.

I do not think that Beach was trying to collapse all languages
into 'tone languages'. If one goes through his work thoroughly one
will find that he always keeps languages which make use of 'tone'
differently distinguished. He states:

"Bantu, Chinese, and other so-called tone-languages have all three
kinds of tone: semantic, syntactical, and emotional. Indo-European
languages in general have only syntactical and emotional tones. We
may conclude, therefore, that what has hitherto been known as a tone-
language is one which possesses semantic tones. But in view of the
great importance of tones in all languages, the term 'tone language'
is peculiarly inappropriate and should be replaced by some other term,
such as 'semantic tone language'." (1924, 104)

I think Pike (1948) has misinterpreted Beach's point and attacked
Beach's view on the term 'tone language'. He states:

"D.M. Beach..., calls all languages (including English) tone
languages, on the basis of their intonation. It would appear prefer-
able, however, to keep tonal and intonational types distinct in nomen-
clature." (1948, 3)

Pike defines a tone language as a language having significant
contrastive but relative pitch on each syllable. I have seen nothing
new in Pike's definition of tone languages as compared to Beach's
'semantic tone language'. For both of them this type of languages is
the language which has what Pike calls 'syllable pitch'; that is each
syllable of a tone language carries at least one significant pitch.
However I think Pike's contribution in the study of speech melody is his distinction of two types of non-tonal languages\(^1\): languages with a 'word-pitch system' for which he gave Japanese, Swedish and Norwegian as examples, and languages with a 'phrase-pitch system' for which he gave English as an example. He states:

"Pitch occurs even in a nontonal language. In order to be spoken at all, words must be pronounced on some pitch. This remains true whether the language containing them is tonal or not. Probably in every nontonal language the pitches of the utterances tend to be 'frozen' into formalized patterns, or INTONATION." (1948, 15)

Pike's view on the sharp dichotomous use of the terms 'tone' and 'intonation' has had a strong influence on the definition of tone and intonation found in text books and work in phonetics (Abercrombie: 1967, O'Connor: 1973, 190-194, Catford: 1977, 111). To quote Abercrombie:

"The linguistic functions of speech melody are very varied, but of two fundamentally different kinds. In one case, the function of the speech melody patterns is to be part of the structure of sentences; in the other case, their function is to be part of the structure of words. In the former case, the patterns are called intonation, and in the latter case they are called tone. In every language the function of speech melody is predominantly either of one kind or the other, so that the languages of the world can be divided into two classes, intonation languages and tone languages." (1967, 104)

In the first part of this quotation, Abercrombie defines 'tone' and 'intonation' according to their functions in a language, with which I entirely agree, but when he comes to conclude that languages of the world can be divided into two classes according to the predominant function of the two kinds of speech melody, I do not agree with his view. I do not think that it is appropriate to classify languages of the world in terms of a dichotomous classification like tone-intonation or tone-nontone languages, because among the nontone or the tone lan-

\(^1\) His classification is different from Sweet who put Swedish in the same group as Chinese i.e. languages with 'word tones'. 
guage: there are still many linguistic and phonetic features that help to distinguish one from the other, so why do we have to base the division predominantly on these two features?

In her paper on the topography of phonetic and morphological characteristics of South East Asian Languages, Henderson, who is very well aware of the problem of the classification of languages of the world through her knowledge of a vast number of languages states:

"It might be supposed, for instance, that it would be a relatively easy matter to decide whether a language is 'tonal' or not, but consideration of linguistic descriptions in our area shows that this is not the case. Difficulties arise because tone is seldom, if ever, a matter of pitch alone. There are frequently concomitant features of phonation type, glottal constriction, stress etc." (1965, 404)

I agree with Henderson that it is not easy to decide whether a language is 'tonal' or not, and there are languages which have other linguistic features which are unique in their family. How can one classify languages with lexically contrastive 'register', like languages in the Mon-Khmer family, with the criteria of pitch fluctuations? I also have a strong objection to the typological definitions of 'intonation' and 'tone' which are widely used and, from my point of view, give a dangerous misconception of the notion 'intonation', i.e. that we find intonation systems only in non-tonal languages. The concept also leads to a restricted approach or a viewing of intonation as a single grammatical contrast of pitch systems, and to the belief that other functions of intonation (i.e. expressive and indexical) cannot be seen as an organized system of pitch in a language.

The view that in tone languages there is a system of contrastive pitch used to convey different lexical meanings and called 'tone', and in non-tone languages there is a system of contrastive pitch used to

1 'Register' is used here to refer to linguistically significant voice quality or phonation (see Abercrombie : 1967, 99-102)
convey different syntactical meanings seems to be rejected by many contemporary linguists. The most influential one, I believe, is Bolinger (1949, 1962, 1978). He makes it clear that with a restricted definition of intonation one might claim that a language has no intonation at all, as he states:

"Obviously by plucking a petal at a time and declaring that it is not a rose, we will end up with something that is not a rose either, and can rule the rose out of existence, assuming there was one to begin with." (1962, 835)

Scholars who are familiar with tone languages are aware that these languages make use of pitch on other structures besides words, Pike states:

"All tone languages have intonation of the emotional type with the general height of voice affected, and so on, but I have not seen reported from them a highly organized contrastive system with a limited number of relative levels controlling the formation of intonations that carry shades of meaning." (1948, 16-17; my underlining)

Ladefoged who is also familiar with tone languages after distinguishing two types of language: English which makes use of pitch to convey syntactical meaning (intonation) and Chinese which makes use of pitch to convey lexical information (tone), states:

"The distinction between tone languages and intonational languages is not precise, as might be imagined from the preceding paragraphs. In practice most tone languages always have a mixture of methods of using pitch. There is probably no language, however tonal, which does not have some intonation features corresponding to a grammatical unit such as clause or a sentence." (1971, 87)

The views of these scholars led to a reconsideration of the definition of intonation as can be seen in a recent view of Pike who states:

"Tone and intonation were never held in sharp, dichotomous partition.... in languages of typical tonal style, one found intonation overlay as a separate system.... But in the main they were treated separately in the early materials. Various later discoveries began to put pressure on this system... led finally to sharp revision of the basic concepts..." (1975, Introduction to 'Studies in Tone and Intonation" edited by Ruth Brend.)
As a phonetician and a native tone language speaker myself, I should like to propose my idea of what is a good definition of 'tone' and 'intonation'. Most of the text books on phonetics define 'tone' as pitch variation or pitch fluctuation which certain languages use to convey lexical meaning, as opposed to 'intonation' which is the pitch fluctuation which certain languages use to convey syntactical meaning. These definitions need to be revised. Firstly the dichotomous use of tone as opposed to intonation tone in terms of language type should be deleted; secondly it should be made clear what unit in the language the pitch fluctuation belongs to (see Beach : 1924 and Pike : 1948); thirdly the function of the pitch fluctuation of that unit should be given.

'Pitch' will be used in this thesis to refer to a subjective property of sounds which can be auditorily described on a scale from low to high; it can also be described objectively in articulatory and acoustic terms. (Discussion of this term will be found in the section on 'technique of analysis' later in this part.)

'Tone' will be used to refer to a distinctive pitch of a syllable of which the function is to distinguish the meaning of one word from another.

'Intonation' will be used to refer to a distinctive pitch of an information unit, either a word or a set of words which are semantically and syntactically unified. Its function is to distinguish the meaning, whether grammatical or attitudinal, of the information unit.

1.2.2 Phonetic Techniques for the Investigation of Pitch

In this thesis 'pitch' will be used strictly in a general phonetic sense to refer to a quality of speech sounds or a phonetic form of speech sounds without regard to its function, in other words, without
any linguistic implication. Pitch, like any other phonetic element (contoid, vocoid, duration), can be described in articulatory, acoustic and auditory terms.

Pitch is described in articulatory terms by referring to the rate of vocal cord vibration during voice production\(^1\) i.e. for how many cycles the vocal cords are drawn together and then forced apart in a second. Acoustically, phoneticians describe pitch in terms of fundamental frequency which correlates with the rate of opening and closing of the vocal cords, e.g. in articulatory terms we say that the sound is produced while the vocal cords vibrate at the rate of a hundred and fifty cycles per second, and in acoustic terms we say that the sound has a fundamental frequency of 150 cps. or 150 Hertz (Hz). Instrumental techniques\(^2\) can be used to investigate this aspect of sound objectively; in the literature the term 'absolute pitch' is used to refer to this objective articulatory and acoustic description of speech melody. To avoid confusion I prefer to confine the term 'absolute' to the objective aspect of pitch, although a very interesting proposal has been made by Crystal to reconsider the use of this term. He states:

"...there is no a priori reason why the concept of absolute pitch should be given a definition solely in terms of fundamental frequency... More obviously and usefully, one might argue for absolutism on AUDITORY grounds, that each individual makes use of certain perceptually 'stereotypical' norms,..." (1971, 18-19)

I can see Crystal's point when he raises the problem of intonation analysis, arising from the relativistic character of pitch used in a

1 The production of pitch in speech is extensively studied in Luchsinger and Arnold (1965), and a more recent study is in Ohala (1978).

2 For investigation of larynx activity phoneticians are now provided with electromyography, laryngography, fibre-optic laryngoscopy etc. The acoustic instrumental techniques for investigating fundamental frequency of speech sounds are the various linear signal processing techniques found in spectrography, pitch computer etc.
language. From my experience in tonal and intonation analysis, I found the same problem, namely the problem of a reference frame for the description of pitch auditorily. However, I think that it is the concept of the subjective auditory 'relative' which needs to be considered not the concept of the objective 'absolute'.

So far, 'relativity' in the analysis of tone and intonation has been concerned only with the relativity of pitch within a system of linguistically significant or contrastive units of pitch. Pike states:

"Since linguistic pitches are relative to one another and since their significance is determined by their mutual contrasts rather than by their absolute nature, the student needs to hear the tonal data in circumstances which allow him to recognize the contrasts with the most facility and certainty." (1948, 48)

Actually when we listen to speech unanalytically, we have an auditory sensation which enables us to say whether the stretch of sounds has a high or a low pitch or that the pitch is neither high nor low. Different people may have a different, what I would like to call, 'auditory pitch repertoire', that is, the auditory conception of pitch in terms of high or low or normal. Every speaker acquires this auditory conception, (I believe, through the process of learning his own language), and he is able to use this conception to judge this quality of

1 The question of relativity in the description of auditory pitch came to me when I joined the project on Linguistic Geography of the Northeastern Thai (1979-1981) and was assigned to work on the tonal analysis of different dialects spoken in 16 provinces (about 200 sampling dialects). Although field workers who were staff members and post graduate students of the Linguistics Department, Chulalongkorn University have had training in pitch description before, we found that it was almost impossible to compare the description of one with another, since different field workers had different conceptions of the height and configurations of pitch. Eventually I was asked to make a record of a reference system of description using my own voice illustrating different pitch levels, length and configurations. The tape is accompanied by a handout showing the system of description notation, and was used by field workers who had different systems of reference in order to train themselves to use this system. However, all the data had been checked through by two analysts who were in charge of tonal analysis before the comparative work was done. This system is the system which I will use to describe the tonal behaviour of one-word utterances in Thai in Chapter 3.
sounds and associate it with the meanings. We do not know yet what are the factors that form this pitch conception;¹ research on the perception of pitch is still to be done for a better understanding of this aspect of language.

However, in describing auditory pitch in linguistic analysis, phoneticians have to analyse and describe pitch in a stretch of sounds in general phonetic terms first and then to use these data either to discover contrastive linguistic units (-emes) or for work of a comparative nature (dialectology, socio-phonetics etc.). For me 'relativity' is not of one level as suggested by Pike. 'Relativity' in pitch perception is of two levels:

1. Relativity in the system of the listener's auditory repertoire.
2. Relativity in the system of the language.

The first level of relativity is in action when the analyst listens to the pitch produced by his informant, then transcribes the pitch in terms of levels of pitch e.g. high, mid, low or high, higher mid, mid, lower mid and low. Why 3 or why 5 levels? This is still a question to be answered. I myself prefer 5 levels because I found that it is easy to start from one reference hinge point the mid. Variation from the mid is therefore either higher or lower than this point. (see detailed discussion in Ch. 3.2.3, the auditory analysis)

At present there is no reference system in terms of 'Cardinal Tones' for phoneticians to use in their description of auditory pitch. Although it sounds very difficult to set up this system I believe such

¹ There are still many unanswered questions about the perception of pitch or, I should say, of phonetic signals as a whole. Human beings have nonlinguistic auditory abilities as well as linguistic auditory abilities which they make use of as language speakers and listeners. Research on the perception of speech signals has shown that subjects who have the same system of auditory conception whether phonetic (Ladefoged: 1967, on 'auditory judgement of vowel quality') or phonological, i.e. subjects who have the same language background, (Gandour: 1978, on 'tone perception', Donovan and Darwin: 1979, on 'perception of rhythm') will perceive the sounds in the same way. The subjective auditory qualities tend to be 'psychologically real'.
a system is possible if there is more basic research done to find out the correlation between the absolute pitch, its space and its movement in a specified time domain, and the auditory pitch judgement in cross-linguistic subjects.¹ This kind of system would be very useful to linguists, socio-linguists and dialectologists whose work is of a comparative nature, or whose research has to be done by different field-workers. It is very important for the analysts to have the same auditory pitch repertoire so that they have a mutual understanding and are able to refer to the same reference system both descriptively and comparatively.

The second level of relativity is in action when the analysts compare the pitches of the elements which they have found to be linguistically contrastive, in other words, the relativity within the system of the language on which they are working. For example, when they work at the first level they may find an element with a mid, a low and an extreme low from the judgement of their auditory repertoire, but in that particular language system the mid in this level is found to be the highest in the system. At this level of analysis relativity is phonological and must be kept distinguished from the first level of relativity which is a phonetic one.

Doing auditory analysis of pitch in speech, for whatever purpose, I think that phoneticians have to start with the relative pitch they acquire in their auditory repertoire, and then go on to the second step when they work with the relative pitch within the system of that language, whatever system it is, tone or intonation.

In my phonetic analysis of intonation in Thai I will deal with both auditory and acoustic aspects of pitch variation which is used with the aid of a computerized speech synthesizer, if we have enough basic knowledge of the non-linguistic auditory perception of pitch, we might be able to synthesize a system of 'Cardinal Tones' on a purely objective basis.
to convey both word and sentence meaning in Thai. The system of
description of auditory pitch and the instrumental techniques used
to obtain acoustic evidence will be dealt with at length in Chapter
3 of this thesis.

1.3 Review of Literature Relating to Thai Intonation

Intonation in Thai has been described by many authors as part of
the phonological description of the language. Major contributions are
found in Henderson (1949), Chuenkongchoo (1956), Abramson (1962), Haas
(1964), Noss (1964), and Rudaravaniya (1965), chronologically arranged.
The work mentioned here can be categorized into work done under two
different approaches: 1) The prosodic approach, and 2) the phonemic
approach.

1.3.1 The Prosodic Approach

Henderson (1949) posits two main kinds of sentence prosodies.

1) Those affecting small groups or pieces within the sentence.
The small groups or pieces are, for example, the future particle "ca?"/
words in genitival relation /khosipr/ etc. This prosody, from my point of view is the prosody
of unaccented monosyllabic grammatical words and can be discussed as
related to the discussion on 'stress' and 'lack of stress' which she
has already posited as prosodies of polysyllables (1949, 37).

2) The prosodies affecting the sentence as a whole which are
of two kinds:

a. Intonation. Henderson observes and reports that:

"In rapid combination style it is possible to detect certain
intonational tendencies which may be mentioned here. A sequence of
mid level tones tend to be pronounced on a descending scale, with a
fairly marked fall in pitch in the last syllable before a pause. A
fall in pitch may be postponed until a word of sufficient semantic
import is reached." (1949, 43).
She does not report any other types of contour besides the lowering of pitch towards the end of an utterance.

b. Sentence Tone. She observes that Thai speakers, with the use of certain words (i.e. particles), command a flexibility of expression comparable to that achieved in the English sentence by the modulations of stress and intonation (1949, 43-50). As a prosodist she finds that these words when they occur in sentences in a conversational casual style of speech have interesting phonetic characteristics. She then posits two prosodies, i.e. tone and quantity, which together work as a phonetic complex of this word class called 'sentence tone'. She states:

"The sentence tone is the complex of the syllable prosodies of tone and quantity, and is usually realized as one of the five tones proper."

We can note here that Henderson does not postulate a separate system of pitch for particles, that is, this system of tone is the same as the system of five tones proper to ordinary monosyllabic words (cf Chuenkongchoo below). However, this system of tone is always combined with the system of quantity in terms of a complex. Henderson postulates seven sentence tones from the prosodies of tone and quantity, as quoted below:

<table>
<thead>
<tr>
<th>Sentence Tone</th>
<th>Synthesis of Syllable Prosodies</th>
<th>Notes on General Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Tone 1 and shortness</td>
<td>The most neutral sentence tone. May give impression of casualness.</td>
</tr>
<tr>
<td>B</td>
<td>Tone 2 and shortness</td>
<td>Suggestion of impatience, abruptness, exasperation; mild command</td>
</tr>
<tr>
<td>C</td>
<td>Tone 3 and length</td>
<td>Assertion, or assent; more formal than D.</td>
</tr>
<tr>
<td>D</td>
<td>Tone 3 and shortness</td>
<td>Assertion, assent, or command</td>
</tr>
<tr>
<td>E</td>
<td>Tone 4 and length</td>
<td>Intensity, emphasis, or urgency</td>
</tr>
<tr>
<td>F</td>
<td>Tone 4 and shortness</td>
<td>Interrogation, invitation; less formal than G.</td>
</tr>
<tr>
<td>G</td>
<td>Tone 5 and length</td>
<td>Interrogation in slow, careful, or very formal style</td>
</tr>
</tbody>
</table>

Henderson (1949, 45).
We can note from her examples that 'interrogation' is conveyed by a raised pitch either a high or a rise (see Sentence Tone F, G; tone 4 is the high tone, tone 5 is the rising tone), and 'assertion' is conveyed by a fall in pitch (see Sentence Tone C, D; tone 3 is the falling tone). Low pitch conveys the impression of 'impatience, abruptness, exasperation or mild command' (see Sentence Tone B; tone 2 is the low tone). Mid pitch gives impression of casualness (see Sentence Tone A; tone 1 is the mid tone). Shortness seems to give an impression of command' (see Sentence Tone B and D).

Chuenkongchoo (1956) has done a lengthy analysis of the prosodic characteristics of particles in spoken Thai which is quite similar to the system of 'sentence tone' discussed above but going into more detail. The complex of features is in terms of 1) quantity 2) intonation and 3) termination. The three features work in terms of a complex of three systems and the complex is restricted to the CV phonematic units of a specific word class, the particles.

The 'quantity' system is composed of two different features of syllable length:

a) long, represented with a raised colon above the syllable, CV'

b) short, represented with a raised v above the syllable, CV".

The 'intonation' system is composed of five different features of pitch:

a) falling, represented with a raised 'f' above the syllable, CV^f

b) rising, represented with a raised 'r' above the syllable, CV^r

c) high, represented with a raised 'h' above the syllable, CV^h

d) mid, represented with a raised 'm' above the syllable, CV^m

e) low, represented with a raised 'l' above the syllable, CV^l

The 'termination system' is composed of two different features of syllable termination:
a) glottalized, represented with a raised comma above the syllable, \( CV' \)

b) non-glottalized, represented with a raised o above the syllable, \( CV^* \)

The system of intonation posited by Chuenkongchoo, though it looks similar to the system of 'tone', is a completely different system (cf Henderson's system of tone as a feature of 'Sentence Tone' above). His 'Tone prosody is the prosody of a syllable, whereas the 'Intonation' prosody is the property of only one word class, the particle. In addition, this system of intonation always works interrelatedly with the system of 'quantity' and the system of 'termination' in terms of a 'complex' of three different prosodies (Chuenkongchoo: 1956, ft. nt. 2, p. 23). There are 14 complexes as described by him. The table below is the description of the 14 complexes and their usage. I have reordered the complexes taking pitch as the primary feature, since 'pitch' is the most relevant feature in our discussion here. I will refer to Chuenkongchoo's complexes by the number he gave to each complex (eg Complex 1 (CX1) is \( CV'^{fo} \)).

<table>
<thead>
<tr>
<th>No. of Complex</th>
<th>Prosodic Characteristics of the Complex</th>
<th>Meanings conveyed by the Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>CX1</td>
<td>( CV'^{fo} ) (fall from high to low)</td>
<td>insistence</td>
</tr>
<tr>
<td>CX 14</td>
<td>( CV'^{f'} ) (fall from mid to low)</td>
<td>statement (simple)</td>
</tr>
<tr>
<td>CX 5</td>
<td>( CV^{wfo} ) (fall from high to low)</td>
<td>affirmative, mild command</td>
</tr>
<tr>
<td>CX 12</td>
<td>( CV'^{f} ) (fall from higher mid to low)</td>
<td>emphatic</td>
</tr>
<tr>
<td>CX 2</td>
<td>( CV'^{fo} ) (rise from low to high)</td>
<td>request or question</td>
</tr>
<tr>
<td>No. of Complex</td>
<td>Prosodic Characteristics of the Complex</td>
<td>Meanings Conveyed by the Complex</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>CX 11</td>
<td>CV\textsuperscript{r0} (rise from low to high)</td>
<td>request or question</td>
</tr>
<tr>
<td>CX 3</td>
<td>CV\textsuperscript{ho} (high level, slight fall at the end)</td>
<td>doubt, puzzlement or wonder</td>
</tr>
<tr>
<td>CX 6</td>
<td>CV\textsuperscript{ho} (high level)</td>
<td>request, question or mild command</td>
</tr>
<tr>
<td>CX 4</td>
<td>CV\textsuperscript{mo} (mid level, slight fall at the end)</td>
<td>warning</td>
</tr>
<tr>
<td>CX 7</td>
<td>CV\textsuperscript{mo} (mid level with a slight fall)</td>
<td>casualness</td>
</tr>
<tr>
<td>CX 9</td>
<td>CV\textsuperscript{lm},</td>
<td>request, command</td>
</tr>
<tr>
<td>CX 13</td>
<td>CV\textsuperscript{l0} (low level with a slight fall)</td>
<td>doubt, puzzlement, wonder</td>
</tr>
<tr>
<td>CX 8</td>
<td>CV\textsuperscript{l0} (low level with a slight fall)</td>
<td>doubt, puzzlement, wonder</td>
</tr>
<tr>
<td>CX 10</td>
<td>CV\textsuperscript{l1} (low level)</td>
<td>insistence</td>
</tr>
</tbody>
</table>

Chuenkongchoo does not give any conclusion of the phonetic features of pitch as related to the meaning they convey, but from the table which I have rearranged above we can conclude that falling pitch generally conveys the meaning of 'affirmation, insistence and emphatic'. Raised pitch either high or rising generally conveys the meaning of 'request, question, doubt, puzzlement'. Mid sustained pitch conveys the meaning of 'casualness, warning' and when it is short with glottal termination (CX 9) it has the meaning of request and command. Low pitch generally conveys the meaning of 'doubt, puzzlement, and wonder and when it is short with glottal termination it has the meaning of 'insistence'.

Length is reported to convey specific attitudinal meaning. He states:
"Length is often used to add 'intensity' or extra weight to utterances in which in other contexts a short particle might be used. Situations involving 'insistence' or 'exasperation' frequently call for complexes in which length is a feature." (1956, 70)

It seems that glottal termination is used to convey the meaning of 'emphatic, command and insistence' (see CX 12, 14, 9, 10).

Although these phonetic characteristics are particular to the particles, Chuenkongchoo has observed that in some situations the prosodic features are applied to certain words other than particles, for example, the word /ʔaʔraj^m/ (what), /tham^m maj^m/ (why), /jaːŋ^1 raj^m/ (how) and /kraʔ^maj^m/ (probably). He also notes that there was a tendency in facetious or very familiar conversation to use a rising or high level pitch on words other than particles to indicate interrogation or request.

I, myself, have observed that in spoken prose particles are not used. I also found that there are situations in conversational speech when speakers do not use particles at all, eg when the speaker is very superior in social status (the speech of the king and members of the royal family, see also notes in chapter 1.1), when the speaker is not sure about his social status as related to the interlocutor, or when the interlocutors are very familiar to each other etc. When particles are not used I found that speakers alter the phonetic characteristics, primarily pitch, of the utterance in order to express the meanings which, in the situations when particles are used, are carried by the prosodic characteristics of the particles. These phonetic characteristics seem to be systematically represented and can be linguistically described. The phonetic characteristics of utterances without final particles both in spoken prose and in conversational speech will be explored to find out how systematic is the system of intonation in Thai and how this system interplays with other linguistically significant systems, i.e. the tonal system and the phonetic stress, and together form the pitch contours of the utterances in spoken Thai.
1.3.2 The Phonemic Approach

The phonemic analysis of spoken Thai has been done by many authors, and the leader of phonemic analysis of the segmental features in Thai is Haas. However, the description and the discussion on the prosodic features of Thai, particularly, stress and intonation, are much more extensive and linguistically sophisticated in the work of Noss (1964) and Rudaravanija (1965).

Noss (1964) postulated 6 tone phonemes. His postulation of plain high tone /’/ vs constricted high tone /’/ is different from other phonemicists. The plain high tone is an extra postulation (as compared to the description with a 5 tone system by others) designated as a high tone which has no constriction. I found that this postulation is uneconomical and untenable, since the examples he gives are words of special class e.g. exclamation /’ta:j/ final particle /na:/, and one of the examples he gives as plain high tone under normal stress /chan/ (I, me) is, in my view, normally unstressed and its realization as plain high tone should be regarded as the influence of the absence of stress.

He postulates 3 types of stress 1) normal stress 2) loud sustained stress and 3) weak stress. These stresses when they occur with each tone phoneme influence the phonetic realization of the tones (1964, 18-20) which in conclusion gives six contrasting stress contours: three of them sustained and three diminishing (1964, 7).


2 He does not describe this term. I take that he means constriction of the vocal cords during the voiced portion of the syllable (1964, 19).

3 In my terms stress, prominent stress and no stress respectively (see discussion in Chapter 2 and 4).
He postulates two contrasting intonation contours 1) high or upper pitch line (↑) and 2) falling pitch line (unmarked). These two intonation phonemes have different phonetic characteristics. The high pitch line is reported to have the absolute pitch range of each tone remaining at a higher level roughly the same from one end of the clause to the other. The falling pitch line is reported to have the absolute pitch range of the utterance dropping steadily. He illustrated the two intonation contrasts in a constructed example of an utterance which has the same tone (mid tone) in every syllable.

1) (cha:w 'na:m kam m laq m 'jiq m 'pla:m naj m 'khu:m ↑)
   farmer PreV shoot fish in pond indicating progression
   (The farmer is shooting the fish in the pond.)

2) (cha:w 'na:m kam m laq m 'jiq m 'pla:m naj m 'khu:
   (The farmer is shooting the fish in the pond.)

He also postulates a system of juncture which is closely connected with the two contrasting intonation phonemes. There are two types of juncture 1) close juncture /./ and open juncture /./↑/. He does not explain the differences between the two types of juncture but I take it from his example that close juncture is the pause which occurs within a grammatical sentence and open juncture is the pause which occurs at the end of a grammatical sentence, for example.

Close juncture /./
(Is this the coat you wore last night? - With 2 close junctures.)

Open juncture /./↑/
(Is this the coat? You wore it last night. -With one open juncture and one close juncture.)
From the postulation of two intonation phonemes and two juncture phonemes, he illustrates eight intonation sequences in constructed examples using identical constituents for contrastive purpose. The eight possible intonation sequences are rearranged and reported below.

Close juncture

- เสียงนี่หรือ คุณใส่เป็นคืนนี้.

(Is this the coat you wore last night?)

- เสียงนี่หรือ! คุณใส่เป็นคืนนี้.

(Is this the coat you wore last night?)

1. two falling contours in close juncture

2. high and falling contour in close juncture

3. falling and high contours in close juncture

rare, more common would be the single-clause transform:

- เสียงนี่หรือ คุณใส่เป็นคืนนี้.

(Is this the coat you wore last night?!

- เสียงนี่หรือ! คุณใส่เป็นคืนนี้!

(Is this the coat? You wore it last night.)

4. two high contours in close juncture

Open juncture

- เสียงนี่หรือ คุณใส่เป็นคืนนี้.

(Is this the coat? You wore it last night.)

- เสียงนี่หรือ! คุณใส่เป็นคืนนี้.

(Is this the coat? You wore it last night.)

5. two falling contours in open juncture

6. high and falling contour in open juncture

7. falling and high contour in open juncture

8. two high contours in open juncture
We can deduce from his examples that a falling contour is semantically unmarked (without exclamation or extra emphasis) as shown in 1, 3, 5, 6, and 7 whereas a high contour either in close juncture (as in 2, 4) or in open juncture (as in 3, 6, 7, 8) is semantically marked (with exclamation and extra emphasis).

Noss's postulation and the description of interrelationship between intonation and juncture is the first attempt to describe 'intonation' as interrelated systems of pitch contour and rhythmical variation caused by pause and stress. Since he is a phonemicist the examples given are not very convincing since they have been constructed from the principle of finding contrastive phonemes under identical environment. There is no example from a real speech situation. Semantically speaking, the high pitch contour from his examples conveys exclamation and emphasis only. There is no report as to whether it conveys interrogation or request like the high or the rise intonation in particles reported in the work of Henderson and Chuenkongchoo discussed above.

Other pioneer phonemicists who deal with Thai intonation are Abramson (1962), Haas (1964) and Rudaravanija (1965). Abramson and Haas deal with intonation only briefly, due to the scope of their work. However, their postulation of three terminal contours seems to be widely adopted.

Abramson (1962, 32-39) posits two pitch registers and three terminal junctures. "Pitch registers" (sometimes referred to as 'voice registers') are of two kinds: 'low register' or 'normal register' /1/ is the normal pitch range of speech, and 'high register' /2/ is the high range. "Terminal junctures" are of three kinds: rising /↓/, sustained /↓/, and falling pitch junctures /↓/. These junctures are reported to occur at the syntactic boundaries, i.e., at the ends of sentences or at other syntactic breaks, and have an effect on the phonetic realization of the lexical tones which occur in front of them. In this report of 'tonal allophones'.
it seems to me that Abramson takes /\|/ as the unmarked juncture since he does not report any change of lexical tones in front of this juncture. He reports that before /โร/ the m and the h tone do not have a final drop and the l and the f tone drop less than before /โร/. He also reports that before /โร/ the f does not have its initial rise and the r, its initial fall; the h does not have its final glottal constriction. All the static tones, the h, m and l, rise slightly at the end. Abramson does not deal with the meaning or the usage of these phonemes in details and his examples are only few. However, he has recommended that the matter should be fully investigated (1962, 39).

In Haas's (1964) phonological sketch of Thai, she also postulates three terminals or terminal markers, which are used to indicate the intonation of a phrase or sentence (1964, xiii), namely, the raised high (†) in which the whole utterance is raised in pitch, the sustained (→) in which there is a little if any drop in pitch before pause, and the falling or dropping intonation (‡). We can note here that Haas observes that the intonation has an influence on the pitch of the whole utterance which is different from Abramson who pays attention only to the pitch of the lexical tones which occur before the junctures.

The other major contribution on intonation in Thai done under the phonemic approach is the work of Rudaravanija (1965). Although the purpose of her research is pedagogical, her analysis is linguistically quite sophisticated. She also brings in the discussion on stress which has a strong influence on the realization of the phonemic tones. She states:

"In this study, stress in Thai is analyzed as being phonemic. It differentiates form classes of words, shows contrasts, and expresses intensity or emphasis." (1965, 68)

She postulates three phonemic degrees of stress: 1) heavy stress
2) reduced stress and 3) emphatic stress. Since she does not separate the notion of 'phonetic stress' from 'the potential phonological accent' at word level, it is quite confusing when she discusses examples from the real context (see details of her examples, 1965, 70-77) i.e. she has to postulate another level of degree of a stress which applies to the three phonemic degree of stress discussed above. Rudaravanija's 'heavy stress' and 'reduced stress' are similar to Noss's 'normal' and 'weak stress'. Her 'emphatic stress' covers Noss's 'sustained stress' and 'high pitch line' intonation phoneme. This can be seen in the comparison of her transcription with Noss' transcription quoted below:

<table>
<thead>
<tr>
<th>&quot;Noss' transcription</th>
<th>Gloss</th>
<th>Transcription in the Present Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) /'mii: /</td>
<td>'Yes, there are!'</td>
<td>/lmi/</td>
</tr>
<tr>
<td></td>
<td>/'mii/</td>
<td>/&quot;mii /</td>
</tr>
<tr>
<td></td>
<td>/'mii:naa./</td>
<td>/lmi &quot;naa /</td>
</tr>
<tr>
<td></td>
<td></td>
<td>know.'</td>
</tr>
<tr>
<td>(b) /'mii 'naa./</td>
<td>'There are fields.'</td>
<td>/'mii &quot;naa /</td>
</tr>
<tr>
<td></td>
<td>/'mii-&quot;naa./</td>
<td>/(')mii &quot;naa /</td>
</tr>
<tr>
<td>(c) /'thîq-mi'na./</td>
<td>'Until March.'</td>
<td>/'thîq mi(i) &quot;naa /</td>
</tr>
<tr>
<td>/' = normal stress</td>
<td>/'l/ = emphatic stress</td>
<td></td>
</tr>
<tr>
<td>/'= sustained stress</td>
<td>/&quot;/ = heavy stress</td>
<td></td>
</tr>
<tr>
<td>/'= high pitch line</td>
<td>/'/ = reduced stress</td>
<td></td>
</tr>
<tr>
<td>intonation phoneme</td>
<td>/(')/ = another degree of reduced stress</td>
<td></td>
</tr>
<tr>
<td>/'= falling pitch line</td>
<td>/'= falling terminal</td>
<td></td>
</tr>
<tr>
<td>intonation phoneme</td>
<td></td>
<td></td>
</tr>
<tr>
<td>/'= medium short internal- syllable duration</td>
<td>/'= medium short internal- syllable duration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rudaravanija postulates three different terminal contours (Tcs); she has adopted this postulation from Abramson (1962) and Haas (1964).

She states:

"The present writer agrees with Haas and Abramson in postulating three terminal contours: namely "falling" /\|/, "rising" /\|/, and "sustained" /\|--/ .

The data in her study also leads the present writer to conclude that the Tcs in Thai are closely related to the meanings of the utterances." (1965, 88).

1 In my description, stress is -etic. A syllable either receives a stress, or a prominent stress or does not receive any stress at all. (See Chapter 2 and 4 in this volume.)
She discusses the relationship between the TCs and the utterance meanings in two types of sentences: those which have, and those which do not have sentence particle. The discussion is summarized in the following table:

<table>
<thead>
<tr>
<th>Type of TCs</th>
<th>Meaning of the Utterances Without Sentence Particle</th>
<th>Utterances With Sentence Particle Preceding the TC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falling TC</td>
<td>Statement</td>
<td>Statement</td>
</tr>
<tr>
<td></td>
<td>Command</td>
<td>Command</td>
</tr>
<tr>
<td></td>
<td>Information question</td>
<td>Request</td>
</tr>
<tr>
<td></td>
<td>Choice question</td>
<td>Strong emphasis</td>
</tr>
<tr>
<td>Rising TC</td>
<td>Yes-no question</td>
<td>Question (of all types)</td>
</tr>
<tr>
<td></td>
<td>Question expressing doubt or incredulity</td>
<td>Expressions of such attitudes as: surprise,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>incredulity, mild emphasis, politeness</td>
</tr>
<tr>
<td>Sustained TC</td>
<td>Unfinished or interrupted utterance</td>
<td>Unfinished or interrupted utterance</td>
</tr>
</tbody>
</table>

Phonetically speaking, she describes the realization of these TCs on impressionistic grounds. She gives conclusions on the phonetic realization of the TCs in general, and as affected by the inherent tones of the syllables. In general she concludes that a rising TC causes the raising of the voice on the syllable immediately preceding it, a falling TC causes the lowering of the voice, and the sustained TC causes the sustaining of the voice. She also claims that the TCs cannot affect the raising, lowering, or sustaining of the voice to the extent that the inherent tones of the syllables are changed. When she discusses the effect of the TCs on the inherent tones of the syllable preceding the TCs, she gives two general remarks: 1) The direction of the inherent tone will be intensified if its inherent direction is compatible with the direction of the TC. She claims that the low and the falling tone will have a lower fall when preceding the falling TC, the high and the
rising tone will have a higher rise when preceding the rising TC, and
the vowel of the mid tone will be lengthened when preceding the sustained
TC. 2) The direction of the inherent tone cannot be converted, to quote
her words,

"Since it is difficult (or perhaps impossible) to convert a tone
in a direction incompatible with a following TC, the TC simple causes a
slight raising or lowering of the pitch of that syllable, but not to a
degree great enough to produce a different tone." (1965, 90)

However, the tones are modified by the TC. The modification is in
terms of general pitch height i.e. the tone is spoken on a higher pitch
when preceding a rising TC, a lower pitch when preceding a falling TC,
and level off when preceding a sustained contour.

She does not discuss the phonetic realization of the pitch contour
of the whole utterance. It seems to me that she claims that the TCs
affect only the pitch of the syllable preceding it, in other words,
only the stressed syllable before the pause.

Rudaravanija (1965) also deals with particles in Thai. Her
classification of particles is sementically oriented. She has three
types of final particles : 1) question particles 2) status particles
and 3) attitude particles. Question particles signal that the sentences
are questions; status particles signal the status of the speaker in
relation to his interlocutor and sometimes also signal the sex of the
speaker; attitude particles suggest the attitudes of the speaker toward
what he is talking about, e.g. his attitude may be casual, persuasive
or emphatic etc. Rudaravanija considers particles as a morpheme with
a non-specified tone and the tone can be specified only when the TC
is known, i.e. the TC determines the tone of the particle. She has
two question particles : /ry:/ and /maj/; five attitude particles :

1 In her term, 'sentence particle'.
2 Cf Henderson (1949) and Chuenkongchoo (1956) in 1.3.1.
3 I use my transcription here. We can notice that length is given
as inherent feature of the particle. Cf Henderson and Chuenkongchoo
above.
/na/, /la/, /ro:k/, /thv/, and /kramaq, lamaq, maq/; five status particles: /kha/, /khrap/, /ha/, /ca/ and /ja/.

The two question particles are always accompanied by a rising TC. (See p. 94-95) However, the attitude particles and the status particles are reported to be accompanied by a rising TC or a falling TC. The occurrences of the TCs on these two types of particles and the meanings they convey are summarized in the table below.

<table>
<thead>
<tr>
<th>the Utterance is Accompanied by</th>
<th>Meanings of the Utterance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attitude Particles</td>
</tr>
<tr>
<td>Falling TC</td>
<td>/na/ strong emphatic</td>
</tr>
<tr>
<td></td>
<td>/la/ wh-question</td>
</tr>
<tr>
<td></td>
<td>/ro:k/ confirming</td>
</tr>
<tr>
<td></td>
<td>/thv/ persuasive</td>
</tr>
<tr>
<td></td>
<td>/maq/ guessing</td>
</tr>
<tr>
<td>/↓/</td>
<td></td>
</tr>
<tr>
<td>/na/ mild emphatic</td>
<td>/kha/ polite question,</td>
</tr>
<tr>
<td></td>
<td>or polite calling</td>
</tr>
<tr>
<td>/la/ statement</td>
<td>/kha/ polite calling,</td>
</tr>
<tr>
<td></td>
<td>or answering</td>
</tr>
<tr>
<td>/ro:k/ betting or challenging</td>
<td>/khrap/ polite question,</td>
</tr>
<tr>
<td></td>
<td>calling, or answering</td>
</tr>
<tr>
<td>/thv/ urging</td>
<td></td>
</tr>
<tr>
<td>/maq/ doubtful</td>
<td></td>
</tr>
</tbody>
</table>

There are no examples of any occurrence of 'Sustained TC' with the particles.

We can see from both tables that terminal contours which, according to Rudaravanija's analysis, have an influence on the last syllables of the utterances before pause or on the particles before pauses are used...
to convey shades of meanings in the same way as the archetypal Tune I
and Tune II in English. ¹ It seems to me that her work which is pedagogi-
cally based, and her assumption that there are three terminal contrastive
contours,² has been strongly influenced by the phonemic solution of the
English intonation contours. She has not attempted to tackle or look at
other interesting phonetic characteristics of the pitch contours besides
the ones which are comparable with English basic intonation contours.
Her examples are quite limited and the phonetic description is very
sweeping. Many interesting phonetic features such as length, and stress
are touched on only briefly and most of the examples are constructed or
given as isolated utterances, sometimes without specified context.

However, the work of these pioneer linguistic phoneticians, reviewed
here, has ploughed the hard ground of the study of intonation in Thai.
My attempt is to continue digging and arranging the ground to get a
fruitful description of these complex phenomena in Thai.

¹ See Armstrong and Ward (1922).
² The postulation which she adopted from Abramson (1962) and Haas (1964).
1.4 An Overview of Thai

The analysis and discussion of Thai in this dissertation is concerned with the dialect of Bangkok, the capital of Thailand. Bangkok has been the administrative center of the country and the center of communication and business for almost two hundred years and for this reason the Bangkok dialect has become the official language of Thailand and it is used in schools, mass communication and formal speech situations in the provinces throughout the country. In Bangkok itself, the language is used in everyday life situations, both formally and informally. Educated Thais who are not from Bangkok are usually bidialectal since Bangkok Thai is used in schools and in formal communication such as in offices, business and mass media etc. Those who are bidialectal can switch from Bangkok Thai to their own dialect when they meet people who speak the same dialect in an informal situation, or when they speak with their close friends and relatives. Most of the subjects used in this research are educated native Bangkok speakers (if not it will be stated). An overview of the language on phonology, morphology and syntax will be given below.

1.4.1 Phonology

The consonants Thai has 21 consonant phonemes as shown in the chart below.

<table>
<thead>
<tr>
<th></th>
<th>labial</th>
<th>alveolar</th>
<th>palatal</th>
<th>velar</th>
<th>glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>unaspirated stops</td>
<td>p*</td>
<td>t*</td>
<td>c</td>
<td>k*</td>
<td>?*</td>
</tr>
<tr>
<td>aspirated stops</td>
<td>ph</td>
<td>th</td>
<td>ch</td>
<td>kh</td>
<td></td>
</tr>
<tr>
<td>voiced stops</td>
<td>b</td>
<td>d</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fricatives</td>
<td>f</td>
<td>s</td>
<td></td>
<td>h</td>
<td></td>
</tr>
<tr>
<td>nasals</td>
<td>m*</td>
<td>n*</td>
<td></td>
<td>n*</td>
<td></td>
</tr>
</tbody>
</table>


Chart 1 Thai consonants

<table>
<thead>
<tr>
<th>labial</th>
<th>alveolar</th>
<th>palatal</th>
<th>velar</th>
<th>glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>liquids</td>
<td></td>
<td>r, l</td>
<td></td>
<td></td>
</tr>
<tr>
<td>approximants</td>
<td>w*</td>
<td>j*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Consonants with asterisks can occur in syllable initial and syllable final positions.

All of these 21 consonants can occur in syllable initial position, but there are only nine consonants that can also occur in syllable final position (the ones with asterisks in the chart); they are four unaspirated stops (p, t, k, ?), three nasals (m, n, η) and two approximants (w, j).

The unaspirated stops (except the palatal) are phonetically unaspirated plosives when they occur initially in syllables. The unaspirated palatal stop is realized as an unaspirated alveolo-palatal affricate:

/\textipa{paːm}/ \[\textipa{paː}\] to throw
/\textipa{taːm}/ \[\textipa{taː}\] eye
/\textipa{caːn}/ \[\textipa{tʃaːn}\] plate
/\textipa{kaːm}/ \[\textipa{kaː}\] crow
/\textipa{ʔaːm}/ \[\textipa{ʔaː}\] father's brother or sister

These unaspirated stop consonants, when they occur finally in syllables, are realized as unexploded stops:

\[\textipa{p}\]

1 There are 5 contrastive tones in Thai: the high, the mid, the low, the rise and the fall. For a systematic transcription of Thai tones I will use a raised letter, \(\text{h}\), \(\text{m}\), \(\text{l}\), \(\text{r}\), or \(\text{f}\), at the end of the syllable to indicate these five tonemes respectively. The phonetic tonal features of the tones will not be given here. See details on tones later in this chapter.
/kap\ 1/ [kap\] with
/kat\ 1/ [kat\] to bite
/kak\ 1/ [kak\] to keep away from
/ka?\ 1/ [ka?\] to estimate.

In the literature, the glottal stop is phonologically treated in various ways. Many American phonemicists (for instance, Abramson: 1962, Noss: 1964) do not posit this sound as a phoneme on the grounds of symmetry and economy, whereas the British prosodist, Henderson (1949) who has examined many different styles of Thai speech, postulates 'glottalization' as one of the prosodies of syllable parts and sentences. As I am going to investigate Thai connected speech, I prefer to have the glottal stop in the Thai consonant system because I think it will ease a lot of problems arising from comparing different styles of speech, and this will be one of the purposes of this research.

The aspirated stops, except the palatal one, are phonetically aspirated plosives. The palatal aspirated stop is phonetically an aspirated alveolo-palatal affricate. This set of consonants can occur only in syllable initial positions:

/pha:\m/ [pha:] to bring
/tha:\m/ [tha:] to paint
/cha:\m/ [t\ha:] tea
/kha:\m/ [kha:] a kind of grass.

There are only two voiced stops in the Thai consonant system, the labial and the alveolar. They are phonetically fully voiced. They can occur only in syllable initial positions:

/ba:\ŋ/ [ba:\ŋ] some
/da:\m/ [da:\m] a handle.
The nasals in Thai are the labial, the alveolar and the velar. All of them can occur both initially and finally in a syllable, for example:

\[
\begin{align*}
/m\text{ain}/ & \quad [m\text{ain}] \quad \text{heart (literary term)} \\
/na:\text{i}/ & \quad [na:\text{i}] \quad \text{title of a married woman} \\
/\eta\text{ain}/ & \quad [\eta\text{ain}] \quad \text{to be beautiful.}
\end{align*}
\]

There are three fricatives in the consonant system of Thai. They can occur only in syllable initial positions, for example:

\[
\begin{align*}
/f\text{ai}/ & \quad [f\text{ai}] \quad \text{straw} \\
/s\text{ai}/ & \quad [s\text{ai}] \quad \text{to build} \\
/h\text{ai}/ & \quad [h\text{ai}] \quad \text{stores.}
\end{align*}
\]

In the pronunciation of most educated Thais, the labial and the alveolar fricatives do occur in syllable final positions if the words are English loans, for example:

\[
\begin{align*}
\text{'graph'} & \quad /\text{phan}\quad 1\text{\textasciitilde kr\textasciitilde f }h/ \\
\text{'gas cooker'} & \quad /\text{taw}\quad m\text{\textasciitilde k\textasciitilde s }h/ 
\end{align*}
\]

The two liquids in the system are the 'r' and the lateral; they can occur in syllable initial position only. The 'r' can be realized as a trill, a tap, an approximant or a lateral. The differences of the phonetic realization of this consonant are sociolinguistically very interesting.¹

\[
\begin{align*}
/ra:\text{i}/ & \quad [ra:\text{i}] \\
/\eta\text{ai}/ & \quad [\eta\text{ai}] \\
/la:\text{i}/ & \quad [la:\text{i}]
\end{align*}
\]

The lateral is a voiced moderately palatalized alveolar lateral, for example:

/laːm/ [laː] donkey

In Thai folk drama the final alveolar nasal will stylistically be pronounced as a final velarized lateral and sometimes an intrusive lateral will be inserted at the final position of an open-syllable word, for example:

/kinm/ 'to eat' is stylistically pronounced as [kiː], /loːf/ 'to be handsome' is pronounced [loːː].

The central approximants are the labial-velar and the palatal. They can occur both in syllable initial and final positions:

/jaːjm/ [jaːi] mother's mother
/waːwf/ [waːu] kite

There are ten consonant clusters, which occur only in syllable initial position. These clusters are shown in words in the distribution chart below.

<table>
<thead>
<tr>
<th></th>
<th>r</th>
<th>l</th>
<th>w</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>/praːm/ to warn</td>
<td>/plaːm/ fish</td>
<td>-</td>
</tr>
<tr>
<td>t</td>
<td>/traːm/ trademark</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>k</td>
<td>/kraːjm/ a kind of fish</td>
<td>/klaːjm/ to become</td>
<td>/kwaːŋm/ deer</td>
</tr>
<tr>
<td>ph</td>
<td>/phraːh/ a kind of knife</td>
<td>/phlaːf/ a dish of Thai food</td>
<td>-</td>
</tr>
</tbody>
</table>
Chart 2 Thai consonant clusters

Clusters beginning with a /b/ or a /d/, followed by an /r/, are found in loanwords, tradenames and technical terms of English origin:

'The British Council' /bri\textsuperscript{h} t\textsuperscript{h} kha:w\textsuperscript{m} sin\textsuperscript{f}/

'Brand' /bra:n\textsuperscript{m}/

'a drink' /dri\textsuperscript{h}/

'St. Andrew' /sen\textsuperscript{h}\textsuperscript{m} dru:m/  

The Vowel Phonemes Thai has 18 monophthongs, nine long and nine short. The long and short corresponding vowels are quite close to each other in quality. They are shown in a phonological chart below.

<table>
<thead>
<tr>
<th></th>
<th>front</th>
<th>central</th>
<th>back</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td>i, i:\</td>
<td>u, u:\</td>
<td>u, u:\</td>
</tr>
<tr>
<td>mid</td>
<td>e, e:\</td>
<td>v, v:\</td>
<td>o, o:\</td>
</tr>
<tr>
<td>low</td>
<td>æ, æ:\</td>
<td>a, a:\</td>
<td>o, o:\</td>
</tr>
</tbody>
</table>

1 This cluster is found only in a few words in Thai.

2 If the speaker has a keen interest in English, the final /t/ in /tit\textsuperscript{h}/ will be pronounced as [t\textsuperscript{h}] or [\textsuperscript{r}t\textsuperscript{h}] and the final /n/ in /sin\textsuperscript{f}/ will be pronounced as /l/. It is very interesting to note that the tones assigned to these syllables are ruled by the syllable structures of the original English words. See Gandour, J. 1979. "Tonal rules for English loanwords in Thai." Studies in Tai and Mon-Khmer Phonetics and Phonology, ed. by Thongkum, Panupong, Kullavanijaya and Tingsabadh. Chulalongkorn University Press, Bangkok.
The phonetic auditory quality of these vowel phonemes in terms of cardinal vowels is given in the cardinal vowel chart below.

Chart 3 The monophthongs

The front and the back sets are centralized. The high and the mid central vowels are phonetically quite back. The low central vowel is phonetically quite front.

There are three diphthongs which have their short and long corresponding pair in the Thai vowel system. All of them start with high vowels then move towards the low central vowel, as shown in the chart below.

Chart 4 The diphthongs

The first vowel segments of these diphthongs are phonetically longer and the second segments are more raised than the monophthong /a/.

1 Some phonemicists posited 6 diphthongs in their vowel system, that is they posit three short diphthongs /ia/, /ma/, /ua/, and three long diphthongs /i:a/, /m:a/ and /u:a/ to be in pairs and symmetrical to the monophthong system. Actually the short diphthongs are found only in loanwords, onomatopoeia and phonaesthetic words. See Henderson, E.J. 1951. "The phonology of loanwords in some South-East Asian languages." Transactions of the Philological Society. 131-58.
Phonetically speaking, there are many more sequences of two vocalic sounds. Five start with the back vowels and the two mid and low central vowels then move towards a close front unrounded vowel, as shown in the chart below.

Phonologically speaking, it is more economical to say that these units begin with a vowel monophthong and end with a consonant, as illustrated below:

- /kY:j^m/ [kv:i] ashore
- /ka:j^m/ [ka:i] body (literary term)
- /lu:j^m/ [lui] to wade
- /ko:j^m/ [ko:i] to spade together
- /lo:j^m/ [lo:i] to float

Five other sequences of two vocalic sounds start with the front vowels and the two mid and low central vowels then move towards a close back rounded vowel, as shown in the chart.

Phonologically speaking, it is more economical to say that these units begin with a vowel monophthong and end with a consonant /w/, as can be seen in the example; below:
Do we have triphthongs in the Thai vowel system? For the same reason that I gave in treating units with two vocalic sounds as sequences of vowel and approximant, I would say "No." Phonetically there are units with three successive vocalic sounds, they are [iːəu, uːəi, and uːəi]. Phonologically speaking it is more economical to treat them as diphthongs followed by consonants of the approximant class, /j/ and /w/. Three of these occur:

/iːəu/ [liːəu] to turn
/lmːəi/ [lmːəi] to crawl
/ruːəi/ [ruːəi] to be rich.

The Tones Thai has five constrastive tones. Auditorily three of them are quite level, that is, the pitch of the starting point and the ending points of the "level" tone are not very different. Abramson (1962) calls these tones 'static tones.' They are the high, the mid and the low tone respectively. The other two tones have quite sharp movements, that is the pitch of the starting points and the ending points of the tonal feature are distinctively different. Abramson (1962) calls these tones 'dynamic tones.' They are the fall and the rise.

Acoustically speaking, of the three static tones the mid and the low are very close to each other. From the experimental study on 'tone identification.' Abramson (1975) found that if the listeners have no
access to the speaker's tone space, the mid tone is likely to be confused with the low tone.

The acoustic measurement of these five tones in citation forms is shown in the figure below.

![Acoustic measurement graph](adapted from Abramson:1962)

Structurally speaking, the maximum five contrasts of these five tones are found only on open syllables with long vowels and syllables ending with nasals or approximants:

1. \text{C(C)V:} h, m, l, f, r

   - /khaː h/ to trade
   - /khaː m/ a kind of grass
   - /khaː ʰl/ a kind of plant
   - /khaː f/ value
   - /khaː r/ leg
2. $C(C)V(\eta)_{h, m, l, f, r}$  

<table>
<thead>
<tr>
<th>/la$\eta^h$/</th>
<th>to wash</th>
<th>/ra$\eta^h$/</th>
<th>to pull</th>
</tr>
</thead>
<tbody>
<tr>
<td>/la$\eta^m$/</td>
<td>a sign of</td>
<td>/la$\eta^m$/</td>
<td>a cardboard box</td>
</tr>
<tr>
<td>/ja$\eta^1$/</td>
<td>kind</td>
<td>/la$^1$/</td>
<td>to secrete</td>
</tr>
<tr>
<td>/la$\eta^f$/</td>
<td>below</td>
<td>/la$^f$/</td>
<td>to be well built</td>
</tr>
<tr>
<td>/la$\eta^r$/</td>
<td>a kind of</td>
<td>/la$^r$/</td>
<td>back</td>
</tr>
</tbody>
</table>

3. $C(C)V(\iota)_{h, m, l, f, r}$  

<table>
<thead>
<tr>
<th>/sa$\eta^h$/</th>
<th>left</th>
<th>/sa$^h$/</th>
<th>to probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>/sa$\eta^m$/</td>
<td>sand</td>
<td>/sa$^m$/</td>
<td>a kind of fish</td>
</tr>
<tr>
<td>/sa$\eta^1$/</td>
<td>to wave</td>
<td>/sa$^1$/</td>
<td>to put on</td>
</tr>
<tr>
<td>/fa$\eta^f$/</td>
<td>cotton</td>
<td>/sa$^f$/</td>
<td>intestine</td>
</tr>
<tr>
<td>/sa$\eta^r$/</td>
<td>to be late</td>
<td>/sa$^r$/</td>
<td>to be clear.</td>
</tr>
</tbody>
</table>

Syllables ending with stops are restricted to specific tones:
on syllables with short vowels endings with stops, we find only the high and the low tone; on syllables with long vowels ending with stops, we find only the low and the fall:

1. $C(C)VS^h, l$  

<table>
<thead>
<tr>
<th>/khat$^h$/</th>
<th>to be hand writing</th>
</tr>
</thead>
<tbody>
<tr>
<td>/khat$^1$/</td>
<td>to obstruct</td>
</tr>
</tbody>
</table>

2. $C(C)V:S^1, f$

<table>
<thead>
<tr>
<th>/kha$^t^1$/</th>
<th>to be torn</th>
</tr>
</thead>
<tbody>
<tr>
<td>/kha$^t^f$/</td>
<td>to put a band or a belt around something.</td>
</tr>
</tbody>
</table>
In connected speech one will expect tone perturbations due to many factors. Some phoneticians talk about the phonetic context, the consonants and vowels of the syllables or the neighboring lexical tone, and the laryngeal coarticulation. Others use the term "tone sandhi" which is what occurs when certain lexical tones change or are replaced by other tones under the morphophonemic rules.

The most interesting factor discussed by phoneticians, from my point of view, is tone perturbation through stress. Henderson (1949) posits the abstract "neutral tone" for unstressed syllables; this "neutral tone" is phonetically realized as some kind of a mid level. I am sure that she does not mean that it is one of the five lexical tones, namely the mid. Candour (1975), I think, misinterprets Henderson's analysis and claims that the contrast of the five tones is still maintained in unstressed words, using acoustic evidence—the fundamental frequencies of the five tones in connected speech. Auditory speaking, whether the contrast is maintained or not is another interesting question. Abramson in his experiment on "tone identification" in Thai concludes: "Although the dichotomy between static and dynamic tones is imprecise and unstable, more so in production than perception, it is still useful as a rough classification of tone production and as an index to the types of acoustic cues used in the recognition of tones."¹

the speaker's pitch range and the immediate tonal context must be provided for the listeners (Abramson : 1978, 323).

The Rhythm In an intensive study of "Rhythm in Standard Thai", Luang thongkum (1978) found that Thai is both syllable-timed and stress-timed. Syllable-timed rhythm is found in some styles of speech, but in normal conversational speech, stress-timed rhythm is found. Using durational measurement of the syllables, she concludes that the last syllable of the utterance is usually the longest; she also found that stresses play an important role in the syntactical contrasts of Thai. I use my notation 1 to show some of her examples 2 here:

4-word utterance (/ja:/kan/-/di:/-/kwa:/)
1. You'd better not be in my way.
   //ja:/ kan di: kwa:///
   .17 .35 .07 .47 (time in seconds)
2. We'd better get a divorce.
   //ja:/ kan di: kwa:///
   .32 .08 .11 .48 (time in seconds)

Luangthongkum's analysis is based mainly on the reading and narrative style of speech; using only durational measurement, she shows that the longest or the most prominent syllable is usually the last syllable of the utterance. From my observation of conversational speech, the most prominent syllable of the utterance is not always the last syllable. It is still a question whether "prominence" is determined by the duration of the word or syllable alone, or whether other

1 The notation used here is adopted from Halliday (1967) : //tone group boundary, / foot boundary, A silent ictus. Details will be found in Chapter 4 of this volume.

2 These are examples which L. Thongkum gave in a talk on "Rhythm in Thai" to the Postgraduate Phonetic Seminar on May 18, 1977, at the Department of Linguistics, University of Edinburgh.
auditory cues are provided for the listeners to determine where the
prominence is. This thesis will also deal with these problems.

1.4.2 Morphology

Basically, Thai is monosyllabic and non-inflectional. However,
we have many ways of making polysyllabic derivatives, compounds and
reduplicatives. Different people have different ideas about word
formation in Thai.¹ I believe that every language whether monosylla-
bic, polysyllabic, inflectional or non-inflectional has its way of
building up new words. Generating new words in a language is a
natural process to every language of the world. Leech (1974 : 202-
231) explains clearly about the 'semantic competence' of a speaker of
a language which he refers to 'the inbuilt dictionary' we carry around
as part of our mental equipment. This 'inbuilt dictionary' is open-
ended and continually undergoing development and modification, through
the communications both spoken and written that we receive. He des-
cribed this 'semantic competence' as the 'lexicon' or the 'theoretical
dictionary' which is an unordered list of lexical entries. A lexical
entry is considered as a combination of three specifications 1) the
morphological specification which gives the form of the word in terms
of base (free form) and affix (bound form) 2) the syntactic specifica-
tion which classifies the word in terms of its distributional potential
within sentences and 3) the semantic specification which defines the
meaning of the word.

Every language has its own set of lexical rules which enable
speakers of the language to generate an infinite number of acceptable

¹ Traditional Thai grammarians and philologists tend to have the same
idea about word formation in Thai. Compare Anumanrajadhon (1971)
and Tonglaw (1952).
lexical items. The lexical rules can be described in terms of changes of one or two or all three of the specifications. I will particularly deal with the changes of morphological specification in this part.

There are three main morphological processes in Thai: 1) the derivational process 2) the compounding process and 3) the reduplication process. I will briefly discuss these three processes below. Subsequently, the accentual system of Thai derivatives, compounds and reduplicatives which are crucial for the description and discussion on stress, rhythm and intonation will be described and discussed in detail in Chapter 2.

The Derivational Process

The derivational process is the process which combines two morphemes (one independent free form or base word and one dependent bound form or affix which is either a prefix, a suffix or an infix) to form a new lexical item.

Base + Affix → Derivative

This process is found in a vast number of technical and literary words which are mostly derived from Pali, Sanskrit and Khmer loanwords. Although the process is taught in schools as part of the Thai grammar, making up new words with this process is considered highly sophisticated and can be done or approved only by scholars who know the borrowing language very well. Some of the derived forms can be considered as monomorphemic polysyllabic words since they have been used for so long.

1 There is a great need for equivalent Thai technical terms to the English ones which come into the language rapidly through modern knowledge and technology. Some speakers prefer to use the original terms in the form of loans (เทพบ /sap^1/), but in the written language if there are many English loans in a text, it looks very queer and usually unacceptable. Thai scholars tend to coin equivalent technical terms (บานม 'jat^1'sap^1/) using Pali and Sanskrit roots and affixes in the same way as English scholars use Latin and Greek.
that it is not easy even for ordinary educated Thai people to tell that they are derivatives, for example, พระภูเกต์ /sa?1 thai:r pa?1 nik'h/ (an architect) is derived from a base word พระภูเกต /sa?1 thai:r pa?1 na:m/ (to construct) and a suffix ถิ่น /rik1/ (one who does); พระเจ้า /tam mruat1/ (a policeman) is derived from a base word พระเจ้า /thu? h sa?1/ (bad). There may or may not be a change of syntactical or semantic specification of the derivatives as compared to the base words and this is usually determined by the affixes added to the base words.

The Compounding Process

The compounding process is the process which coalesces two independent free forms or base words into a new lexical item.

Base + Base ——— Compound

This process tends to be used very widely in the language as can be seen from the high proportion of compounds in the Thai lexical system. Although some linguists have tried to describe compounds in Thai in terms of their syntactic specification, for example, N + N ——— N or N + V ——— V etc., I do not think it is a good way to describe compounds, because one can have N + V ——— N as well as N + V ——— V.

From my point of view, compounds should be clearly distinguished from endocentric phrases. Noss states, "Compounds in Standard Thai, as defined here, are characteristically endocentric: the first constituent

1 Traditional Thai grammarians believe that being monosyllabic we tend to have a great number of homonyms, and to make clear what word one is using is by way of adding another word to the form. Another reason they usually give is that compounds also help the listeners to identify the tones of the words because in compounds one has another word to use as an auditory reference.

2 See Haas (1964 : XV-XVIII) and my discussion in Chapter 2.
is the head and all other constituents are modifiers." (1964: 63) I think his statement is very misleading and could cause a lot of problems later on especially when he explains about the syntactic construction of the phrases, "An endocentric phrase, or expression, is any consecutive-order syntactic construction such that the first lexeme, or head, can substitute for the whole construction." (1964: 73)

I think if one defines an endocentric phrase as above then a compound is obviously not endocentric, for example:

a) a sentence with an endocentric NP

/'paːkl 'kɑːm 'juːl najr/  
beak crow is where
(Where is the beak of the crow ?)

The NP /'paːkl 'kɑːm/ can be substituted by the head /'paːkl/ without contaminating the meaning of the sentence, thus one can ask the example question as follow:

/'paːkl 'juːl najr/  
beak is where  
(Where is the beak ?)

b) a sentence with a compound

/'paːkl 'kɑːm 'juːl najr/  
pen is where  
(Where is the pen ?)

The first constituent of the compound cannot function as head, that is, it cannot substitute the whole construction by itself as compared with the head of the endocentric phrase in (a).

Although some of the compounds look like endocentric phrases as in the example above, there are a vast number of compounds which do not look like endocentric phrases (Head + Modifier) at all i.e. we cannot say that the first lexeme is the head and the second lexeme is a
modifier, for example, 'tam' (low) + 'chai' (slow) /'tam\_1' 'chai\_1' (wicked); 'kham' (word) + 'kla:w' (say) /'kham\_m' 'kla:w\_1' (a saying); 'kho\_m' (remain, persist) + 'thon' (resist) /'kho\_m' 'thon\_m' (resistant, durable etc.

It will be better if we keep compounds distinct from phrases because they are different semantically, syntactically and phonetically, as can be seen clearly from the following example:

<table>
<thead>
<tr>
<th>Endocentric NP</th>
<th>Compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head + Modifier</td>
<td>Base + Base</td>
</tr>
<tr>
<td>/'pa: k1' + /'ka: m/</td>
<td>/'pa: k1' + /'ka: m/</td>
</tr>
<tr>
<td>/'pa: k1' 'ka: m/</td>
<td>/'pa: k1' 'ka: m/</td>
</tr>
<tr>
<td>['pa: k1' 'ka: m']</td>
<td>['pa: k1' 'ka: m']</td>
</tr>
</tbody>
</table>

The differences can also be illustrated in the following pairs, /'mae: f 'nu: r/ (mother (of) mine or my mother) and /'mae: f 'nu: r/ (dear-term of address used only with girls), /'tap\_1' 'taw/ (liver (of) a tortoise or tortoise’s liver) and /'tap\_1' 'taw/ (a kind of plant). (See details in Chapter 2.4)

There are compounds which are made of lexical prefixes and base words. What Noss calls lexical prefixes (1964 : 59-62) are lexemes which are found by themselves as isolated meaningful words and are commonly found recurring in a great number of compounds. Some of them are used to convey certain syntactical meanings of the compounds, for example, /'ka: n/ (act, operation, matter) is used to make compound nouns from verbs or nouns, somewhat conveying the meaning of the process, the act or the operation of certain things e.g. /'ka: n/ + /'khri: an/ (to write) = writing, /'ka: n/ + /'plai/ (to translate) = translation, /'ka: n/ + /'khrui: a/ (kitchen) = cooking, /'ka: n/ + /'rot\_h' 'faj/ (train) = the railway board etc. ; จำนวน
"khwa:m" (fact, effect, matter) is another lexical prefix used to make compound nouns from verbs and adjectives somewhat like the English suffixes -ity or -ness or -th e.g. ความตาย /"khwa:m/ + /'ta:j/ (to die or to be dead) = death, ความดี /"khwa:m/ + /'di:/ (good) = goodness, ความดUMB /"khwa:m/ + /'ŋo:f/ (stupid) = stupidity etc. Some of the lexical prefixes are used to convey fairly definite meanings, for example, /'khi:f/ (dung, excrement) is found in a great number of compounds, somewhat conveying the meaning that the English suffix -ful does e.g. /'khi:f/ + /'lə:m/ (forget) = forgetful, /'khi:f/ + /'a:i:/ (shy) = bashful, /'khi:f/ + /'len/ (play) = playful etc. The same lexical prefix /'khi:f/ is also found in compounds, somewhat conveying the meaning of the by-product of something e.g. /'khi:f/ + /'lə:aj/ (saw) = sawdust, /'khi:f/ + /'huː/ (ear) = earwax, /'khi:f/ + /'taw1/ (tortoise) = body odour etc.

Research on the semantic aspect of compounds and lexical prefixes as related to the syntactic aspect needs to be done for a better description of compounds in Thai.

The Reduplication Process

This morphological process is the process which is found very commonly in many languages of the world including Thai. There is a reduplication or repetition of the base form and the reduplicated form may be like or partly like the base form. The reduplicated form together with the base form produce the reduplicative, for example หมัน ๆ /'dek¹ 'dek¹/ (children), หมัน ๆ /'dek¹ 'dak¹/ (child said with negative attitude) หมัน ๆ /'dek² 'dek f/ very childish etc.

Reduplicatives in Thai have been described by many linguists. Many of them believe that reduplicatives are used in the language for the sake of emphasis or for other stylistic purposes.

of euphony.¹ I think, this is partly right. However, reduplication processes found in many languages of the world have shown that there are some common semantic features shared by these reduplicatives. Reduplication seems to be a natural process² found in almost every language to convey certain meanings. We found reduplicatives in languages which have developed towards the non-arbitrary system of signs used to convey expressive meanings more than in the ones that developed towards the arbitrary system of signs used to convey referential meanings.³

The three morphological processes described above are the processes used to generate polysyllabic words in Thai. Word derivations can either be through the derivational, or the compounding or the reduplication process.

1.4.3 Syntax

Thai is an SVO language. The sentence structure can be represented as follows:

\[(A) \quad S \quad V \quad O \quad (A)*\]

(* A = adjunct, S = subject, V = verb, O = object)

These sentence constituents can be classified into two main groups:


2 It is very interesting to study the use of repetitive signs to convey certain meanings in sign language as to whether they share the semantic functions of the reduplicatives.

1. The primary sentence constituents are the nominal and the verbal sentence constituents. The nominal sentence constituents function as the subjects or the objects of the verbal sentence constituents.

2. The secondary sentence constituents are the adjuncts.

**The Nominal Sentence Constituents**

The nominal sentence constituents are the noun and the pronoun. The noun can be a single noun, a compound noun or a noun phrase. The single noun (Ns) can stand alone without any article to function as a subject or an object. Any modifier (Mod) modifying the noun occurs after the noun and together with the noun forms the noun phrase (NP).

**Example a)**

```
S | V
|  
| Ns
|  
่วน  |  'สุ่ย' 

'/ca:n' 'su:a:j'
plate  beautiful
(The plate is beautiful.)
```

---

1 Panupong (1970 : 36-42) considers adjuncts as secondary sentence constituents. This consideration is discussed later in this chapter.

2 Noss (1964 : 73-75) considers the first lexeme of an endocentric phrase as 'head' (H). A head can substitute for the whole endocentric phrase without contaminating the meaning of the sentence. The head comes before a modifier (M) i.e. the structure of an endocentric phrase is H M. An exocentric phrase has no 'head' i.e. no single lexeme of the construction can satisfactorily substitute for the whole construction. Cf. Panupong (1970 : 69-82), "The structure of the noun phrase".
b) SV

\[
\begin{array}{c}
\text{NP} \\
\text{N} & \text{Mod} \\
\text{'ca:n}^m & \text{'ni:f}^l & \text{'su:aj}^r \\
\end{array}
\]

plate this beautiful
(This plate is beautiful.)

c) SV

\[
\begin{array}{c}
\text{NP} \\
\text{N} & \text{Mod} \\
\text{Prep} & \text{N} \\
\text{'ca:n}^m & \text{bon}^m & \text{'to:h}^h & \text{'su:aj}^r \\
\end{array}
\]

plate on table beautiful
(The plate on the table is beautiful.)

---

1 This modifier is a falling tone determinative. Determinatives in Thai are of two types 1) the falling tone determinatives (Df)/'ni:f/--this, /'nan:f/--that, /'no:n:f/--that (farther away from the speaker than /'nan:f/) and /'nu:n:f/--that (the farthest), can occur immediately after the nouns, 2) the high tone determinatives (Dh) /'ni:h/--this, /'nan:h/--that, /'no:n:h/--that, and /'nu:n:h/--that must have a classifier (Cls) preceded it, thus one will find an NP with H + Df /'ca:n^m ni:f/ or H + Cls + Dh /'ca:n^m baj^m ni:h/, for example.
The pronouns are of many types: the personal pronouns, the demonstrative pronouns, the interrogative pronouns and the indefinite pronouns. The choice of personal pronouns in conversational speech is very vital; it is determined by the relationship between the speaker and the listener or listeners. The criteria involved are the degree of familiarity (+ intimacy & 0 neuter), the social status of the speaker

1 Classifiers (Cls) are words used after the nouns when counting or demonstrating the nouns. Nouns are classified by their semantic features with classifiers. (See details in Phichaicharnarong, M. 1980. A Componential Analysis of Classifiers in Thai. Unpublished paper, Dept. of Linguistics, Chulalongkorn University.) A classifier occurs after a noun. It will precede the demonstrative and the ordinal number e.g. /caín¹ baj³ ni:ʰ/- N + Cls + Dh (this plate) or /caín¹ baj³ thiː¹ soŋ/- N + Cls + CNo (the second plate), but it will follow the cardinal number e.g. /caín¹soŋ² baj³/- N + CNo + Cls (two plates).

2 See details in Gething (1972: 38-56) "Personal pronoun as a lexical set"; and Cooke (1968: 8-68) "Pronominal reference in Thai".
whether it is the same as the listener, lower or higher than the listener, the degree of seniority i.e. whether the listener is senior or junior to the speaker etc. Because of the sensitivity of choice of pronoun in speech, speakers tend to drop the pronouns in their sentences when they are not sure what to use. For this reason it is very common to find sentences in conversational speech without nominal constituents functioning as subjects or objects, for example:

A: /'pa:j m 'naj r/ go where

Where are you going?

B: /'pa:j m hoq sa? l 'mut l/ go library

I'm going to the library. Where are you going?

A: /'pa:j m ro:n m ?a:m 'ha:n r/ go refectory

I'm going to the refectory. I am already hungry.

/ 'pa:j m 'maj r/ go question particle

Do you want to go? (Are you coming?)

B: /'maj f ro:kl /'ja:m m aj f 'hiw r/ /'pyq f 'thain m/ no negative particle yet not hungry just eat

I'm not hungry yet. I've just eaten.

/ 'pa:j thr?/ go let

Let you go.
The Verbal Sentence Constituents

The verbal sentence constituents are the simple verbs and the verb phrases. In general the verbs can be

1. the intransitive verbs (Vi)
2. the transitive verbs (Vt)
3. the double transitive verbs (Vtt)

Example a)

\[
\begin{array}{c|c|c}
S & V & O \\
\hline
\text{Ns} & \text{Vi} & \\
\text{\textquote{four tokl}} & & \\
\hline
\text{\textquote{The rain is falling or the rain falls.}}
\end{array}
\]

Example b)

\[
\begin{array}{c|c|c}
S & V & O \\
\hline
\text{ProN} & \text{Vt} & \text{Ns} \\
\text{\textquote{khaw}} & \text{\textquote{Su: h}} & \text{\textquote{pha: f}} \\
\hline
\text{\textquote{She bought some cloth.}}
\end{array}
\]
The verb can be a single verb as shown in the examples above or it can be a verb phrase. A verb phrase can be a compound (see details in 1.4.2), or a verb preceded by a pre-verb1 (PreV) or an auxiliary2 (Aux1), or a verb followed by a post-verb (PostV) or an auxiliary (Aux2), or a verb preceded by a PreV or an Aux1 and then followed by a PostV or an Aux2.

Example a)

1 There are two pre-verbs in Thai /paj/m/ and /ma:m/, and there are 11 post-verbs. These words are used to modify the verbs and together with the verbs form the verb phrases. (See details in Panupong, 1970 : 84-5, 158-160 and Panupong, 1977 : 59-61)

2 There are two kinds of auxiliaries: those which occur in front of the verbs (Aux1) and those which occur after the verbs (Aux2). (See details in Panupong, 1970 : 128-148 and 1977 : 56-59.)
The meanings of the words used as post-verbs are very interesting especially in terms of directional and temporal oppositions. See Luksaneeyanawin, S. 1982 The meanings of the word /khmn/- up and /log/- down. The Science of Language (Working papers in linguistics), Dept. of Linguistics, Chulalongkorn University. 2, 79-94.
If there is an object in the sentence, the PostV and the Aux2 will come after the object, for example:

S V O PostV Aux2

/\khaw^r 'law^f ni?^h:thai^n m/ paj^m 12:wh
he tell story go (used as Past tense PostV) Aux

(He had told the story already.)
The Adjuncts

The adjuncts are considered as secondary constituents because they never occur without the accompaniment of a primary constituent in initiating sentences. They are different from the primary constituents because they may be shifted freely from initial position to final position without any alteration of the over-all meaning of the sentence and there may be one or more adjuncts occurring at a time with the primary constituents in a sentence. There are three kinds of adjuncts: 1) the modal adjuncts (Am) which consist of the modal words or phrases indicating the mood/modality of the verbal constituents 2) the locational adjuncts (AL) which consist of the place words or phrases indicating the location of the verbal constituents and 3) the temporal adjuncts (At) which consist of the time words or phrases indicating the time of the verbal constituents. All three adjuncts can occur freely either in the initial or final position of the sentence, but if they occur together, there are some restrictions on sequential arrangements. However, if the adjunct is nearer to the beginning of the sentence, more emphasis is placed on it.

The Particles

Besides the nominal constituents, the verbal constituents and the adjuncts, there is another class of words, the particles, which does not fit in the classes just mentioned. They are 1) the negator 2) the interrogator and 3) the final particles.

1) The Negator /məj/ 

The negator (Neg) /məj/ occurs with the verbal constituent to show negation. If there is a simple verb, the negator will occur in front of it, for example:

1 See discussion on initiating and non-initiating sentences later in this chapter.

2 The possible sequential arrangements of these adjuncts are described in Panupong (1970: 36-42).
If there is a verb phrase, the occurrence of the negator is determined by the auxiliaries. It can occur before some of the auxiliaries e.g. /khu:jan/-should, /khvj/- would rather, /khoj/-used to, /kon/-must etc., it can also occur after some auxilliaries e.g. /ca/- will, shall, /khoj/-may etc., for example:

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<table>
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<td>S</td>
<td>Neg</td>
<td>Auxl</td>
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<tr>
<td>/'fon/-</td>
<td>maj/-</td>
<td>/khu:jan/-</td>
<td>'tok/-</td>
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<tr>
<td>rain</td>
<td>not</td>
<td>should</td>
<td>fall</td>
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</table>

(The rain should not fall.)

2) **The Interrogators**

The interrogators are particles which are used to form questions. There are two types of interrogators: 1) the question words are words used to form information questions. They are /khrar/- who, whom, /'a/-raj/- what, /ja/-raj/- how, /mu:ra/-raj/- when, /thi/-naj/- where, /tham/-maj/- why and (Classifier) + /naj/- which. The question word will occur at the position of the expected answer for which the question is asking i.e. if the answer expected is a subject the question word will occur at the subject position, for example:
a) /khraj^m 'khaw^r khaː f/ khaw^r he
(Who killed him?)

b) /khaw^r 'khraj^m/ who kill
(Whom did he kill?)

c) /smːa f 'tuːa m maj^r/ you like shirt class, which
(Which shirt do you like?)

d) /thamm maj^r ca ^ l 'maː m mːaː f raj^m/ he come when
(When will he come?)

(When will he come?)

e) /tham^m maj^m tham^m thamm maj^l/ he do why
(Why did he do it?)

(Why did he do it?)

2) the question particles are words used to form polar or yes-no questions. They are /maj^l/, /rwː l/, /chaj^m maj^l/, /rwː l maj^l/ and /rwː l plaː w^l/. The choice between these question particles in
questioning shows the attitude of the speaker in their questions\(^1\) i.e. it tells whether the speaker has a presupposed belief in the answer, whether he has a presupposition of some asserted facts, or how sure he is about the answer. Kullavanijaya (1980) points out that one cannot satisfactorily classify yes-no questions in Thai by their syntactical structures because they are all composed of statements followed by question particles. These questions all require a yes or no answer, for example:

\[
\text{maj}^f/
\]

\[
/\text{khw}^f \ '\text{paj}^m \ \text{ro}^{1m} \ '\text{ri}^{an}m \ \text{ru}^{1f}/
\]

\[
\text{ru}^{1f} \ \text{pla}^{w1}/
\]

\[
\text{chaj}^f \ \text{maj}^f/
\]

he go school Q-Part.

(Does he go to school ?)

The answer can be either /'paj^m/ (Yes, he does.) or /maj^f 'paj^m/ (No, he doesn't.)

She then proposes to classify yes-no questions in Thai into two groups, using the semantic functions of these questions in speech:

1. **Questions with /maj^f/** show that the speaker does not have any presupposed belief or any presupposition of asserted facts, for example:

\[
/\text{kha}^f \ '\text{su}^{1q} \ \text{maj}^f/
\]

he tall Q-Part.

(Is he tall ? - the speaker does not have any idea whether he is tall or not because she has never seen him or she has not seen him for a long time.)

Since this type of questions shows that the speaker does not have any presupposed belief and he is not sure about the answer, it is considered as a polite form of questions.

(Did you see my ring? - This question does not press the listener to answer 'Yes' as compared to the ones with /rm:/ or /chajf/)

Since this type of questions shows that the speaker does not know any fact and he expects some new information, one will never find the use of this particle in a past event, for example:

\[ */mr:: af'wa: n thv: m 'pajm ro: 3in, ri: an majr/ \]

Yesterday you go school Q-part.

("Would you go to school yesterday?"

2. Questions with /rm:/, /rm1r pla:w/, /chajf/ show that the speaker has some presupposed belief or presupposition of asserted facts, in other words they reflect the attitude of the speaker towards the matter.

a). Questions with /rm:/ show that the speaker has some asserted fact from the conversation or from his past experience and he wants a confirmation whether the fact is true or not.

\[ /khaw 'suin rm:/ \]

he tall Q-part.

(Is he tall? - I heard that he is.)

Since this type of questions shows that the speaker has some asserted fact and in some situation the fact is different from what he sees, it can be used to indicate that the speaker is surprised with the fact he found in the speech situation, for example:

\[ /kap1 'khaw jaq maj 'set1 rm:/ \]

food yet Neg. ready Q-part.

(Is the food not ready yet? - I thought that it had been ready, or I expected that it was ready but it was not.)
Questions with /rm: r/ are very common in greetings, which show that the speaker is not very serious about the answer since he can see from the fact in that situation, for example:

/sa? l 'ba:j m 'di: m rm: r/

healthy  good  Q-part.

(Do you have good health? or How are you?)

/wan n 'ni:h 'ma:l t:m: l 'cha:w h rm: r/

today  come  from  morning  Q-part

(Did you come early today? - The speaker noticed that the listener came early that day so when he arrived he asked her the question as a greeting.)

b) Questions with /rm: r pla:w l/ show that the speaker has some presupposition of asserted facts but he does not learn them from the speech situation or from the listener. The speaker wants to show that he is attitudinally neutral about the facts he has and he gives the opportunity to the listener to declare that the fact he has got is true or not.

/'nu: paj m 'chok h khaw r rm: r pla:w l/

term of PreV hit  he  Q-part.

address

(Did you hit him, dear? - He said you did but I am not sure.)

This type of questions are usually used in the examination of witnesses to show that the speaker is neutral about the asserted fact and gives a chance to the listener to declare the truth, for example:

/khun m 'hen r khaw r 'kha:l rm: r pla:w l/

you  see  he  kill  Q-part.

(Did you see him kill? - I heard you did. Will you tell me the truth?)

Since this type of questions shows that the speaker gives the listener the opportunity to declare the truth, we often find that
it is used to challenge for a fight, for example:

/khun^m 'toj^l 'naη^h phom^r rm^r pla:w^l/
you hit younger (of) I Q-part. brother

(Did you hit my brother? -- I heard that you did. Now, come
on, tell me the truth.)

c) Questions with /chaj^f maj^r/ show that the speaker has some
presupposition of asserted facts and he believes that the facts are
right, for example:

/thy:^m 'a:n^l na^r 'swi:r ma:^m iːw^h chaj^f maj^r/
you read book come Past T Q-part (PostV) Aux

(Have you read the book? -- I expect you did because I have
asked you to read it before you come to class.)

Since this type of questions shows the expectation of the speaker,
we sometimes find them used as a polite command or a request, for
example:

/khun^m ca^l 'phim^m khoː^f 'scip^l haj^f chan^r chaj^f maj^r/
you will type exam papers for I Q-part.

(Will you type the exam papers for me?)

3) The Final Particles.

The final particles are words used to show the attitude of the
speaker towards the subject being spoken or the listener or listeners.
These final particles do not have inherent tones; the prosodic charac-
teristics, i.e. the pitch, length and glottal termination of these
particles, vary according to the meanings the speaker wants to convey.
Because they are used to convey grammatical, attitudinal and indexical
meanings of the sentences in the same way as the intonation contours
do in English, sometimes they are called 'intonation carriers' or
'intonation bearers' (see details in Chapter 1.3).

Initiating and Non-initiating sentences.

The sentence constituents described so far, together form sentences in Thai. Structurally speaking one can describe sentences in terms of simple or compound or complex sentences. However, I found the classification proposed by Panupong (1969) is a suitable one to handle conversational speech. She classifies sentences in conversations into two types:

1. Initiating sentences are sentences which can start a conversation i.e. they do not imply any foregoing sentence or sentences in the conversation. I think, they can be considered as 'new' in terms of information structure.

2. Non-initiating sentences are sentences which cannot usually start a conversation. They are dependent upon the preceding sentence or sentences or context of situation for intelligibility. These sentences will be represented with some 'given' as well as 'new' information. Because the 'given' information can be deleted, we found a vast number of one word sentences used as non-initiating sentences in conversational Thai.

A conversational dialogue is given below to exemplify the initiating and non-initiating sentences described above.

A: /məːf 'wəːn m 'phɔːh 'dɔːŋ lɛːw/ 
   yesterday meet Dang Past tense
   Aux

   Yesterday I met Dang. (Initiating sentence)

/dəːj f 'phuːt f 'rəːm aŋ nən h 'dəːaj f/ 
Past tense talk matter that also

I have also talked about that matter. (Non-initiating sentence)

1 Structural classification of sentences in Thai is discussed at length in Noss (1964) and Panupong (1970).
B: /khun³ 'boːk¹ khaw³ lmːw¹/  
you tell he/she Past tense  
Aux  
You have told her? (Non-initiating sentence)  

A: /'jaːq⁶/  
Not yet. (Non-initiating sentences)  

B: /'jaːq⁶/  
Not yet? (Non-initiating sentence)  

/lmːw¹ 'phuːf³ 'rmːaːŋ⁶ ?aːl raj⁷ kan⁵ kha?/  
Past tense talk matter what PostV final  
for re- particle  
ciprocal  
act  
What have you been talking for (Initiating sentence)  

A: /'rmːaːŋ⁶ 'gan⁶ khoːq⁶ 'poŋ³/  
matter work of Pong  
About Pong's work. (Non-initiating sentence)  

B: /'hːr 'rmː⁵ waːf caːl 'phuːf³ haj⁶ man⁵  
Interjec- think that will talk Past tense it  
tion  
rʊːlmːw hruːh 'roːst⁴ paj⁵/  
all clear Past tense  
PostV  
Dear me! I thought you had made the whole thing clear to  
er. (Non-initiating sentence)
The terms 'accent' and 'stress'\(^1\) as used in this thesis, are adopted from David Abercrombie who makes a very clear statement to distinguish and keep these two terms apart:

"I want, first of all, to suggest that 'stress' should be confined strictly to general phonetic discussion... I would restrict the word, moreover, to something which is either present or absent... A syllable is either 'stressed' or 'unstressed'... I wish to use 'accent', which has often been a synonym of 'stress' in a very different way, in a sense which is not general phonetic at all... Accent, as I use it, exists only at the lexical level... When I say that such-and-such a syllable of a word has an (or the) accent, or is accented (other syllables therefore being unaccented), I am not saying anything about the phonetic characteristics of that syllable. All that is being said is that in certain conditions (which must be specified) in utterances, an accented syllable will show certain characteristics which can be predicted, and these may be different from its characteristics in other conditions... accent itself is ineffable. It plays no part in the phonological analysis of utterances; its place is in the lexicon." (1976, 51-52).

I will use these two terms as two different concepts, but although they must be kept distinguished, they are related. I do not entirely agree that accent plays no part in the phonological analysis of utterances because for me accent will be used to refer to the potentiality of the syllable or the syllables in a word to be realized with stress either when the word occurs by itself in an utterance or with other words in an utterance.

'Stress' will be used in this thesis to refer to a subjective complex of some objective phonetic features such as a higher degree of respiratory effort, length, pitch, loudness etc. as compared with the unstressed syllable. The realization of stress in Thai has been studied

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1 In the past these two terms were used interchangeably; Sweet, (1889) Jones (1918) and his followers use the term 'word stress', Pike (1945) uses the term 'innate stress' for what will be called here 'accent'. Hiranburana (1971) uses the term 'accent' and Luangthonkum uses the term 'stress' very loosely to mean both 'accent' and 'stress' as used in this thesis.
at great length by two authors: Hiranburana (1971)\(^1\) examines the length, the pitch and the segmental quality changes in stressed and unstressed syllables, whereas Luangthongkum (1978) uses durational measurement to examine this phenomenon.

I entirely agree with Dauer (1980) who states:

"Stress involves a physiological, an auditory, and a phonological component. As the phonetic realization of accent with important rhythmic consequences in some languages, stress is phonological. Both production and perception of stress depend on the knowledge of the structure of the language being spoken. Physiologically, stressed syllables are said to be characterized by greater articulatory and possible respiratory effort or energy, though we have no way yet of measuring this. There are a number of identifiable and partially isolatable phonetic features associated with stressed syllables." (1980, 79; my underlining)

One has to know the language or get to know the language in order to be able to manipulate correctly all the objective phonetic features in the production and perception of stressed and unstressed syllables found in utterances of the language.

As stated before, stress in Thai has been investigated at great length, but curiously there has never been any solid work done in Thai which gives an explicit account of the Thai accentual system.

Hiranburana (1971) uses the term 'accent' in a very loose sense i.e. sometimes to refer to the phonological 'accent' and sometimes to the phonetic 'stress', and using the generative model she postulates 4 different degrees of accent\(^2\) and sets up some 'Word Accent Placement (WAP) rules' for Thai words. The rules are summarized here:

1. She sets up three rules for the phonetic realization of what I call 'accented syllable': the first set of rules deals with length, the second set deals with segmental changes and the third set deals with pitch variation. These rules have been set up on the basis of spectrographic analysis of the phonetic characteristics of the accented and unaccented syllables in Thai.

2. Degrees of accent used by Hiranburana are the etic ones. In this thesis degrees of accent are the emic ones. On the etic level the syllable is either stressed or unstressed, there is no degree of stress postulated here.
1. The final syllable of a lexical item which is one of the major categories i.e. a noun (N), a verb (V), an adjective (Adj), an adverb (Adv), or a demonstrative word when not functioning anaphorically (Det) will receive \([\text{accent 1}]\); if the word is one of the minor set (word classes besides the ones in the major set), it will receive \([\text{accent 3}]\). All other syllables in words of the major set receive \([\text{accent 2}]\).

2. When words are put together to form compounds they will undergo the Compound WAP rules which reduce the degree of accent of the non-final syllables of the compounds by one degree. On doing this the word boundaries are erased and the base words become one unit i.e. the compounds.

3. There is another set of rules called Reduplicated WAP rules which assign \([\text{accent 3}]\) to the penultimate syllables of the disyllabic reduplicatives. In tetra-syllabic reduplicatives the rules assign \([\text{accent 2}]\) to the antepenultimate syllables and assign \([\text{accent 4}]\), or in some different type of reduplicatives \([\text{accent 3}]\), to the first and the penultimate syllables of the reduplicatives.

Luangthongkum (1978) also postulates some rules for accent placement in Thai which are quite similar to Hiranburana's rules except that she has also taken the segmental structure of the syllables into account (1978, 91-95 : on linker syllables). Both of them assign an accent to the last syllables of content words. Using the term 'stress' for both what I call 'accent' and 'stress', Luangthongkum states that accent or what she calls 'word level stress' in Thai is not linguistically significant, as quoted here:

Luangthongkum has only 4 types of words in this set : N, V, Adj, Adv. She calls them content words as opposed to grammatical words which are pronouns, demonstrative pronouns, demonstrative adjectives, adverb-auxilliaries, conjunctions and prepositions.
"Stress rules can be postulated for polysyllabic words and compounds. It is quite predictable; they are, very often, determined by the phonetic features and position of the syllable... Nothing is absolute about the rules of stress placement as suggested in 2 and 3 (i.e. word stress rules—my addition) there is only a tendency to be that way. In rapid connected speech, stress may be shifted, which depends upon the speaker's interpretation of a particular statement, style of speech, the position of the word or syllable in utterances, tempo and so on... Regarding domain of stress, word-level stress in Thai is not linguistically significant, but phrase-level stress is syntactically significant." (1978, 97, 99)

There are two points on which I would like to comment here:

1. I do not agree with Luangthongkum when she says that nothing is absolute about the rules of accent placement, which she calls 'stress placement'. Actually the rules of accent placement are quite absolute and they assign the potentiality for stress to the syllables of words to be realized with stress, but whether the syllables are represented with stress or not there are other linguistic components which come into play. However, once the accent is assigned to the syllable the potentiality for stress is there and available to be represented with stress. (See detailed discussion on stressed and unstressed syllable in chapter 4.13)

2. When one says that accent is linguistically non-significant, that does not mean that accent can be shifted freely to any syllable of the word. I prefer to say that accent in Thai is not contrastive i.e. to make it more specific that the accentual system in Thai does not work in the same way as the contrastive English word pairs 'object (N) and object (V) do. But every Thai word does have the underlying accent or accents. It is very important to know where they are especially when words are put together to form utterances. If one does not know where the accents of the words are and assigns accents to the wrong syllables, when the sequences of these syllables are uttered this will affect the performance of the words and make the utterance unintelligible or give the impression to the listener that the speaker is a non-native Thai or a non-Bangkok Thai speaker.
Although Luangthongkum gives a lot of examples of polysyllabic words with different accentual patterns she does not clearly explain how these patterns are worked out. She gives examples of words which have the same realization of stress in moderate casual speech but does not explain why these words are realized differently in slow casual speech. Actually if one goes more deeply into her extensive examples, there are many interesting things about the underlying accentual patterns found in those words, and if these are pointed out, we will have a far better explanation of Thai accentual system.

In this chapter, I will describe the accentual system in Thai, starting from monosyllabic words and going on to polysyllabic words. The accentual system of polysyllabic words in Thai will be of three different kinds corresponding to: 1) monomorphemic polysyllabic words 2) reduplicatives and 3) compounds.

2.1 The Accentual System of Monosyllabic Words

Basically, words in Thai are monosyllabic, for example, 丰胸/phο(:)/ father, 丰胸/mα(:)/-mother, 丰胸/kинm/-to eat, 丰胸/kха:w(f)/-rice, 丰胸/να:m/-water, 丰胸/thα:w/-old, 丰胸/тι:n/-foot etc. These monosyllabic words when pronounced in isolation are always realized with stress. Scholars who work on stress in Thai (Hiranburana: 1971, Noss: 1972, Luangthongkum: 1978) seem to agree that when the monosyllabic words in Thai are put together into a sentence, the syntactic function of the word determines whether it will be realized with stress or not (to use the term stress in a restricted way as suggested by Abercrombie i.e. the stress is present or absent). In other words the syntactic function of the monosyllabic words tells us whether the word is accented or has the potentiality to be realized with stress or not.

Hiranburana and Luangthongkum seem to agree in general that content words (N, V, Adj, Adv) are always realized with stress i.e. in
Hiranburana's term they receive [accent 1] or in Luangthongkum's term they are stressed. The grammatical words (ProN-pronouns, Cl-classifiers, PreV-preverbs, PostV-postverbs, Aux-auxiliaries, Prep-prepositions, Conj-conjunctions, Neg-negators, Par-particles) will not be realized with stress i.e. in Hiranburana's term they receive [accent 3] or in Luangthongkum's term they are unstressed, in normal speech.

I agree with these authors, and to use my own phraseology, I would like to propose here that the accentual system of monosyllabic Thai words is conditioned by the syntactical function of the words. All content words are accented i.e. are normally realized with stress but not necessarily always stressed (See Abercrombie 1976.). All grammatical words are unaccented i.e. normally are realized without stress but not necessarily always unstressed.

The following examples are given to illustrate the accentual system of monosyllabic Thai words:

```
a. หม (V) /καν/ - to shave
    khaw f  chop f  kan m  na f
    (Pron) (V) (V) (N)
    he/she like to shave face

    She likes to shave her face (with sharp thread).
```

1 The mingograms illustrate the pitch in Hertz (Hz), the intensity in decibels (db) and the duration in centiseconds (cs). (See details in Ch.3) In these examples the relative differences of the phonetic characteristics of the accented and unaccented syllables realized as stressed and unstressed syllables are of interest. The diacritic ϋ represents an unaccented syllable and ρ represents an accented syllable.
b. คะ (V) /kan^m/- to block

\[ \text{ja:} \quad \text{kan}^m \quad \text{di}^m \quad \text{kwa}^f \]
\[ \text{(Neg)} \quad (V) \quad (Adv) \]
not block better

(You'd) better not block (the way).

c. คะ (PostV) /kan^m/- this post-verb is used with many verbs to express a sense of togetherness or to express the idea of reciprocity or mutuality.

\[ \text{ja:} \quad \text{kan}^m \quad \text{di}^m \quad \text{kwa}^f \]
\[ (V) \quad (PostV) \quad (Adv) \]
- divorce better

(We'd) better get a divorce.

d. คะ (ProN) /kan^m/- a first person pronoun used by young men when speaking to familiar friends of the same social status.

\[ \text{kan}^m \quad \text{paj}^m \quad \text{ro:}^m \quad \text{ri:an}^m \quad \text{thuk}^h \quad \text{wan}^m \]
\[ (ProN) \quad (V) \quad (N) \quad (Adv) \]
I go school everyday

I go to school everyday.

In a. and b. the word /'kan^m/ is a verb i.e. a content word, the word is then accented or in other words it has the potentiality to be realized with stress and in normal speech the word is actually stressed. (See a & b in Fig 2.1.)

In c. and d. the word /kan^m/ is a grammatical word. In c. it is a post-verb and in d. it is a pronoun. The word /kan^m/ being a grammatical word, is unaccented or in other words it does not have the potentiality to be realized with stress and usually in normal speech,
the word is unstressed. (See c & d in Fig 2.1.)

The monosyllabic unaccented grammatical words can sometimes be realized with stress if emphasis is given to the word:

e. ฆา (ProN) /khaw^r/- a third person pronoun which is neuter

ฆา บอก ว่า ฆา เข้า - ใจ
khaw^r bok^l wa:f khaw^r khaw^r -caj^m
(ProN) (V) (Conj) (ProN) (V)
he/she tell that he/she understand
+emphasis

He told (me) that he understood.

The first pronoun in this sentence is strongly emphasized but the second one, being a repetition of the first pronoun, is not emphasized. Thus the first pronoun, though unaccented because it is a grammatical word, is reinforced by the emphasis given to it and receives a stress. (See e in Fig 2.1.)

f. ต้อง (Aux) /t^f/- must

ต้อง ต้อง ทำ ให้ รู้ - ใจ
chan^r toq^f tham^m haj^f sam^r -ret^l
(ProN) (Aux) (V) (ProstV) (Adv)
I must make successfully
+emphasis

I must make it.

The auxiliary /t^f/ will never be realized with stress in normal speech because being a grammatical word the word is unaccented, but emphasis is given to the word showing the strong determination of the speaker, and thus the word is stressed. (See f in Fig 2.1.)

2.2 The Accentual System of Polysyllabic Words

I have stated before that Thai words basically are monosyllabic but this does not mean that we do not have polysyllabic words. Word lists used in historical and comparative studies of languages of the Thai family are basically monosyllabic but in everyday conversational
Speech of modern Thai speakers polysyllabic words are very numerous. They are of three main kinds: 1) monomorphemic polysyllabic words of foreign origin 2) reduplicatives and 3) compounds.

Through a long contact with Pali and Sanskrit, Mon-Khmer, English and some other languages in which words are fundamentally non-mono-syllabic, Thai has borrowed and formed an enormous amount of polysyllabic words. These words, though borrowed, have become subject to the phonological processes of Thai with the result that they are phonetically quite different from the original words. From my point of view, these phonetic characteristics of loanwords not only help to 'spotlight' the words as foreign, as clearly pointed out by Henderson (1951), but also clearly reflect the phonological system of the borrowing language.

The word /ba?l'ran1'di:m/2, borrowed from the English word 'brandy'/'br?ndi/' is a good example. We can see that an extra syllable /ba?/ is inserted, and every syllable now acquires a tone.3 The intrusive syllable called by Bee (1975) 'linker syllable' (see details later in this section) is inserted to break up the 'br' cluster of the original English word which is not structurally allowed in Thai. The word then has three syllables unlike the original disyllabic word. The accentual pattern is ː, ː which is very different from the accentual pattern of the original English word ː, a pattern that does not exist in the Thai accentual system.

1 Henderson's work on the phonology of loanwords in Asian languages (1951), perhaps is the most comprehensive and helpful to this aspect of phonology.

2 Among the younger generation/'bran1'di:m/.

3 A phonemic tone will be assigned to every syllable in loanwords. See details in Gandour (1979).
Past works done on Thai accent generally agree that there is always an accent on the last syllable of a Thai word. My own findings are that in polysyllabic words there is usually another accent. This accent is systematically placed on one particular syllable and is there ready to be realized with stress, but is not always realized as a stressed syllable. I want to emphasize here that accent is not freely shifted. If it is shifted, there is always a reason to be given. Bee (1975) has observed that some accentual patterns in Thai are more favoured than others: the cretic rhythm (\'\'\'\') in trisyllabic words is claimed to be habit forming in Thai (Bee : 1975, 23). Other familiar rhythms are the iambic (\'\'\') found in disyllabic words, the bacchic (\'\'\'\') and the anapaestic (\'\'\'\') found in trisyllabic words, and two successive iambics (\'\'\'\') found in tetrasyllabic words.

I think Bee is on the right track i.e. there are some accentual patterns which are more favoured than others, but his conclusion that the cretic rhythm (\'\'\'\') is more favoured than any other (Bee : 1975, 24) is too vaguely stated, without clear evidence. Luangthongkum (1978) has taken Bee's idea on types of syllables into account when she gives examples of polysyllabic Thai words ranging from two to five-syllable words. Her extensive examples show her excellent observation of accents and their realization in polysyllabic words which occur in different styles of speech. However, she does not explicitly show how these different accentual patterns are formed in Thai.

I want to propose here that:

1. The accentual patterns which are favoured in Thai polysyllabic words are the double accented patterns.

2. These favoured accentual patterns share a common characteristic. They have two accents, the primary accent and the secondary accent.
The primary accent has more potential to be realized with stress than the secondary accent. In fast casual speech the secondary accent will sometimes be suppressed and is not realized with stress but the primary accent is normally realized with stress in every type of speech. The primary accent is always on the last syllable of the words (except in one type of reduplicatives).

3. The secondary accent placement is determined systematically in different types of polysyllabic words:

3.1 in monomorphemic polysyllabic words, by the syllable type and the number of component syllables of the words.

3.2 in reduplicatives, by the type of reduplicatives.

3.3 in compounds, by the original accent placement of the base words forming the compounds and the morphemic structure of the compounds.

From these hypotheses I will explain how accentual patterns in Thai polysyllabic words are formed by giving evidence to illustrate what I have proposed.

2.2.1 The Favoured Accentual Pattern

If we listen to Thai pronunciation of foreign names, the accentual patterns of these names or words clearly reflect the favoured accentual system in Thai. Foreign names seem to be a good place to start because one does not have to take morpheme boundaries into account when one wants to concentrate on something else. Another point is that, names given below are chosen on the basis of having only non-linker syllables (see details later in 2.2) as their component syllables. This is done to avoid the complication of syllable types of the component syllables which I do not want to take into account at the moment.
### Disyllabic Foreign Names

<table>
<thead>
<tr>
<th>Name</th>
<th>Pronunciation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>日本</td>
<td>/jiː f pun</td>
<td>Japan</td>
</tr>
<tr>
<td>香港</td>
<td>/hɔŋ f kɔŋ</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>索非</td>
<td>/siː m riː a m</td>
<td>Syria</td>
</tr>
<tr>
<td>巴西</td>
<td>/braː m siːl m</td>
<td>Brazil</td>
</tr>
<tr>
<td>玛丽</td>
<td>/mɛː m riː f</td>
<td>Mary</td>
</tr>
<tr>
<td>莉娜</td>
<td>/lin m daː m</td>
<td>Linda</td>
</tr>
</tbody>
</table>

### Trisyllabic Foreign Names

<table>
<thead>
<tr>
<th>Name</th>
<th>Pronunciation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>巴拿马</td>
<td>/paː m naː m maː m</td>
<td>Panama</td>
</tr>
<tr>
<td>内华达</td>
<td>/neː m waː m daː f</td>
<td>Nevada</td>
</tr>
<tr>
<td>坎伯兰</td>
<td>/kham m byː m laːm m</td>
<td>Cumberland</td>
</tr>
<tr>
<td>索马里</td>
<td>/soː m maː m liː a m</td>
<td>Somalia</td>
</tr>
<tr>
<td>坦桑尼亚</td>
<td>/θɛm m saː m niː a m</td>
<td>Tanzania</td>
</tr>
<tr>
<td>班巴拉</td>
<td>/juː m kan m daː f</td>
<td>Uganda</td>
</tr>
<tr>
<td>班芭芭拉</td>
<td>/baː m baː m raː f</td>
<td>Barbara</td>
</tr>
<tr>
<td>多萝西</td>
<td>/doː m roː m thiː m</td>
<td>Dorothy</td>
</tr>
</tbody>
</table>

### Tetrasyllabic Foreign Names

<table>
<thead>
<tr>
<th>Name</th>
<th>Pronunciation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>伯利兹</td>
<td>/kuː a m teː m maː m laː m</td>
<td>Guatemala</td>
</tr>
<tr>
<td>阿根廷</td>
<td>/ʔaː m cen tiː m naː f</td>
<td>Argentina</td>
</tr>
<tr>
<td>印度尼西亚</td>
<td>/ʔin m doː m niː m siː a m</td>
<td>Indonesia</td>
</tr>
<tr>
<td>落得德里</td>
<td>/lɔn m dom dyː m riː f</td>
<td>Londonderry</td>
</tr>
<tr>
<td>蒙特蒙特</td>
<td>/mɔː m koː m myː m riː f</td>
<td>Montgomery</td>
</tr>
<tr>
<td>塔拉纳基</td>
<td>/θaː m raː m naː m kiː f</td>
<td>Taranaki</td>
</tr>
</tbody>
</table>

### Pentasyllabic Foreign Names and Words

<table>
<thead>
<tr>
<th>Name</th>
<th>Pronunciation</th>
<th>Country/Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>委内瑞拉</td>
<td>/weː neː suː m eː laː f</td>
<td>Venezuela</td>
</tr>
<tr>
<td>委内瑞拉人</td>
<td>/weː neː suː m eː liː an f</td>
<td>Venezuelan</td>
</tr>
<tr>
<td>委内瑞拉百科全书</td>
<td>/en saj kʰloː pʰiː diː a m</td>
<td>encyclopedia</td>
</tr>
</tbody>
</table>
These foreign names and words are all double accented. Primary accent is assigned to the last syllable of the words and the syllable is always stressed in every style of speech. In disyllabic names secondary accent is assigned to the only syllable besides the last syllable i.e. the penultimate syllable. In trisyllabic, tetrasyllabic, pentasyllabic the secondary accent is never assigned to the penultimate syllable. Trisyllabic names have the accent on the last and the antepenultimate and form a 'o' accentual pattern claimed by Bee (1975) to be habit forming in Thai. Tetrasyllabic names have two accentual patterns 'o' or 'o o'. Both patterns are found in these names but the former one is more favoured; however, the secondary accent is never assigned to the penultimate syllable of these names. In pentasyllabic names the last and the fourth syllable from the last are accented and normally realized with stress. Sometimes the antepenultimate syllable is stressed, especially when the word is pronounced slowly. I propose that another accent, the tertiary accent, to be assigned to it. The tertiary accent is the least likely to be realized as stressed among the three types of accent. Thus it is usually suppressed and is not realized with stress, but the potentiality is still there and ready to be realized with stress. We will find much stronger evidence in the analysis of accentual patterns found in monomorphemic loans and derivatives, reduplicatives and compounds showing that double accent is the favoured pattern found in Thai words, and the penultimate syllable is not favoured for secondary accent placement.

2.2.2 The Accentual System of Monomorphemic Polysyllabic Words

Monomorphemic polysyllabic words in Thai are mostly loanwords from foreign languages especially Pali and Sanskrit:
origin of the words: example

Sanskrit and Pali

- गुरुः /pha? h'kha? h'wa? hdi:m/- the divine or adorable one
- सेवकम /kha? h ma? h na:m khom/- communication

Indonesia

- مPRODUCT /ma? hde:mwi:r/- a title of the second queen of a Javanese king
- مPRODUCT /ma? hta:mha? ri:m/- the sun

English

- ตราชเนย /sa? ltr:mby:mir/- strawberry
- สถานี /sa? lthar:ri:m/- station

etc.

There are also some polysyllabic Thai words, for example: /cakh ka? lrae:h/- the armpit, /sap1pa? lxjokl/- to drowse, /sap1pha? hjc:k/- to tease, /la? h?a:j/m/- to be ashamed, /ma? hleth/- seed etc.

In order to describe the accentual system of these monomorphemic polysyllabic words, I will postulate two types of syllables found in these words, the linker syllables (L) and the non-linker syllables (O).

Linker syllables, according to Bee (1975) are syllables which have the vowel phoneme /a/, and are usually realized as [ə]. In artificial dictation style, a linker syllable will close with a glottal stop and bear a phonemic tone, but in normal speech, Bee claimed that the glottal stop does not exist and the pitch of the syllable is self-adjusting to the tonal context of its environment. I think the term 'linker syllables' used by Bee is adopted from Henderson (1951) who calls these syllables 'linking syllables' and assigns 'a neutral tone' or in Bee's term 'the self adjusting tone' to them.

It is Henderson who points out that this type of syllables is used as a juncture marker in Thai derivatives. Actually linker syllables are not only linking syllables, some of them are intrusive syllables, inserted in words to break up the clusters found in the original foreign words which are not allowed in the Thai phonological system.
For example /ba?l/ in /ba?lran1di:m/ breaks up the 'br' cluster in the original English 'brandy'; /sa?l/ in /sa?ltr3:mbr:mri:/ break up the cluster 'str' in the original word-'strawberry'. Linker syllables are also inserted into words for the sake of pleasantness of rhythmical variation or euphony needed in poetry as stated by some Thai traditional grammarians.\(^1\) Bee also observes this function of linker syllables as he states that it is a sort of phonaesthetic elaboration.

Linker syllables must be kept distinguished from monosyllabic Thai words which have a phonemic /a/ and end with a glottal stop such as /n?/ - to estimate, /n?/ - a kind of turtle, /kha?'/- to mix, /cha?'/- to wash, /pa?'/- to patch, /pra?'/- to cover with dots, /ra?'/- to grate, /la?'/- to leave, /ra?'/- to pile with thorny branches etc. These words have a phonemic tone whereas the linker syllables have an underlying neutral tone. When the linker syllable is stressed under any circumstance, the syllable will acquire a phonemic tone.\(^2\) But normally linker syllables are unaccented and will be realized as unstressed syllables with the self adjusting tone.

All other syllables besides linker syllables described above are non-linker syllables (O).

From these two types of syllables 'L' (linker syllables) and 'O' (non-linker syllables) we can hypothesize different combinations of L and O as follows:

In disyllabic words, there are 4 possible combinations of L and O, they are

\[ L L \quad L O \quad O O \quad O L \]


2 There are two tones which the linker syllable can acquire: the high and the low tone. The assignment is determined by the class of the initial consonant.
In trisyllabic words, there are 8 different possible combinations, they are

\[
\begin{align*}
\text{LLL} & \quad \text{LLO} & \quad \text{LOO} & \quad \text{LOL} \\
\text{OOO} & \quad \text{OOL} & \quad \text{OLL} & \quad \text{OLO}
\end{align*}
\]

In tetrasyllabic words there are 16 different possible combinations, they are

\[
\begin{align*}
\text{LLLL} & \quad \text{LLLO} & \quad \text{LLOO} & \quad \text{LOOL} \\
\text{OOOO} & \quad \text{OOOL} & \quad \text{OOLL} & \quad \text{OLOO} \\
\text{LOOO} & \quad \text{LOOL} & \quad \text{LOLO} & \quad \text{OLLO} \\
\text{OLLL} & \quad \text{OLLO} & \quad \text{OLLO} & \quad \text{OLLL}
\end{align*}
\]

After hypothesizing these combinations of L and O I have looked up words which have component syllables similar to these hypothetical combinations and asked some Thai friends to read them. (See details of words in appendix.) Their pronunciation of these words conforms to each other and to my pronunciation. Accent placement rules are then set up to describe the accentual system of the monomorphemic polysyllabic words.

Rule I: For disyllabic words, primary accent is assigned to the final syllable, and secondary accent will be assigned to the only remaining syllable i.e. the penultimate syllable, if it is a non-linker syllable. If the syllable is a linker syllable it is unaccented.

<table>
<thead>
<tr>
<th>Accidental Patterns</th>
<th>Example</th>
<th>Phonetic Realization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Casual</td>
</tr>
<tr>
<td>L 'L</td>
<td>สะเก็ด /saʔ¹jaʔ¹/- distance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>สะตั้น /saʔ¹laʔ¹/- a kind of plant</td>
<td></td>
</tr>
<tr>
<td>L 'O</td>
<td>ละคร /laʔ¹khoːn⁵⁶/- a drama</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ซูม /chaʔ¹baʔ¹/- a copy</td>
<td></td>
</tr>
</tbody>
</table>
### Rule II: For trisyllabic words, primary accent is assigned to the final syllable. If the two remaining syllables (the ones in parenthesis) are of the same type, secondary accent will be assigned to the syllable farthest from the primary accent i.e. the antepenultimate syllable. If one of the remaining syllables is a non-linker, the secondary accent will be assigned to it.

### Rule II applied to the 8 hypothetical combinations

\[
\begin{array}{cccc}
('L 'L) 'L & ('L 'L) 'O & (L'O) 'O & (L'O) 'L \\
('O 'O) 'O & ('O 'O) 'L & ('O L)'L & ('O L)'O \\
\end{array}
\]

<table>
<thead>
<tr>
<th>Accentual Patterns</th>
<th>Example</th>
<th>Phonetic Realization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Casual</td>
</tr>
<tr>
<td>'O 'O</td>
<td>'L L'L</td>
<td>/sa:\haga\tha\h/- reckoning</td>
</tr>
<tr>
<td>'O 'O</td>
<td>'L L'O</td>
<td>/sa:\hama\tha\h/- tranquility of the mind</td>
</tr>
<tr>
<td>'O 'O</td>
<td>'O O'</td>
<td>/ki\hja\m/- manners</td>
</tr>
<tr>
<td>'O 'O</td>
<td>'O O'</td>
<td>/naj\ma\ria\m/- Nigeria</td>
</tr>
<tr>
<td>'O 'O</td>
<td>'O O'</td>
<td>/sam\pharm\ra\h/- belonging</td>
</tr>
<tr>
<td>Accentual Patterns</td>
<td>Example</td>
<td>Phonetic Realization</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------</td>
<td>----------------------</td>
</tr>
<tr>
<td>L'O'O</td>
<td>/kraː̂ than m.ran/- suddenly</td>
<td>Casual Careful</td>
</tr>
<tr>
<td></td>
<td>/ma? h hoː ríː m/-Thai classical music</td>
<td></td>
</tr>
<tr>
<td>L'O'L</td>
<td>/sa? ríː m ra? h/- the body</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/sa? phaː waʔ h/- condition or state of something</td>
<td></td>
</tr>
<tr>
<td>'O L'L</td>
<td>/phaː m raʔ h taʔ 1/- India</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/phaʔ thaʔ h raʔ h/-glorious</td>
<td></td>
</tr>
<tr>
<td>'O L'O</td>
<td>/caʔ 1 f.laʔ h wan/- busily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/kiː m raʔ h tliʔ 1/- The act of speaking</td>
<td></td>
</tr>
</tbody>
</table>

Rule III: For tetrasyllabic words, primary accent is assigned to the final syllable. The penultimate syllable is always unaccented. There are two remaining syllables for secondary accent placement (the ones in parentheses). If one of these two remaining syllables is a non-linker, the secondary accent is assigned to it. If both of them are of the same type, either linker or non-linker, the secondary accent can either be assigned to the first syllable of the words or to the antepenultimate syllable. However, the antepenultimate syllable is more favoured.

Rule III applied to the 16 hypothetical combinations

(L'O)O'O  (L'O)O'L  (L'O)L'O  (L'O)L'L
('O L)O'O  ('O L)O'L  ('O L)L'O  ('O L)L'L

The secondary accent will be assigned to the non-linker syllable between the two remaining syllables, besides the final syllable which has the primary accent and the penultimate syllable which is never accented in tetrasyllabic monomorphemic words.

If both of the remaining syllables are of the same type either linker or non-linker, the secondary accent can be assigned to the
antepenultimate, which is more favoured, or to the first syllable of the word, which is a less favoured position. (# is put in front of a more favoured pattern.)

#(L'L)L'L  #L'L)L'O  #L'L)O'O  #(L'L)O'L
('L L)L'L  ('L L)L'O  ('L L)O'O  ('L L)O'L

#(O'O)O'O  #(O'O)O'L  #O'O)O'L  #(O'O)O'L
('O O)O'O  ('O O)O'L  ('O O)O'L  ('O O)O'L

Words with these hypothetical different combinations are given below with the phonetic realization of them in casual and careful style of speech.

<table>
<thead>
<tr>
<th>Accentual Patterns</th>
<th>Example</th>
<th>Phonetic Realization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Causal</td>
</tr>
<tr>
<td>L'O O'O</td>
<td>/sa?l tram by:m ri:f/ -strawberry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/pa?1tha:m nu:h krom/m - a word-book</td>
<td></td>
</tr>
<tr>
<td>L'O O'L</td>
<td>/sa?1wat1ti1ka1/ - swastika</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/sa?1wat1di1ka1/ - swastika</td>
<td></td>
</tr>
<tr>
<td>L'O L'O</td>
<td>/sa?1tha:pa1na:m/ - to establish</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/pa?1ti1pa1tha:m/ - ingress, access, way, step, progress</td>
<td></td>
</tr>
<tr>
<td>L'O L'L</td>
<td>/ka?ha:pa?1na?h/ - an early Indian coin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/pa?1kin?na?ka1/ - miscellaneous</td>
<td></td>
</tr>
<tr>
<td>'O L O'O</td>
<td>/kan?la?pag ha?r/ - an alcyonarian coral</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/khak?ha?ham pho?n/m - sky</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accentual Patterns</td>
<td>Example</td>
<td>Phonetic-Realization</td>
</tr>
<tr>
<td>--------------------</td>
<td>----------------------------------------------</td>
<td>-----------------------------------------------------------</td>
</tr>
<tr>
<td>'O L O'L</td>
<td>/kanˈlaʔhjaːˈnaʔh/ name of the uplands in India, now called Dekkan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/khaːˈraʔniːˈjaːˈh/ foods or provisions which should be masticated</td>
<td></td>
</tr>
<tr>
<td>'O L L'O</td>
<td>/chaːˈpaʔˈnaʔˈkitˈ/ the act of cremating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/mitˈsaːˈkaːˈwanˈ/ garden of paradise</td>
<td></td>
</tr>
<tr>
<td>'O L L'L</td>
<td>/kanˈnaʔˈthaːˈkaːˈl/ a thorn, anything pointed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/phaːˈsaːˈwaʔˈraʔˈh/ the sun</td>
<td></td>
</tr>
<tr>
<td>#L'L L'L or</td>
<td>/paːˈraʔˈmaʔˈtaʔˈl/ eternity</td>
<td># 0 0 0  # 0 0 0</td>
</tr>
<tr>
<td>'L L L'L</td>
<td>/kraːˈhaʔˈnaʔˈh/ the act of holding</td>
<td>or or or or or or</td>
</tr>
<tr>
<td>#L'L L'O or</td>
<td>/kaʔˈraʔˈkaʔˈwatˈ/ a rain of hailstones</td>
<td>or or or or or or</td>
</tr>
<tr>
<td>'L L L'O</td>
<td>/kaʔˈraʔˈkaʔˈdaːˈm/ the crab, Cancer, July</td>
<td></td>
</tr>
<tr>
<td>#L'L O'O or</td>
<td>/khaːˈmaʔˈnaːˈkhomˈ/ communication</td>
<td></td>
</tr>
<tr>
<td>'L L O'O</td>
<td>/paːˈraʔˈmaːˈnuːˈm/ the finest of dust, an atom</td>
<td></td>
</tr>
<tr>
<td>#L'L O'L or</td>
<td>/paːˈraʔˈmeːˈhaʔˈl/ the title of a medical treatise</td>
<td></td>
</tr>
<tr>
<td>'L L O'L</td>
<td>/kaʔˈraʔˈniːˈjaːˈh/ business, duty</td>
<td></td>
</tr>
<tr>
<td>Accentual Patterns</td>
<td>Example</td>
<td>Phonetic Realization</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------</td>
<td>---------------------</td>
</tr>
<tr>
<td>#0'O O'O or '0 O O'O</td>
<td>กรมการ /kan m a: thi? h ka:n m/ -an authorized committee</td>
<td># # #</td>
</tr>
<tr>
<td>#0'O O'L or 'O O O'L</td>
<td>ผู้ทะกรา /pe:sat'ka:ri:m/ -a female embroider</td>
<td># # #</td>
</tr>
<tr>
<td>#0'O L' L or 'O O L'L</td>
<td>หรีญาณ /di: 'waj'ma? hka? l/ -ornaments for the neck</td>
<td># # #</td>
</tr>
<tr>
<td>#0'L'O or 'O O L'O</td>
<td>นามพนม /ma:'ta'ma? ha? l/ -a maternal grandmother</td>
<td># # #</td>
</tr>
<tr>
<td>#0'L'O or 'O O L'O</td>
<td>นามพุม /ne:'ran'cha? h ra:m/ -the name of a river</td>
<td># # #</td>
</tr>
<tr>
<td>#0'L'O or 'O O L'O</td>
<td>นำพาน /?a:ra:t' tha? h na:m/ -to invite, tocall</td>
<td># # #</td>
</tr>
</tbody>
</table>

It is very interesting to note here that a lot of Thai monomorphemic polysyllabic words, of which the reading pronunciation suggested by traditional Thai scholars is (L L)L L or (L L) L O or (L L)O O or (L L) O L, are not pronounced with these component syllables in colloquial Thai. Speakers tend to change one of the syllables other than the last and the penultimate one to a non-linker syllable. Thus one will have L O or O L as first and antepenultimate syllables instead of two linker syllables. It is disputable whether doing this will help to provide a clear cut decision for secondary accent placement in these words, or whether assigning the secondary accent to one of these linker syllables affects the quality and quantity of the segmental units, thus changing a linker syllable to a non-linker syllable. Some examples are given here:
It can be seen from some of the examples here, and many more that are not illustrated here, that although rules for the reading pronunciation of loanwords are suggested by traditional Thai grammarians, the pronunciation of these words in colloquial Thai does not follow the rules. The words seem to be affected by the phonological system of Thai and the change found is very interesting phonologically. More investigation needs to be done in this respect.

Penta-syllabic or hexa-syllabic words which are monomorphemic are quite rare. Most of them are foreign names and terms which are newly borrowed and are used in spoken language among people working in the same field, such as medicine, the sciences, linguistics etc. These newly borrowed words are very interesting, as I mentioned before that they help to reflect the phonetics and phonology of the borrowing language quite well. However I will not deal with the question in this thesis but would like to state some of my observations here. These words usually have two accents, and the primary accent is always on the last syllable as in other polysyllabic monomorphemic words.
described above. The secondary accent will never fall on the penultim- 
ate syllable but will fall on the first or the second syllable of the 
word. It is possible to have another accent, the tertiary accent which 
has the least potential to be realized with stress and is always realized 
as unstressed in fast casual speech. Some examples are given here (the 
underlined syllable is the one which has the tertiary accent).

Venezuela /we: mne: su: mve: ma: f/ 0'0 0'0
Encyclopedia /en msa: mkhlo: pi: di: a/ 0'0 0'0
Tuberculosis /thiw br: mkhio: msi: h/ 0'0 0'0
Archaeology /a: mkhio: o: mlo: c/ 0'0 0'0
Accessibility /ak hse: sa: 1 bi: mi: ti: f/ 0'0 0'0 0'0
Heterogeneous /het thar hro: ci: m nas: 1/ 0'0 0'0

However, these are words that are newly borrowed and cannot be 
considered as fully assimilated to the Thai phonological process yet, 
but as I observed from my own speech and speech of my contemporaries 
these words are usually double stressed, going towards the favoured 
accentual patterns in Thai.

Another piece of evidence which will support this hypothesis of 
the favoured double accented patterns, is the analysis of 'Klawn' 
/klo:n m/, the most popular verse structure in Thai.

Klawn is considered to be pure Thai verse structure.¹ A stanza of 
Klawn has 4 lines, and each line is called a Wak /wak h/. Two Wak or 
two lines make a Baat /ba:t 1/ (the word /ba:t 1/ in Thai means 'foot'). 
The first Baat in a stanza is the primary Baat (/ba:t 1 e: k 1/) and the 
second Baat in the stanza is the secondary Baat.² A piece of Klawn must 
end with a secondary Baat, no matter how many stanzas it has.

1 Gething, Thomas W. 1972. Aspects of Meaning in Thai Nominals: A 

2 The primary Baat has to end with a syllable with rising tone, the 
secondary Baat has to end with a syllable with a mid tone.
The number of syllables in each line or Wakh varies from six to nine or more than nine in the modern Klawn. The name of the Klawn is sometimes given by the number of syllables in each line i.e. 'Klawn Hok' with six, 'Klawn Cet' with seven, 'Klawn Paet' with eight and 'Klawn Kau' with nine syllables in a line respectively. There are two types of rhyming: the inner rhyming or the rhyming within the line (alliteration) and the outer rhyming or the rhyming between lines. The inner rhyming is optional but the outer rhyming is obligatory. The structure and the obligatory rhyming of these Klawn are shown below.

Klawn Hok

\[
\begin{array}{cccccccc}
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{array}
\]

Klawn Cet

\[
\begin{array}{cccccccc}
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{array}
\]

Klawn Paet

\[
\begin{array}{cccccccc}
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{array}
\]

Klawn Kau

\[
\begin{array}{cccccccc}
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{array}
\]

In the modern Klawn, the number of syllables in each line in the same stanza can vary from 6 to 12 syllables.

Traditional Thai grammarians usually have /chan^h_tha^n_h_lak^h/

1 The dotted line shows that the last syllable of the first Wakh of the primary and secondary Baat may choose to rhyme with one of the syllables positioning under the dotted line in the second Wakh of the primary and secondary Baat respectively. However the last syllable of the second Wakh of the primary Baat always rhymes with the last syllable of the first Wakh of the secondary Baat. Inner rhyming is optional and is not shown here.
or the study of verse as a part of their description of the language. Their suggestion of how to read these Klawn is to divide the syllables in each line into 3 groups (or metrical feet in my terms) i.e. Klawn Hok, which has 6 syllables in a line, is suggested to be read with 2 syllables in a group (the dot given in each line above indicates the boundaries of the 3 groups), Klawn Kau, which has nine syllables in each line, is to be read with 3 syllables in each of the metrical feet. Klawn Paet which has 8 syllables in each line is divided into 3, 2, 3 syllables in the three metrical feet respectively. Klawn Cet which has 7 syllables in each line is suggested to be read with 3, 2, 2, or 2, 2, 3 or 2, 3, 2 syllables in the three metrical feet.

From my analysis of the rhythmical structure of these Klawn, each line of the Klawn is divided into 3 metrical feet. There is a silent stress after the second foot and another one at the end of the line. The most important thing is that there are always two rhythmical beats in each metrical foot, no matter how many syllables there are in the foot. The traditional view of verse structure in Thai which is based on the number of syllables in each metrical foot, does help the student who wants to write a piece of Klawn to choose words or phrases carefully to fit into the metrical feet of each line of the Klawn. But, I think, in order to read the Klawn (especially Klawn Cet and the modern Klawn of which the number of syllables in each metrical foot can vary) one needs to have a clear picture of the rhythmical structure of these poems.

This view of verse structure in Thai has never been shown by any

---

1 When I was in my secondary school, I was assigned by the school to read poems for a competition. I was intensively trained by my teacher, Miss Sawangwan Karnjanacheewa, the daughter of the famous traditional Thai grammarian, Phraya Upakit-Sinlapasarn. The training was done in a very traditional style i.e. listening and repeating again and again. No explanation of the verse structure was given.
traditional Thai grammarians.

<table>
<thead>
<tr>
<th>the rhythmical structure of the Klawn</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>the distribution of syllables in each type of Klawn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Klawn Hok</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>klwa:m m</td>
<td>di:m</td>
<td>mi:m jui:l</td>
<td>kju: fchu:a f</td>
<td></td>
</tr>
<tr>
<td>ความ คุณ</td>
<td>ปุ ้อย</td>
<td>กว่า ชั่ว</td>
<td>อย่าง คุณ</td>
<td></td>
</tr>
<tr>
<td>tit1 tu:a m</td>
<td>klu:a f inj1 m</td>
<td>?a:m saj m</td>
<td>อย่าง คุณ</td>
<td></td>
</tr>
<tr>
<td>ติค ฟา</td>
<td>กลัว ชั่ว</td>
<td>อย่าง คุณ</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Klawn Paet (8 syllables in a line)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>khra? ja: j o:k l</td>
<td>pen m wa:m</td>
<td>mroh h so:k l</td>
<td>คุณ คุณ</td>
<td></td>
</tr>
<tr>
<td>ผา:ก กา:นHan h</td>
<td>ja:y m san f</td>
<td>ขา หัก</td>
<td></td>
<td></td>
</tr>
<tr>
<td>บุญ บุญ</td>
<td>นั่ง นั่ง</td>
<td>ขา หัก</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'0 '0 '0</td>
<td>'0 '0</td>
<td>'0 '0</td>
<td>'0 '0</td>
<td></td>
</tr>
<tr>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td></td>
</tr>
<tr>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td></td>
</tr>
<tr>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td>'0 '0 '0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Klawn Kau (9 syllables in a line)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>rak pra:l the.f</td>
<td>rak phu:an bai:n</td>
<td>mthuk h si:r l</td>
<td>ขา ประ เทศ</td>
<td>ขา เพื่อน บ้าน</td>
</tr>
<tr>
<td>ขา ประ เทศ</td>
<td>ขา เพื่อน บ้าน</td>
<td>ขา เพื่อน บ้าน</td>
<td>ขา เพื่อน บ้าน</td>
<td></td>
</tr>
<tr>
<td>The rhythmical structure of the Klawn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>'0 0 '0 rak sat ciq</td>
<td>'0 0 '0 rak wi cha</td>
<td>'0 0 '0 caj kla: ha:n</td>
<td>'0 0 '0</td>
<td></td>
</tr>
<tr>
<td>ชัก ฟัง ฟัน</td>
<td>รัก วิ ชา</td>
<td>ชก กล่า หาญ</td>
<td>0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>'0 0 '0 sa: rak h khm</td>
<td>'0 0 '0 maj tri mit</td>
<td>'0 0 '0 cit chwm ba:n</td>
<td>'0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>ดา รหัส ฟัน</td>
<td>ไม่ ตรี มิตา</td>
<td>จด ชื่น บาน</td>
<td>0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>L 'O '0 ta:1 lo:1 kai:m</td>
<td>L 'O '0 m:1 ra ha:n</td>
<td>L 'O '0 ja:1 la:h tham</td>
<td>L 'O '0 0</td>
<td></td>
</tr>
<tr>
<td>ดอก โอ</td>
<td>มี บาย</td>
<td>อย่า ละ ธรรม</td>
<td>0 0 0 0</td>
<td></td>
</tr>
</tbody>
</table>

Klawn cet (7 syllables in a line)

<table>
<thead>
<tr>
<th>L 'O '0</th>
<th>'0 '0</th>
<th>'0 0</th>
<th>'0 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>?a:1 nit ca</td>
<td>'0 0</td>
<td>'0 0</td>
<td>'0 0</td>
</tr>
<tr>
<td>ถึง จา</td>
<td>ถึง ว่า</td>
<td>โทษ ชก</td>
<td>ของ ชก</td>
</tr>
<tr>
<td>'0 L '0</td>
<td>'0 '0</td>
<td>'0 '0</td>
<td>'0 '0</td>
</tr>
<tr>
<td>phviopra1 cak l</td>
<td>daq sa:j r</td>
<td>na:m laj r</td>
<td>pen kli:aw paj</td>
</tr>
<tr>
<td>พิทยาพร ลาด</td>
<td>ท้าย สาย</td>
<td>นำ ไกล</td>
<td>เป็น เกือบ ไป</td>
</tr>
<tr>
<td>'0 '0</td>
<td>'0 '0</td>
<td>'0 0</td>
<td>'0 0</td>
</tr>
<tr>
<td>taq f tim</td>
<td>ca:1 chi:aw f</td>
<td>pen kli:aw paj</td>
<td>klap khumn ma</td>
</tr>
<tr>
<td>ตำแหน่ง</td>
<td>จะ เชียร</td>
<td>เป็น เกือบ ไป</td>
<td>กับ ศิลป แม</td>
</tr>
</tbody>
</table>
The rhythmical structure of the Klawn

<table>
<thead>
<tr>
<th>Modern Klawn (10 or 11 or 12 syllables in a line)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L ̀ 'O ̀ 'O 'O</td>
<td>'O ̀ 'O 'O</td>
<td>'O ̀ 'O 'O</td>
<td>'O ̀ 'O 'O</td>
<td></td>
</tr>
<tr>
<td>?a'1 me: ri'1ka: m</td>
<td>pa: ma: ma: m</td>
<td>ma: ma: pra'1 the:t</td>
<td>ma: ma: pra'1 the:t</td>
<td></td>
</tr>
<tr>
<td>o me 'O na</td>
<td>na na ma</td>
<td>na na prae thai</td>
<td>na na prae thai</td>
<td></td>
</tr>
<tr>
<td>o 'O 'O L ̀ 'O</td>
<td>'O 'O L ̀ 'O</td>
<td>'O 'O L ̀ 'O</td>
<td>'O 'O L ̀ 'O</td>
<td></td>
</tr>
<tr>
<td>cam toq f sa'det</td>
<td>ra'h he: ra'h hon</td>
<td>ra'h hok ra'h hy:n</td>
<td>ra'h hok ra'h hy:n</td>
<td></td>
</tr>
<tr>
<td>̀ 'O 'O ̀ 'O</td>
<td>̀ 'O 'O ̀ 'O</td>
<td>̀ 'O 'O ̀ 'O</td>
<td>̀ 'O 'O ̀ 'O</td>
<td></td>
</tr>
<tr>
<td>la'1 ma: kla:w</td>
<td>kra'1 thop kra'1</td>
<td>ma: ma: m dan m</td>
<td>ma: ma: m dan m</td>
<td></td>
</tr>
</tbody>
</table>

The important point in the rhythmical structure of Klawn as related to the accentual system in Thai is that every metrical foot of a Klawn has two rhythmical beats and this rhythmical pattern is the favoured and fundamental accentual pattern of every Thai word. There will always be 2 accented syllables in the polysyllabic Thai words, no matter how many syllables there are in the words; the last syllable of a word always has the primary accent assigned to it and the placement of the secondary accent in monomorphemic polysyllabic words is determined by the syllable type of the remaining syllables besides the last syllable (in trisyllabic words) or the last and the penultimate syllables (in tetrasyllabic words). The favoured-accentual pattern in Thai is not only the cretic type as claimed by Bee, but also any double accented patterns.
2.2.3 The Accentual System of Reduplicatives

Reduplicatives will be considered in this thesis as words composed of syllables which are alike in every aspect (i.e. they have common consonants, vowels and tones or in other words they have common segmental units), or partly alike (i.e. they share common consonants but different vowels). From the morphemic point of view one can describe reduplicatives as derivatives derived from a base word plus a reduplicator which is like or partly like the base word, but there are also some reduplicatives which do not have a meaningful base word. Neither syllable can occur as a word by itself—they always occur in pairs and are considered to be reduplicatives derived from special vowel iconicity.

Past works done on reduplication in Thai do not pay much attention to the accentual patterns of these reduplicatives. Haas (1942) describes types of reduplication based on the quantity and quality of the vowels in reduplicatives. Noss (1964) pays more attention to the morphemic structure of the reduplicatives. Hiranburana (1971) and Luangthongkum (1978) though dealing directly with accent in Thai, do not explain explicitly or observe any differences in the accentual patterns of these reduplicatives. Both authors assign the primary accent to the last syllable of the reduplicatives. According to them, there is one accent in disyllabic reduplicatives and there are two accents in tetrasyllabic reduplicatives.

In my analysis of reduplicatives which is based on the semantic differences of reduplicatives in Thai, I found four main types of accentual patterns.

1 R'O in Simple Reduplicatives

1 Luksaneeyanawin, S. Some semantic functions of reduplicatives in Thai. Working Papers in Linguistic Science. Department of Linguistics, Faculty of Arts, Chulalongkorn University. (Forthcoming).
Simple reduplicatives are derived from a base word and a reduplicator (R) which is completely like the base word i.e. it reduplicates all the segmental units of the base word. The reduplicator (R) comes in front of the base word (O). The base word is accented but the reduplicator is unaccented. The accentual pattern of the disyllabic simple reduplicatives is R'O. The simple reduplicatives with this R'O accentual pattern are derived from words of different classes, and each class of words when undergoing the simple reduplication process will convey different meanings.

<table>
<thead>
<tr>
<th>Word class &amp; the meaning it conveys after the reduplication</th>
<th>Base Word</th>
<th>Reduplicatives</th>
<th>Example in sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a. Noun</strong> +Plurality</td>
<td>'dek</td>
<td>dek'dek</td>
<td>Children go (to) school.</td>
</tr>
<tr>
<td></td>
<td>child</td>
<td>children</td>
<td></td>
</tr>
<tr>
<td></td>
<td>'sa:w</td>
<td>sa:w'sa:w</td>
<td>He likes(to)look(at)girls.</td>
</tr>
<tr>
<td></td>
<td>girl</td>
<td>girls</td>
<td></td>
</tr>
<tr>
<td><strong>b. Verb</strong> +Continuity</td>
<td>'dy:n</td>
<td>dy:n'dy:n</td>
<td>(If we)walk continuously,</td>
</tr>
<tr>
<td></td>
<td>walk</td>
<td>walk continuously</td>
<td>(we will) reach(there)soon.</td>
</tr>
<tr>
<td></td>
<td>'tom</td>
<td>tom'tom</td>
<td>(I) only boil and boil(it) everyday.</td>
</tr>
<tr>
<td></td>
<td>boil</td>
<td>boil and boil</td>
<td></td>
</tr>
<tr>
<td>Word class &amp; the meaning it conveys after the reduplication</td>
<td>Base Word</td>
<td>Reduplicatives</td>
<td>Example in sentences</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>-----------</td>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td><strong>c. Adjective</strong></td>
<td>'lum:aq r</td>
<td>lwm:aq 'lwm:aq r</td>
<td>chan' chop' f ?an m 'lum:aq lwm:aq r</td>
</tr>
<tr>
<td><strong>+Generality (non-specific)</strong></td>
<td>yellow</td>
<td>yellowish</td>
<td>I like the yellowish one.</td>
</tr>
<tr>
<td>'be:n m</td>
<td>'be:n 'be:n m</td>
<td>sort of flat</td>
<td>I am looking for a sort of flat box.</td>
</tr>
<tr>
<td><strong>d. Adverb</strong></td>
<td>'di: m</td>
<td>'di: m</td>
<td>naq f 'di: m 'di: m</td>
</tr>
<tr>
<td><strong>+Imperativity</strong></td>
<td>good</td>
<td>nicely (only in imperative sentence)</td>
<td>Sit nicely.</td>
</tr>
<tr>
<td>'troq m</td>
<td>'troq m 'troq m</td>
<td>straight (only in imperative sentence)</td>
<td>Stand straight, will you?</td>
</tr>
<tr>
<td><strong>e. Classifier</strong></td>
<td>'na: f</td>
<td>'na: f</td>
<td>truat' ldu: m 'pen m 'na: f</td>
</tr>
<tr>
<td><strong>+Distributivity</strong></td>
<td>Clsf. for a page of paper</td>
<td>page by page</td>
<td>I examined it page by page</td>
</tr>
<tr>
<td>'lu:k f</td>
<td>'lu:k f 'lu:k f</td>
<td>each one</td>
<td>Can (I) buy (them) by numbers? (not a whole basket)</td>
</tr>
</tbody>
</table>

There are nouns which undergo the simple reduplication process and function as adjectives plus the semantic feature of generality. In English there is a suffixation process for changing a noun to an adjective e.g. child+ish, boy+ish, devil+ish etc. The reduplication process in Thai helps to do the same thing.
The face is still childish.

I don't like starchy things.

All disyllabic simple reduplicatives have only one accent, on the last syllable of the reduplicatives, i.e. they all have R'O accentual pattern.

2 iR'O in Intensifying Reduplication

The iR'O accentual pattern is found in disyllabic intensifying reduplicatives. Intensifying reduplicatives are derived from a base word and a reduplicator which has the same consonants and vowels as the base word. The reduplicator is accented and acquires an intensifying accent called by Haas (1946, 1964) and her followers 'the emphatic tone'. The phonetic realization of this accent has been acoustically studied by Abramson (1960); it is a rising and falling contour and is quite different from the realization of the five phonemic tones under normal accent.

I think it is very misleading to postulate 'the emphatic tone' for syllables with intensifying accent (Haas, Noss) because the rise and fall of pitch and the extra intensity found in the reduplicator of the intensifying reduplicatives is the phonetic realization of the intensifying accent assigned to any of the phonemic tones. These realizations of the five phonemic tones which have undergone the intensifying process, though sharing some common features, are quite different from each other as can be seen in Abramson (1960 : 186).

1 I decided to use this term in order to reserve the term 'emphatic' for the description of intonation.
The first syllable of these intensifying reduplicatives receives an intensifying accent and the last syllable receives another accent and forms the "R'O accentual pattern, which is found in reduplicatives derived from verbs, adjectives and adverbs plus the semantic feature of intensification.

<table>
<thead>
<tr>
<th>Base Words</th>
<th>Intensifying Reduplicatives $i_R'O$</th>
<th>Example sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>'O</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Verb + Intensification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'kinm</td>
<td>i'kinm 'kinm</td>
<td>phi:ko: f'kinm'kinm n':h te: l:maj f'uman f</td>
</tr>
<tr>
<td>eat</td>
<td>eat a lot</td>
<td>I eat a lot but never get fat.</td>
</tr>
<tr>
<td>walk a lot</td>
<td></td>
<td>I walk a lot but never get thin.</td>
</tr>
</tbody>
</table>

| **Adjective + Intensification** |                                  | na: fthy: m'um aq r m'um aq |
| 'lm:aqr     | i'lm:aqr 'lm:aqr                   | Your face is very yellow. |
| yellow      | very yellow                        |                               |
| 'bæ:nm      | i'bæ:nm 'bæ:nm                     | na: f'kha:rn bæ:nm bæ:nm    |
| flat        | very flat                          | Her face is very flat.       |
**Intensifying Reduplicatives**

<table>
<thead>
<tr>
<th>Base Words</th>
<th>Example sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>'O</td>
<td></td>
</tr>
<tr>
<td>'rew$^m$</td>
<td>very quickly</td>
</tr>
<tr>
<td>quickly</td>
<td>You walk very quickly</td>
</tr>
<tr>
<td>'suːaj$^r$</td>
<td>very beautifully</td>
</tr>
<tr>
<td>beautifully</td>
<td>(She) smiles very beautifully.</td>
</tr>
</tbody>
</table>

It is noteworthy that there are only certain classes of words i.e. verbs, adjectives and adverbs which can undergo the intensifying reduplication process and acquire the $^iR'O$ accentual pattern. There are some intensifying reduplicatives which are derived from nouns, but when they undergo this phonological process the nouns do not function as nouns any longer; the syntactic specification is changed to adjective.

<table>
<thead>
<tr>
<th>Base Word</th>
<th>Reduplicative</th>
<th>Example Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>'O</td>
<td>$^iR'O$</td>
<td></td>
</tr>
<tr>
<td>Noun</td>
<td>Adjectives</td>
<td></td>
</tr>
<tr>
<td>'dek$^l$</td>
<td>'dek$^l$</td>
<td>(You) ask very childish question.</td>
</tr>
<tr>
<td>child</td>
<td>very childish</td>
<td>You look very young.</td>
</tr>
<tr>
<td></td>
<td>very young</td>
<td></td>
</tr>
<tr>
<td>'pæi$^f$</td>
<td>'pæi$^f$</td>
<td>This sweet is very starchy.</td>
</tr>
<tr>
<td>flour or starch</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Monosyllabic words that undergo the intensifying reduplication process will become disyllabic intensifying reduplicatives with the intensifying accent on the first syllable and another accent on the last syllable.

3 'O'R and 'R'O in Partial Reduplicatives

'O'R and 'R'O accentual patterns are found in disyllabic partial reduplicatives. Partial reduplicatives are derived from a base word and a reduplicator which is partly like the base word, i.e. the reduplicator may have the initial consonant, and a tone which is similar to the base word but have a different vowel, or it may have all the consonants and the tone similar to the base word but have a different vowel. These different vowel patterning of the reduplicators convey different semantic implication.

Partial Reduplicatives with y-Reduplicators or a-Reduplicators

This type of reduplicatives consists of a base word and a reduplicator which resembles the base word in every respect: consonants, tone and syllable length, except that the vowel quality of the reduplicator is changed to a certain vowel i.e. an /y/ or an /a/. The y-reduplicators and the a-reduplicators come after the base word, and with the base word, they form the 'O'R accentual pattern. They are used to convey a negative attitude, such as annoyance, disagreement, disapproval or disbelief of the speaker towards the referent (the thing, the action etc.) referred to in the utterance.

1 These reduplicatives are never used in sentences which show a positive attitude of the speaker towards the referent:

*/ja:k mi: mlu:k lé:k/- 'I want to have children.', or
The accentual pattern of these reduplicatives is 'O'R. Both the base word and the reduplicator are accented. (cf. R'O in simple reduplicatives and ¹R'O in intensifying reduplicatives).

<table>
<thead>
<tr>
<th>Base Word</th>
<th>Reduplicatives with (\gamma)-reduplicators</th>
<th>Example Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>'m:i:a'</td>
<td>'m:i:a'mv'm</td>
<td>maj'ja:k'i:m:i:a'mv'm</td>
</tr>
<tr>
<td>wife</td>
<td>+negative attitude</td>
<td>(I) don't want to have a wife.</td>
</tr>
<tr>
<td>'su:aj'</td>
<td>'su:aj'sv:j</td>
<td>su:aj'sv:j'a¹raj'm</td>
</tr>
<tr>
<td>beautiful</td>
<td>+disagreement</td>
<td>Beautiful ? What ?(I don't agree with you that she is beautiful.)</td>
</tr>
<tr>
<td>'law'</td>
<td>'law' 'lw'</td>
<td>naq'∆m'law'lw'tanhwan'm</td>
</tr>
<tr>
<td>whiskies</td>
<td>+annoyance</td>
<td>(He) sits and drinks whiskies all day long. (I really am annoyed.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Word</th>
<th>Reduplicatives with (\alpha)-reduplicators</th>
<th>Example Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>'rak'</td>
<td>'rak' 'rak'</td>
<td>chan'maj'f'daj'f'rax'k'haw'sak'¹raj'</td>
</tr>
<tr>
<td>to love</td>
<td>+negative attitude</td>
<td>I do not love him at all.</td>
</tr>
<tr>
<td>'phu:ak'</td>
<td>'phu:ak' 'phark'</td>
<td>khaw'f'phu:ak'phark'kan'm'ik'¹law'h</td>
</tr>
<tr>
<td>group</td>
<td>+disapproval</td>
<td>(You) get together again. (I don't like it at all.)</td>
</tr>
<tr>
<td>'ki:aw'</td>
<td>'ki:aw' 'kaw'</td>
<td>thv'm'paj'm'ki:aw'kaw'a¹raj'mdu:af</td>
</tr>
<tr>
<td>to relate</td>
<td>+annoyance</td>
<td>What is your connection with it ? (I think it is none of your business.)</td>
</tr>
</tbody>
</table>
Partial Reduplicatives with oq-Reduplicators

This type of reduplicatives consists of a base word and a reduplicator which resembles the base word in some respect i.e. it has the same initial consonant and tone as the base word but the vowel is changed to an /o/ and the final consonant of the reduplicators is always an /ý/; the syllable quality is always short. This type of reduplicator comes before the base word, and with the base word they form reduplicatives with 'R'O accentual pattern. They have the same semantic implication as reduplicatives with v-reduplicators and w-reduplicators.

<table>
<thead>
<tr>
<th>Base Word</th>
<th>Reduplicatives with oq -reduplicators</th>
<th>Example Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>'O</td>
<td>'oq 'm 'mú:m</td>
<td>moq m m m sok¹ ka¹ l prok¹ caq m</td>
</tr>
<tr>
<td>hand</td>
<td>+disapproval</td>
<td>(Your) hands are dirty.</td>
</tr>
<tr>
<td>'ru:a:j m</td>
<td>'roq 'ru:a:j m</td>
<td>roq ru:a:j m a¹ l raj m</td>
</tr>
<tr>
<td>rich</td>
<td>+disagreement</td>
<td>Rich ? What ? (Oh! No, I'm not rich.)</td>
</tr>
<tr>
<td>'ma:j h</td>
<td>'moq 'ma:j h</td>
<td>du:m moq ma:j h rok h paj m mot¹</td>
</tr>
<tr>
<td>wood</td>
<td>+annoyance</td>
<td>Look. (They left) the board completely untidy.</td>
</tr>
</tbody>
</table>

4 'R'R in Special Reduplicatives

Apart from simple reduplicatives (R'O), intensifying reduplicatives (i'R'O), and partial reduplicatives ('R'O or 'O'R) as described above, there is another type of reduplicatives which I would like to call 'special reduplicatives'. They are special because they are not formed from base words like other kinds of reduplicatives. They look like couplets of syllables which share common consonants, tones and
syllable quantity. These syllables, which occur as couplets, never occur as words by themselves, they always occur in pairs. They are formed by particular vowel patterning. The special reduplicative analysed here, as one of the reduplicatives which has 'R'R accentual pattern, is formed from the patterning of front-back, high-low corresponding vowels of the vowel system in Thai as shown below:

```
   i       u
  /\      /\  
 e   y   o
 /  \  /  \ 
 a   a   o
```

This vowel patterning forms reduplicatives which have component syllables with u-i, o-e, o-a and u-a vowel correspondence. The couplets with these corresponding vowels have the same consonants, tones and syllable quantities. These reduplicatives are very numerous in Thai. They also have common semantic features such as +movement, -tidiness -stillness, -smoothness, -quietness, -stability.

The accentual pattern of these reduplicatives is the same as the partial reduplicatives i.e. they are double accented. But because they are not derived from a base word, I will represent them by 'R'R accentual pattern (cf. 'R'O and 'O'R in partial reduplicatives).
<table>
<thead>
<tr>
<th>Corresponding vowels</th>
<th>Special Reduplicatives 'R'R</th>
<th>Example Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>u - i</td>
<td>naj f juk h jik h ta lwe: m la: m</td>
<td>All the time, (she) did not sit still.</td>
</tr>
<tr>
<td></td>
<td>tawu f tiq f lu: a kv: n m</td>
<td>(She) really overacted with movements.</td>
</tr>
<tr>
<td></td>
<td>m a: raj m kuk h kik h</td>
<td>(He) is doing something (with noise).</td>
</tr>
<tr>
<td>o - e</td>
<td>khwe: n su: wa jto: m te: m</td>
<td>(He) hang the clothes here and there.</td>
</tr>
<tr>
<td></td>
<td>kha: riuk h phe: r ma: pyt pra l tu: m</td>
<td>(he) got up and went unsteadily to answer the door.</td>
</tr>
<tr>
<td></td>
<td>la: j m m: jo: h je: h ca: m</td>
<td>The hand-writing is not smooth.</td>
</tr>
<tr>
<td>Corresponding vowels</td>
<td>Special Reduplicatives 'R'R</td>
<td>Example Sentences</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>o - ø</td>
<td>’to()1 ’to()1</td>
<td>lu:k^f sa:w^d 'to()1 'to()1 le:w^h</td>
</tr>
<tr>
<td></td>
<td>-stability</td>
<td></td>
</tr>
<tr>
<td></td>
<td>’cok^f ’cok^f</td>
<td>khon^m ’cok^f ’cok^f</td>
</tr>
<tr>
<td></td>
<td>-quietness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>’lok^f ’lok^f</td>
<td>th: ’lok^f ’lok^f ca^m</td>
</tr>
<tr>
<td></td>
<td>-stillness</td>
<td></td>
</tr>
<tr>
<td>u - a</td>
<td>’dak^h ’dak^h</td>
<td>tuk^h ’dak^h</td>
</tr>
<tr>
<td></td>
<td>-stillness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>’phrap^f ’phrap^f</td>
<td>khon^m ’phrap^f ’phrap^f</td>
</tr>
<tr>
<td></td>
<td>+movement -quietness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>’hat^h ’hat^h</td>
<td>khaw^m th: ’hat^h</td>
</tr>
<tr>
<td></td>
<td>+movement</td>
<td></td>
</tr>
</tbody>
</table>

There are many more special reduplicatives which need to be analyzed phonetically and semantically, for example, หลวง 'cho^l 'cha:h - clanging, ชลบุรี 'chot^h 'cho:j - graceful, ToggleButton 'to\(\)1 'to\(\)1 - shabby, บ้า 'baw^h 'baw^h - funny (of face), etc. To my observation, these disyllabic special reduplicatives have the 'R'R accentual pattern,
common to the accentual pattern of the special reduplicatives I have described above. We can conclude here that there are four accentual patterns for four different types of disyllabic reduplicatives (See Fig 2.2): R'O in simple reduplicatives, 'R'O in intensifying reduplicatives, 'O'R and 'R'O in partial reduplicatives and 'R'R in special reduplicatives. These processes of reduplication can also apply to disyllabic words\(^1\) and form reduplicatives with double accents as will be illustrated below:

### Simple Reduplicatives

<table>
<thead>
<tr>
<th>Monosyllabic base word</th>
<th>'O</th>
<th>R'O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disyllabic base word</td>
<td>'O'O</td>
<td>R'R O'O</td>
</tr>
</tbody>
</table>

**Example**

- **naːm**\(^h\) 'taːn\(^m\) brown
- **kraːl**\(^l\) 'duːkl\(^l\) bone

### Intensifying Reduplicatives

<table>
<thead>
<tr>
<th>Monosyllabic base word</th>
<th>'O</th>
<th>(^i)R'O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disyllabic base word</td>
<td>'O'O</td>
<td>(^i)R'R O'O</td>
</tr>
</tbody>
</table>

**Example**

- **khaw**\(^f\) 'caj\(^m\) understand
- **phuː**\(^f\) 'jiː\(^r\) woman
- **thuk**\(^h\) 'wan\(^m\) everyday

---

1 Polysyllabic words which are double accented when undergoing any reduplication processes will produce reduplicatives with 4 accented syllables.
Fig 2.2
Partial Reduplicatives

Monosyllabic base word  'O  'O'R or 'R'O
Disyllabic base word  O'O  O'O R'R or R'R O'O

Example

thu'h'ri:an

-Durian (a kind of fruit with very strong smell)

kha'? 'jan

-diligent

Special Reduplicatives

The tetrasyllabic special reduplicatives have the same accentual pattern as the tetrasyllabic partial reduplicatives but because they are not derived from any base words (See details in 2.3.4) I will represent their accentual pattern with R'R R'R. These tetrasyllabic special reduplicatives form a large number of lexical entries in Thai.

Example

sa?'duq  sa? 'diq  (u-i vowel correspondence)

(flinging manner - used to describe women)

ka? 'do:k  ka?l 'de:k  (o-e vowel correspondence)

(clumsy - used to describe teenagers)

sa? 'do'h  sa? 'ga'h  (o-a vowel correspondence)

(unsteady - used to describe drunkards)

ka? 'jnk  ka? 'jak  (m-a vowel correspondence)

(unstill - used to describe jitter-bug dance or dolls with springing parts)
There is a large number of tetrasyllabic special reduplicatives which still need to be analyzed phonetically and semantically, for example, \( \text{ขอนั้น} \) 'พ่อ' 'พ่อ' - brusquely (as when one is angry). \( \text{ขอนั้น} \) 'พ่อ' 'พ่อ' 'เห่า' - staggering to and fro (as when one is drunk or tired), \( \text{บ้าน} \) 'ปิ้ง' 'ปิ้ง' 'เพราะ' - active and full of life. \( \text{บ้าน} \) 'ปิ้ง' 'ปิ้ง' 'เมื่อ' - coyly secretive etc. All of these tetrasyllabic special reduplicatives which are numerously used in spoken Thai, have the R'R R'R accentual pattern.

All of the reduplicatives in Thai as described above share a common characteristic, that is the double accented pattern. This evidence also supports my hypothesis on the favoured accentual pattern of Thai words which has already been supported by the analysis of monomorphemic polysyllabic words and the analysis of rhythmical structure of Thai verse in 2.2.

2.2.4 The Accentual System of Compounds

Besides the monomorphemic polysyllabic words which are names or words of foreign origin and the reduplicatives, there is a substantive number of polysyllabic compounds in Thai.

By looking at the morphological structure of the compounds in Thai, we can classify compounds into 2 main types:

1. Compounds which are derived from 2 free base words e.g. หู \( /\text{หู}/ \) 'ที่' 'หู' - shoes (N) is derived from \( /\text{หู}/ \) 'ที่' to put beneath (V) and \( /\text{หู}/ \) 'ที่' foot (N). Usually the morphological change is

1 Coining new words and compounds is a serious problem among academic people in Thailand. English technical terms are not accepted in written style. Chulalongkorn University has recently appointed a committee of which the members are from the Thai Department. This committee will give consultation to staff members from various fields with their language problems, especially those who want appropriate equivalence of Thai technical terms to the English technical terms which pour into the language in vast numbers through the modern technology.
accompanied by a change of meaning or a change of grammatical function or both. The change of meaning can be a stylistic change e.g. (gui) /'bainf/- house (N) (spoken style) is derived from /'bainf/- house (N) and /'choq/- cavity (N), or the compound can be a lexical item with a new meaning related to the meanings of the compounding words e.g. ぬ /'khorf/-'tainm/- a beggar (N) is derived from /'khor/ - to beg (V) and /'tainm/- donation (N). Sometimes the meaning of the compound is vaguely related or completely different from the meanings of the compounding base words e.g. น /'khawf'cajm/- to understand (V) is derived from /'khawf/- to go in (V) and /'cajm/- heart (N) or น /'nakh'ka:n/- to be homosexual (Adj) is derived from /'lenf/- to play (V) and /'phowanf/- friend (N) etc.

2. Compounds which are derived from a free base word and another word which by itself does not have any meaning. This latter element is what Noss (1964) calls 'lexical prefix' and 'lexical suffix'. These compounds are always accompanied by syntactic changes as well as changes of meaning. For example, the lexical prefix น /'phuf/- in น /'phuf'raj/- criminals, น /'phuf'jaj/- adults, น /'phuf'jawm/- juveniles or น /'nakh/- in น /'nakh'ri:nm/- students, น /'nakh'kainm/- janitors, น /'nakh'khi:n/- writers, tell us that these compounds are nouns and the semantic feature they share is [+Human].

The differences between these two types of compounds can be illustrated in the diagram below. 1

1 This diagram is a modification of Leech (1974, 214-219), "The Form of Lexical Rules".
1. The Accentual Pattern of The Disyllabic Compounds.

Disyllabic compounds are derived from two monosyllabic base words or one monosyllabic base word and one monosyllabic lexical affix (described in the diagram above). Most of these monosyllabic base words and lexical affixes are non-linker syllables. Thus, the component syllable pattern of the disyllabic compounds is always 00 and the accentual pattern of these compounds is always O'O (c.f. 'O'O, 'O'L, the accentual patterns of the monomorphemic disyllabic words in 2.2).

From my point of view, the O'O accentual pattern of the disyllabic compounds is very essential in distinguishing different grammatical structures of sequences of words; i.e. it tells us that the sequences of words are compounds and they are different from the same sequences of words, structured as phrases or sentences.

A compound, though derived from two base words, is considered as one single lexical unit with its own accentual pattern. Noss (1964, 63) has made a statement which, I think, is very misleading: "Compounds in Standard Thai, as defined here, are characteristically endocentric:

1. Haas (1964, XV-XVII) gives some rules for telling the syntactic specification of the compounds from the syntactic specification of the compounding words. I found the rules do not work well because there are so many exceptions.
the first constituent is the head and all other constituents are modifiers..."

Actually, compounds in Thai must be kept distinguished from the endocentric phrases (Head + Modifier) and sentences (NP + VP). Compounds must be analyzed in terms of a combination of base words which have undergone the compounding process (See diagram at the beginning of this part.), and have specific accentual patterns assigned to them like any other lexical units.

If we follow what Noss states, we will not be able to distinguish these sequences of words, given here as examples:

a. นิ้ว /'paːk/- the mouth or a beak and นิ้ว /'kaːm/- a crow

<table>
<thead>
<tr>
<th>Compound</th>
<th>Phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base + Base</td>
<td>Head + Modifier</td>
</tr>
<tr>
<td>'paːk + 'kaːm</td>
<td>'paːk(N) + 'kaːm(Possessive</td>
</tr>
<tr>
<td></td>
<td>Adj-of crow)</td>
</tr>
<tr>
<td>paːk'kaːm</td>
<td>'paːk¹ 'kaːm</td>
</tr>
<tr>
<td>-pen (N)</td>
<td>-beak (of) crow</td>
</tr>
</tbody>
</table>

b. นิ้ว /'jaːj/- grandmother (on the mother side) and นิ้ว /'nuː/- a mouse, I (proN), Noo (a girl's name)

<table>
<thead>
<tr>
<th>Compound</th>
<th>Phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base + Base</td>
<td>Head + Modifier</td>
</tr>
<tr>
<td>'jaːj + 'nuː</td>
<td>'jaːj(N) + 'nuː(Possessive</td>
</tr>
<tr>
<td></td>
<td>Adj - my)</td>
</tr>
<tr>
<td>jaːj'nuː</td>
<td>'jaːj¹ 'nuː</td>
</tr>
<tr>
<td>-darling (term of address or pronoun used to call or refer to a younger female with intimacy)</td>
<td>-grandmother (of) Noo or my grandmother.</td>
</tr>
</tbody>
</table>
c. ḫā /'taːm/- grandfather (on the mother side) and ḫâ /'maːm/
-Ma (a common name), to come

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base + Base</td>
<td>NP + VP</td>
</tr>
<tr>
<td>'taːm + 'maːm</td>
<td>'taːm + 'maːm</td>
</tr>
<tr>
<td>taːm'maːm</td>
<td>taːm'maːm</td>
</tr>
<tr>
<td>- Ma (the old Ma)</td>
<td>-Grandfather comes.</td>
</tr>
</tbody>
</table>

Another example is a sequence of three words which are differently structured:

d. ṣaːj̄ /'jaːjm/- grandmother (on the mother side), and ḫâ /'nuːr/ - a mouse, I (pron), Noo (a girl's name), and ḫâ /'maːm/- Ma (a common name), to come

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head + Modifier</td>
<td>NP + VP</td>
</tr>
<tr>
<td>Compound</td>
<td>Compound</td>
</tr>
<tr>
<td>Base + Base</td>
<td>Base + Base</td>
</tr>
<tr>
<td>'jaːjm nuːr'maːm</td>
<td>jaːjm'nuːr'maːm</td>
</tr>
<tr>
<td>grandmother (of) Ma (Ma the girl)</td>
<td>(My) darling comes.</td>
</tr>
</tbody>
</table>

From the examples given, one will see clearly that sequences of words which have undergone the compounding process will have the specific accentual pattern of compounds (so far in the example given this is the 0'0 for the disyllabic compounds) which are different from sequences of independent words in phrases or sentences.¹

2 Secondary Accent Placement in Compounds

I have proposed at the beginning of this chapter that there is a favoured accentual pattern in polysyllabic words, the double accented pattern. The primary accent in polysyllabic monomorphemic words is

1 Grammatical words are unaccented and content words are accented.
always on the last syllable, and so is the primary accent in most reduplicatives and compounds. The secondary accent placement in polysyllabic monomorphemic words is determined by the syllable structure of the remaining component syllables besides the final (see details in 2.1 and 2.2). The secondary accent placement in reduplicatives is determined by the types of reduplication process the words have undergone (see details in 2.3). I have also proposed that the morphemic structure of the polysyllabic non-monomorphemic words or compounds will determine the secondary accent placement in them.

Representing the morpheme boundary with a (.), I can illustrate how the secondary accent placement in compounds is determined.

a. ภูมิศาสตร์ /ka'¹ 'seít¹ 'saít¹/- agricultural sciences

<table>
<thead>
<tr>
<th>Derivation</th>
<th>Base + Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ka'¹ 'seít¹/</td>
<td>/'saít¹/</td>
</tr>
</tbody>
</table>

-land, field (a monomorphemic polysyllabic borrowed word with L'O accentual pattern)

b. กรมปศุสัตว์ /'ka:n ka'¹ 'seít¹/- farming, agriculture

<table>
<thead>
<tr>
<th>Derivation</th>
<th>Lexical Prefix + Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>/'ka:n/</td>
<td>/ka'¹ 'seít¹/</td>
</tr>
</tbody>
</table>

-a lexical prefix indicating that the compound is a noun and dealing with process

land, field (with L'O accentual pattern)
c. น้ำมะขาม /naːː mʰ 'som f 'khan h/- an orange squash

Derivation

<table>
<thead>
<tr>
<th>Compound Base</th>
<th>Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>/'khan h/</td>
<td>/'naː mʰ f 'som f/- to squash</td>
</tr>
<tr>
<td>/'naː mʰ 'som f/-</td>
<td>/'naː mʰ 'som f 'khan h/-</td>
</tr>
</tbody>
</table>

d. ตู้หน้าต่าง /'tuː f kap₁ 'khaː w'/- a cupboard with screened door to keep cooked food

Derivation

<table>
<thead>
<tr>
<th>Base</th>
<th>Compound Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>/'tuː f/-</td>
<td>/'kap₁ 'khaː w'/- different dishes to eat with rice</td>
</tr>
<tr>
<td>/'kap₁ 'khaː w'/-</td>
<td>/'tuː f kap₁ 'khaː w'/-</td>
</tr>
</tbody>
</table>

We can see clearly from the example illustrated that syllables which are originally accented and come in front of the morpheme boundary, are those on which the secondary accent always falls. If one knows how the compound is derived, one can decide where the secondary accent placement is.

If the compounding base words are polysyllabic and have more than one accent, we usually find another accent in the compounds i.e. the tertiary accent. The tertiary accent is the least likely to be realized as stressed. When the words are uttered in a very fast casual speech, the tertiary accented syllable is usually unstressed. However, once the accent is assigned to it the potentiality to be represented with stress is there. Thus in slow deliberate speech the syllable is always realized with stress.

1 The morpheme boundary of the last derivation (cf. examples c./naːː mʰ 'som f 'khan h/- an orange squash and d./'tuː f kap₁ 'khaː w'/- a food cupboard).
Representing the tertiary accent with ('), I will illustrate here how the secondary and tertiary accent placements in compounds are determined.

a. กาฬพัฒนา /'kaːm(')phatʰ tharʰ 'naːm/- development

Derivation
Lexical Prefix + Base
/'kaːm'/ /'phatʰ tharʰ 'naːm'/
-a lexical prefix -a monomorphemic poly-
indicating that syllabic word with
the compound is 'O L'O accentual pattern
a noun and dealing
with process

b. นิคมไปยัง /'krom(')prajm saʔ¹ 'niːm/- Posts Department

Derivation
Base + Base
/'krom'/ /'prajm saʔ¹ 'niːm'/
-a government - the post, the mail
department or (a monomorphemic poly-
bureau syllabic word with
'O L'O accentual pattern)


c. โรงพยาบาล /'roːŋ phaʔʰ 'jaːm'baːn/- a hospital

Derivation
Base + Base
/'roːŋ'/ /phaʔʰ 'jaːm'baːn'/
-a building or -to nurse (a monomorphemic pol-
a house syllabic word with
L'O'O accentual pattern)


d. มหาวิทยาลัย /maʔʰ 'har(')witʰ tharʰ 'jaːm'laːj/- a university

Derivation
Base + Base
/'maʔʰ 'har'/ /'witʰ tharʰ 'jaːm'laːj'/
-big (a monomorphemic pol-
phemic polysyllabic word with
accentual pattern) -college (a monomorphemic pol-
ysyllabic word with 'O L'O'O accentual
pattern)


e. /'woq m a? h(')ho: r 'ri: m/ - a Thai classical orchestra

```
Derivation
Base + Base

'/woq m/

- a circle

'/ma? h(')ho: r 'ri: m/

- Thai classical music
(a monomorphemic polysyllabic word with L'0'O accentual pattern)

'/woq m. ma? h(')ho: r 'ri: m/
```

f. /'sa: r'tha: m ra? h(')na? h'suk l/ or /'sa: r'tha: m ra? h(')na? h'suk l

-public health

```
Derivation
Base + Base

/'sa: r'tha: m ra? h(')na? h/

-or

/'sa: r'tha: m ra? h(')na? h

-happy

-public (a monomorphemic polysyllabic word with O'O L'L or 'O O L'L accentual pattern)

/'sa: r'tha: m ra? h(')na? h. 'suk l/

/'sa: r'tha: m or h(')na? h. 'suk l l
```

g. /ka? l'ra? h ni: m(')ja? h'kit l/ or /'ka? l'ra? h ni: m(')ja? h'kit l/

-duty (terms of reverence used only for the king)

```
Derivation
Base + Base

/ka? l'ra? h ni: m(')ja? h/

-or

/'ka? l'ra? h ni: m(')ja? h

-task

-duty (a monomorphemic polysyllabic word with L'L O'L or 'L L O'L accentual pattern)

/'ka? l'ra? h ni: m(')ja? h. 'kit l/

/'ka? l'ra? h ni: m(')ja? h. 'kit l/
```

1 The second pattern is more favoured (see also example g.)
We can see from the example given that the secondary accent is assigned to the originally accented syllable which comes in front of the morpheme boundary as in a, b, c, d, and e. The tertiary accent is assigned to the other originally accented syllable. However, there is one exception i.e. if the originally accented syllable which comes in front of the morpheme boundary is a linker syllable, it will not receive the secondary accent. Secondary accent placement will be transferred to the other originally accented syllable which is further apart from the primary accent of the last syllable of the compounds. The tertiary accent is then assigned to the linker syllable in front of the morpheme boundary as in f, g and h in the above examples.

In the speech of many of my contemporaries and the younger generation Thais, I have observed that even in slow deliberate speech the tertiary accent in many words is realized as an unstressed syllable. There are only two stressed syllables in words like /ma²h'ha:r(')/ with /tha²h'ja:m'la:j'm/ phonetically [m'ha:: 'laj], /'ro:ºpha²h(')/ja:m'ba:n'm/ phonetically ['ro:º 'ba:n] or /'sa:ºtha:m'ra²h(')/na²h'suk¹/ phonetically ['sa:: na 'suk]. It seems that these compounds are changing towards the double accented pattern, the favoured accentual pattern of Thai words.
Conclusion

There are certain rules for accent placement in Thai words. These rules can be divided into two main groups:

1. Accent placement rules for monosyllabic words.
2. Accent placement rules for polysyllabic words.

1. Accent placement rules for monosyllabic words are:
   1.1 All content words are accented.
   1.2 All grammatical words or clitics are unaccented, but they can be realized with stress when uttered in isolation or reinforced by emphasis.

2. Accent placement rules for polysyllabic words are:
   2.1 Accent placement for monomorphemic polysyllabic words is determined by the number of syllables in the words and the types of the component syllables i.e. linker (L) or non-linker (O) syllables. There is always a primary accent on the last syllable of the words. The favoured accentual pattern in Thai polysyllabic words is the double accented pattern, so there is always a secondary accent in monomorphemic polysyllabic words. Secondary accent placement in disyllabic, trisyllabic and tetrasyllabic monomorphemic polysyllabic words is different for each type.

   2.1.1 Disyllabic monomorphemic words will have one of these accentual patterns: L'L, L'0, '0'L or '0'0.

   2.1.2 Trisyllabic monomorphemic words will have the primary accent on the last syllable and the secondary accent placement is determined by the syllable types of the two remaining syllables. If one of the remaining syllables is a non-linker syllable, that syllable will receive the secondary accent. If both remaining syllables are of the same type, either linker or non-linker syllables, the antepenultimate syllable will
receive the secondary accent and together with the primary accent will form a cretic rhythmical pattern claimed by Bee (1975) to be the favoured accentual pattern in Thai.

2.1.3 Tetrasyllabic monomorphemic words have the primary accent on the last syllable and the secondary accent placement is determined by the syllable types of the remaining two syllables besides the last and the penultimate syllable. If one of them is a non-linker syllable, it will receive the secondary accent. If both of them are of the same type either linker or non-linker syllable, the secondary accent can be assigned to any of them, either the first syllable of the word or the antepenultimate syllable. However, the antepenultimate syllable is more favoured; in other words 'R' accentual pattern is more favoured than 'O'R' accentual pattern in tetrasyllabic monomorphemic words.

2.2 Accent placement for reduplicatives is based on the types of the reduplication process the word has undergone:

2.2.1 Simple reduplicative will have the primary accent on the last syllable. In disyllabic simple reduplicatives there is not a secondary accent. In tetrasyllabic simple reduplicatives, the secondary accent is always on the antepenultimate syllable and together with the primary accent forms the R'R O'O accentual pattern.

2.2.2 Intensifying reduplicatives will have an intensifying accent on the last syllable of the reduplicators and the secondary accent falls on the last syllable of the reduplicatives. Thus, we find 'R'O, R'O O'O in disyllabic and tetrasyllabic intensifying reduplicatives respectively.

2.2.3 Partial reduplicatives will have the primary accent on the last syllable of the words. In disyllabic partial reduplicatives the only remaining syllable (the penultimate) receives secondary accent. Thus, together with the primary accent, they form the 'R'O or 'O'R accentual pattern. In tetrasyllabic partial reduplicatives the antepenulti-
mate syllable receives the secondary accent and with the primary accent on the last syllable, they form R'R O'O or O'O R'R accentual pattern.

2.2.4 Special reduplicatives have the primary accent on the last syllable of the reduplicatives. The secondary accent is on the penultimate if the word is disyllabic and on the antepenultimate if the word is tetrasyllabic. Together with the primary accent on the last syllable of the words they form 'R'R and R'R R'R accentual patterns.

2.3 Accent placement for compounds is determined by the morphemic structure of the compounds. Derivations of the compounds will help to explain how accents are assigned in compounds. Like any other types of words in Thai, the primary accent of the compounds is always on the last syllable. The secondary accent is assigned to the originally accented syllable of the compounding base word which comes in front of the morpheme boundary of the last step of derivation. However, there is one exception. If the syllable that comes in front of the morpheme boundary is a linker syllable, secondary accent will be transferred to the other originally accented syllable which is further apart from the primary accent. The linker syllable in front of the morpheme boundary, then receives the tertiary accent. The tertiary accent is assigned to the originally accented syllable which does not receive the secondary accent by the secondary accent placement rules stated above.

The realization of the tertiary accented syllables found in the speech of modern Thais reflects the tendency of the compounds towards the double accented pattern which is considered to be fundamental of Thai polysyllabic words.

The accentual system fully described in this chapter is most relevant to the discussion on the rhythmical variation or the system of tonality considered as one of the intonation systems in Thai. Tonality
contrasts are partly determined by the phonological accents of the word or the set of words which are syntactically and semantically unified to form information units. This will be dealt with at length in Chapter IV.
Chapter III

The Tonal Behaviour of One-Word Utterances

3.1 Why one-word utterances?

Past work done on intonation in Thai as reviewed in Chapter 1.3 has shown that intonation in Thai is contrastive and it is a complex of many phonetic elements.

In postulating intonation phonemes, the phonemicists who study Thai intonation seem to agree in general that there are three contrastive intonation phonemes or terminal contours namely: rising, falling, and sustained contours (Haas: 1964, Noss: 1964, Rudaravanija: 1965, Abramson: 1962, 1979). With the pressure of the contrastive phoneme concept and the narrow view about the function of intonation, all the work done under this approach describes only the grammatical contrasts of intonation. The postulated intonation phonemes seem to be moulded after the traditional grammatical contrasts of English intonation which give rise to a very generalized view of these complicated phenomena. All of the analyses are based on impressionistic grounds without any acoustic evidence, except Abramson (1979), whose recent article has shown acoustic evidence of an overall falling contour in a sentence, which results in a relative lowering of the pitch of the same lexical tone in words occurring at the end, as compared with the beginning of a sentence. This phenomenon was observed and reported more than thirty years ago by Henderson (1949: 43) who, I believe, was the first one to point out this 'downdrift' of pitch in sequences of words with the same lexical tones occurring at different parts of the sentence.

1 Noss (1964) posits 2 intonation phonemes and 2 juncture phonemes which is descriptively more sophisticated than others mentioned, in terms of rhythmical and intonation variations (see details in 1.3.1)
On the other hand, the prosodic analysis of Thai intonation as carried by particles, initiated by Henderson's work on 'sentence tones' in 1949, was done at length by Chuenkongchoo in 1956. The analysis is phonetically very sophisticated as compared with the work done by the phonemic approach. However, there is no clear conclusion to the detailed description of the phonetic correlates found in particles having different syntactical meanings. It is Chuenkongchoo's work which inspired me to work on Thai intonation. He pointed out that in a special style of speech (facetious speech, as he called it) words other than particles sometimes borrowed the prosodic characteristics of the particles to indicate interrogation or request (Chuenkongchoo: 1756: 75-76). Other scholars who have also observed that words other than particles are used to carry intonation are Pantupong (1973) and Pantumeta (1962). Pantupong states:

"In Thai we also use intonation in sentences to convey shades of meaning. Intonation in Thai can be divided into two groups: 1. Intonation found in words which are answers to yes-no questions, and the last words of sentences which are emphasized. 2. Intonation found in final particles." (1973: 46-47, my translation from the original article in Thai.)

Her examples, though quite limited and based on impressionistic grounds, are very interesting. She reports variation in the phonetic realization of words with inherent falling tone /da:j/) and mid tone /di:m/ when they occur at the end of the sentences which have the same general meaning but different shades of meanings. The two contrastive tones are reported to have the same phonetic realization under certain intonational meanings.

Abramson (1979) criticized the analysis, stating: "Henderson (1949) has argued that aside from the general melodic line of Thai intonation, the sentence tone as a whole is mainly determined by the speaker's choice of particles, most of them final particles. She describes seven such sentence tones. Without entering into the question of how many sentence tones there might be..." (1979, 384)
Pantumeta (1962) also reports that words other than particles are used to carry shades of meaning. Her examples have shown the problem of writing or indicating intonation with the ordinary Thai script.

From my own observation the omission of final particles is very common in everyday speech. It is not only the style of speech but also the relationship between the speakers and the interlocutors which affects the omission of particles in spoken utterances. In delivering lectures, telling stories, reading news i.e. monologues, particles are hardly used. In conversational speech speakers tend to drop their final particles if they feel very superior to the interlocutors. 1 Speakers also drop the particles if they feel very familiar with the interlocutors, as one can observe regular omission of final particles in conversations between husbands and wives, close friends, and brothers and sisters. In some speech situations when the speakers are not sure about their social status as with respect to the interlocutors, they usually omit the particles. 2 The distribution and the use of particles in conversational speech is sociolinguistically very interesting and research on this particular point still needs to be done. 3

Henderson's and Chuenkongchoo's work on final particles, discussed in Chapter I, has shown how different syntactical meanings are conveyed

1 When I was in hospital for three months in 1979, I observed that doctors and senior nurses hardly used final particles at all when they spoke to their patients.

2 This is similar to the omission of the first person pronoun in speech, when the speaker cannot decide which pronoun should be used, due to the social sensitivity of the choice of the pronoun.

3 In the summer of 1977 when I went home to collect my data, I took a chance to go and see Miss Supamitr Satachantr, a well-known radio broadcaster, who at that time was running many series of radio plays. She kindly gave me a loan of the script of a play which they have just finished. Reading through the script I found that a lot of the sentences used are without final particles, including the question particles. This helps to confirm my observation of the omission of final particles in conversational speech.
by a system of phonetic complexes i.e. pitch, length and glottal termination superimposed on a special word class— the particles— which are considered toneless or do not have the inherent lexical tones. The critical question is, when one omits particles in one's speech how one conveys different syntactical meanings without the particles. How do the two systems of pitch fluctuation (i.e. the inherent lexical tones of words in the sentences) and sentence intonation interrelate to form the melody of speech in Thai?

Actually, this kind of question has been raised many times by various tone language scholars like Beach and Pike but I have never come across any solid research done to answer this question. Beach claims that the variation of pitch in Hottentot is in a smaller range as compared with English. He states:

"The explanation must be that in the interests of intelligibility a Hottentot cannot take liberties with his tones for emotional or other purposes to the extent that a European can. The Hottentot even in connected discourse, must keep to a large extent to the limited number and range of the inherent tones of the roots." (1938 : 125)

Pike used to believe there is not a linguistic system of intonation in a tone language. He states:

"In addition to their lexical pitch, however, tone languages may have various types of pitches superimposed upon them. Thus, the general pitch of the voice may carry implications of anger, disgust, joy and so-on,...but these types tend to be vocal reflections of physiological states, or general pitch characteristics rather than specific pitch contours organized into an intricately interwoven structural pattern." (1945 : 25)

"All tone languages have intonation of the emotional type, with the general height of voice affected, and so on, but I have not seen reported for them a highly organized contrastive system with a limited number of relative levels controlling the formation of intonations that carry shades of meaning." (1948, 16-17)

I myself as a native tone speaker and a phonetician believe that there is a system of intonation used to convey different shades of meaning of utterances, and that this system, when superimposed onto the tonal system of the words in a sentence, will affect the realization of
the tones which are the properties of the syllables, in the same way as a system such as stress affects the consonants and vowels of the syllables in English.

To illustrate clearly the interplay of this system of intonation with the inherent lexical tones, I need to find out first how systematically the tones change under different syntactical meanings.

One-word utterances occur quite often in conversational speech, especially as non-initiating sentences (see details in Chapter 1.3.3). The tonal behaviour or pitch variations of the lexical tones in one-word utterances, according to my observations, are very interesting.

I have chosen to start my analysis of intonation in Thai with one-word utterances with the following questions and reasons in my mind:

1. I have observed variations of pitch, length, and loudness in one-word utterances. These variations are used to convey different grammatical and attitudinal meanings. On the assumption that intonations are the complexes of phonetic features, primarily pitch, used to convey contrastive grammatical and different attitudinal meanings, they must be systematically represented.

2. If one wants to convey syntactical meanings without the particles or the 'intonation carriers', will ordinary words borrow the prosodic characteristics of the particles as claimed by Chuenkongchoo (1956)? Will ordinary words which have different lexical tones, have the same prosodic characteristics applied to them, i.e. will words with different lexical tones behave in the same way as the particles? Will this system of intonation contaminate the tonal system of the words?

3. It is to see clearly how the five contrastive tones behave under different intonational meaning, that I have chosen to start my analysis with monosyllabic one-word utterances. This is to avoid, at this stage, getting involved with other linguistic variables such as
the phonetic stress, the phonological accent or the syntactical construction. The accented monosyllabic words which represent five contrastive lexical tones with different intonational meanings superimposed will be systematically studied.

4. The analysis of the tonal behaviour of one-word utterances under different grammatical and attitudinal meanings might help to clarify or at least increase the awareness of the problem of 'citation forms' used in linguistic analysis.¹ The variations of the phonetic realization of the same underlying units which are usually put aside by phonemicists as of 'free variations' need to regain more attention as illustrated out by the work of a sociolinguist like Labov,² for example.

3.2 The Experiment

Data used for the analysis of intonation in one-word utterances presented in this chapter are obtained from the experimental technique

1 From my experience of working with informants, we field workers usually ask informants questions which are specially designed to get one-word utterances as the answers. It has been taken for granted that these forms of speech or 'citation forms' are the representatives of the sounds of the language. In many pieces of work done on Thai, 'citation forms', so-called, are studied and reported without saying how one gets these forms. When I first started my career in phonetics, Jimmy Harris introduced me to work with informants by giving me an illiterate informant to work with. Excited, as this was new to me, I found myself asking the informant again and again, so that the nervous informant became more nervous and excited and always added 'something' more to the words. Since then I have always been aware of the problem of citation forms, especially when I work with informants who cannot read or write.

2 Labov (1972) has pointed out, in his introduction, many ideological barriers to the study of language in everyday life and the most important one in his view has been the belief that free variation cannot in principle be constrained, so that it has been taken to be linguistically nonsignificant. In chapter 3 of his book on the isolation of contextual styles he has pointed out that stylistic variations have not been treated by techniques accurate enough to measure the extent of regularity which does prevail. He also showed how this problem was overcome through his ingenious way of investigation.
adapted from Greenberg (1969), whose technique is used to investigate the phonetic realizations of intonation contrasts in one-word utterances in English. It is clear that Greenberg has been inspired by Chomsky's statement quoted on his front page.

"Obviously, one can find out about competence only by studying performance, but this study must be carried out in devious and clever ways, if any serious result is to be obtained." (Noam Chomsky)

The informants are required to perform one-word utterances by means of cue-cards, and the phonetic realizations, (primarily pitch, secondarily length and loudness) of these utterances will be objectively investigated.

It has been stated that intonation in Thai is contrastive. The postulation of contrastive intonation phonemes for statements and questions is very common in the literature on the language. In a non-tonal language like English, pitch fluctuations found in words on which contrastive intonation phonemes are superimposed can be categorized into 2 main contours i.e. the rising and the falling. These 2 contours are found as contrastive intonation phonemes in many languages of the world, as Bolinger (1978) clearly illustrates in his survey of intonation in different languages. However, in a tone language like Thai I found from my observation that the variations of pitch in words with different

1 See details in Cruttenden (1981)

2 I did a preliminary study of tonal behaviour of the five lexical tones in five lexical items which grammatically are capable of occurring alone as one-word utterances and semantically can be expressed quite easily. They are the five gradable adjectives (see Quirk and Greenbaum : 1973). /'dɪ:/ - good, /'kɔː/ 'kaw/-old, /'dɛɪ/- 0.K. or all right, /'ræj/- bad, wicked or naughty, and /'suːd/ 'sum/- beautiful. The subjects in that pilot study are Mrs. Chalida Naparuk, Mr. Polrard Luksaneeyanawin and myself. The tonal behaviour of the lexical tones in different subjects seems to conform to the same pattern with minor differences such as range of pitch and degree of loudness. Each lexical tone has its own behaviour which is completely distinguished from the others though their behaviour shares common characteristics. Because I intend to use instrumental evidence to support my auditory analysis, Mrs. E.T. Uldall has kindly suggested that I take phonetic considerations, such as the type of initial consonants and vowels, into account in choosing words for this experiment.
lexical tones, though generally speaking they involve raising and lowering under certain intonations, are quite different from each other. I therefore call these differences 'tonal behaviour', since each lexical tone seems to behave differently, as if it tries to keep the characteristics which are used to distinguish it from the other tones.

I have used the archetypal 'statement' and 'question' grammatical meaning categorization and some of the attitudinal dimensions of meaning suggested in Uldall (1960, 1964) and the cue card technique, in order to obtain the data used for the descriptive analysis of intonation in one-word utterances in Thai presented in this chapter.

3.2.1. The Cue-Cards

The cue-cards are cards which are used to elicit one word utterances from the subjects. They are produced with the intention of observing the tonal behaviour of the five contrastive lexical tones under different intonational meanings. The cards give the situations or states of emotion which the subjects are supposed to act out as naturally as possible; i.e. the cue cards are used as stimuli to elicit prompt one-word utterances as responses from the subjects without any verbal instruction. The meanings which the subjects are expected to convey through their responses to the cue cards are of two types: 1) the grammatical meanings 2) the attitudinal meanings.

The grammatical meanings used in this part of the analysis are the archetypal ones in the literature i.e. statements or assertions, and yes-no questions. I have also added two more grammatical meanings. The first one is the unfinished utterance, which has been reported in

1 Tingsabadh (1980, 73-83) has discussed in detail the three methods of elicitation: 1) the repeating method 2) the reading method 3) the questioning method. The cue-card technique I adopted from Greenberg (1969) for this study is a combination of the reading and questioning method.
the literature to have the sustained intonation phoneme i.e. the notion of non-finality or continuation in the speaker's mind, or the 'but': and the second one is the statement which the speaker uses to signify that he has received the message and "please continue". This notion of meaning has been called in the past 'the telephone-yes intonation.' (Jones : 1918, 277)

The attitudinal meanings used in this part of the analysis are based on Uldall's (1962) postulation of three dimensions of attitudinal meanings: emphatic/unemphatic or strong/weak; authoritative/submissive; interested/bored or pleasant/unpleasant with the addition of two other semantic contrasts postulated by Uldall (1960, 1962): believing/disbelieving, and agreeable/disagreeable. I also add two more semantic contrasts which are reported in the literature to have different intonation contours: surprised or doubt/not surprised, or neutral, and angry/concealing anger.

The nature of the words used to observe the tonal behaviour.

The criteria used in choosing words to be analysed in this part of the research are based on the following points.

1. They must be monosyllabic words and be representative of the five contrastive lexical tones. (See discussion in 3.1.)

2. They must be content words which are predicative i.e. verb or adjective, since being content words they are accented and are grammatically acceptable as one word utterances (see discussion in chapter 1.4.3 and chapter 2.1), and being predicative they are semantically quite flexible to be expressed as one word utterances.¹

¹ In Thai it is very common to find sentences without nominal constituents functioning as the subjects. The subjects are known through the context and considered redundant in conversational speech. (See 'the nominal constituents in Ch. 1.4.3.)
As described in chapter 1.4.1, there are 5 contrastive tones in Thai: the high, the mid, the low, the fall and the rise. These five tones can be found as a minimal set in open syllables with long vowels or in syllables closed with nasal consonants. I chose five monosyllabic words with open syllable structure i.e. the words are composed of initial voiceless stop consonants and long monophthongal vowels. They are in /'ke:m/ (to be twisted, distorted, slanted or disfigured, to be knavish, roguish (figurative)): ivery /'thi:l/ (to be close (in succession), to be repeated in quick succession, to be of high frequency); /'ca:f/ (to be bright or strong (of light, colour and sound));  /'pha:s:h/ (to be defeated, to lose); /'khe:r/ (to be twisted, to be cross-eyed). The other four words to be observed are representatives of contrastive tones in closed syllables, they are:  /'kha:t/ (to be torn);  /'kho:t/ (to be narrow or constricted);  /'phit/ (to be wrong);  /'kho:t/ (to be not straight, to be crooked or dishonest). The first two words are the representatives of the low and the falling tones which are the only two tones found in long syllables closed with stop consonants, and the latter two words are the representatives of the low and the high tones which are the only two tones found in short syllables closed with stop consonants.

From the criteria discussed above, I made 15 cue cards for each of the nine monosyllabic words, including two cue cards at the beginning to elicit the normal reading pronunciation of connected sentences (cue card no. 1) and the pronunciation of the minimal set of words with five

1 From the preliminary study I found some interesting points in the intensity traces of the contrastive intonations in the word /'di:/.

These differences cannot be observed clearly in the words with two or more successive different vocalic segments, such as /'kaw/, /'da:j/, /'ra:j/, and /'su:aj/, so I decided to change all the words, using phonetic criteria as the primary consideration, though the five words in the pilot study are very commonly found as one-wordutterances in speech.
contrastive tones including the pronunciation of the set of words used in this experiment in deliberate reading style (cue card no. 2). The text of the cue cards is translated and given below. (The text of the original cards in Thai is in the appendix.)

Cue card no. 1

Recording for the study of intonation in Thai.

The date is..............................

Department of Linguistics, University of Edinburgh.

Cue card no. 2

(Please read the following words, word by word, slowly and deliberately.)

/'khaː m/ /'khaː l/ /'khaː f/ /'khaː h/ /'khaː r/
/'khaː t'/ /'khaː t'/ /'khaː l'/ /'khaː h'/
/'khaː t'/ /'khaː t'/ /'khaː t'/ /'khaː t'/
/'khaː t'/ /'khaː t'/ /'khaː t'/ /'khaː t'/
/'khaː t'/ /'khaː t'/ /'khaː t'/ /'khaː t'/

Cue card no. 3 - to elicit a statement.

(If someone asks you, 'Is this /'keː m/ or /'trog m/ ?'
and you think that 'It is /'keː m/.'; what will you say ?)

(1.a) ______ ______ (Please say twice.)

Cue card no. 4 - to elicit an unfinished sentence.

(Someone asks you, 'Is this /'keː m/ or /'trog m/ ?'
and you are not sure whether it is really/'keː m/,
you are going to say'/keː m/... but'. (Please answer without saying the word 'but'.)

(1.b) /'keː m/... /'keː m/...

1 The words are written twice, the informants were instructed to perform each utterance twice. This is to check the similarity of the first and the second performance and to make sure that the informants do not fail to perform according to the instructions.
Cue card no. 5 - to elicit a tail sentence.

(The person who asks you the question is very sure that 'It is /'ke: m/.' but he wants your opinion. You agree with him that 'It is /'ke: m/.' You are going to say 'Right... /'ke: m/.' Please answer without saying the word 'right'.)

(i.c) .../'ke: m/ .../'ke: m/

Cue card no. 6 - to elicit a yes-no question

(Your friend says, 'It's /'ke: m/.' and you do not hear properly what he says. You are going to ask, 'You said /'ke: m/ ?' but you use only one word...)

(1.d) /'ke: m/ ? /'ke: m/ ?

Cue card no. 7

(From now on, please answer the given questions with different attitudes and states of emotion according to what is stated in the cards. Try to answer as naturally and as you would do in the real situations. Please do not overact.)

Cue card no. 8 - to elicit a neutral or unemphatic vs an emphatic answer.

(Somebody asks you, 'Is it /'ke: m/ ?'. You think that it is. Please answer with a normal attitude without any emotion. Do not stress or emphasize your answer.)

(2.a) /'ke: m/ /'ke: m/

(Now you want to stress or emphasize your answer.)

(2.b) /'ke: m/ /'ke: m/

Cue card no 9 - to elicit a neutral or non-angry vs an angry answer.

(You are normal, you don't have any emotion.)

(3.a) /'ke: m/ /'ke: m/
(You are very angry and you don't care whether your listener knows that you are. You really show your anger.)

(3.b) /'ke:/ /'ke: /

Cue card no. 10 - to elicit an answer with concealed anger.

(You are very angry but you don't want your listener to know that you are. You try to hide your anger, then answer...)

(3.c) /'ke:/ /'ke: /

Cue card no. 11 - to elicit an answer with an agreeable attitude.

(You really agree with the person you are talking with that 'It's /'ke:/.' You will answer...)

(4.a) /'ke:/ /'ke: /

(You are indifferent and without any emotion. You will answer...)

(4.b) /'ke:/ /'ke: /

Cue card no. 12 - to elicit an answer with a disagreeable attitude.

(You do not agree with the person you are talking to. Your answer is...)

(4.c) /'ke:/ /'ke: /

(You are neutral, you don't have any emotion.)

(5.a) /'ke:/ /'ke: /

Cue card no. 13 - to elicit an answer with an interested attitude vs bored attitude.

(You are very interested in what you are talking about, you will answer...)

(5.b) /'ke:/ /'ke: /
(You are very bored with the conversation, you will answer...

(5.c) /'ke:/

Cue card no. 14 - to elicit an answer with a believing attitude vs. neutral attitude.

(You really believe that it's /'ke:/, you will answer...)

(6.a) /'ke:/

(You are indifferent and emotionally neutral, you will answer...)

(6.b) /'ke:/

Cue card no. 15 - to elicit an answer with a disbelieving attitude vs neutral attitude.

(You don't believe that it's /'ke:/, you will answer...)

(6.c) /'ke:/

(You are indifferent and emotionally neutral, you will answer...)

(7.a) /'ke:/

Cue card no. 16 - to elicit an authoritative answer vs a submissive answer.

(Suppose you are the boss and you want to express the fact that you really are the boss when you answer, you will answer...)

(7.b) /'ke:m/ /'ke:m/

(Suppose you are the underling and you are afraid to impose upon your boss, you will answer...)

(7.c) /'ke:m/ /'ke:m/

Cue card no. 17 - to elicit a surprised answer vs a neutral, non-surprised answer.

(You are very surprised at what you are talking about in your conversation, you will answer...)

(8.a) /'ke:m/ /'ke:m/
(You are not surprised at all, you will answer...) (8.b) /'keI m/ /'keI m/ .

Cue cards no. 3-17 are repeated again for the word /'thi:/, /'caI z/, /'phm h/, /'kheI/, /'khaI:/, /'khotf/, /'phit/ and /'khot h/.

Recording Situation

The recording was done in the recording studio, Phonetics Laboratory, University of Edinburgh, on a Ferrograph Logic 7 console tape recorder, at a speed of 3\(\frac{3}{4}\) ips.

The first set of cue cards was given to the informants to read through before the recording. The informants were told to ask questions if they were not clear about the instructions given in the cue cards. During the recording I was with the informants to give them the cues by giving the cue-card number of the utterances. The informants took their time and then performed each utterance twice according to the instructions on the cue card. The cue utterances by me were very useful since they gave a break for the informant to think between different situations. They were also very helpful when I did my acoustic analysis because they indicated where I was.

When a set of cue cards was finished, I handed the informant another set of cards. We usually had a minute break after each set. The first set of utterances took a longer time than the other sets, since the informants tended to have a longer stop between different cue cards. The informants were faster in the later sets of utterances. No informant had difficulties with the cue cards, nor with the recording situations.

After the recording I and the informant listened to the tape and if there were any utterances that failed to satisfy us, we recorded those again.
36 words and a few sentences are read, and 414 (23 x 2 x 9) one word utterances are said by each informant. These one word utterances are auditorily analysed (see details in 3.2.3 of this chapter) and then acoustically analysed.

The description of the intonation of one word utterances will be the description of the behaviour of each lexical tone under these semantic contrasts:

1. statement / question
2. finality / non-finality
3. unemphatic / emphatic
4. neutral / non-neutral; these two postulates of emotionally or attitudinally unmarked and marked utterances consist of 11 pairs:

4.1 neutral / marked with anger
4.2 neutral / marked with concealed anger
4.3 neutral / marked with agreeable attitude
4.4 neutral / marked with disagreeable attitude
4.5 neutral / marked with interested attitude
4.6 neutral / marked with bored attitude
4.7 neutral / marked with believing attitude
4.8 neutral / marked with disbelieving attitude
4.9 neutral / marked with authoritative attitude
4.10 neutral / marked with submissive attitude
4.11 neutral / marked with surprised attitude

The neutral, or the emotionally and attitudinally unmarked utterances, are put in the cue cards in a systematic random order i.e. sometimes they are put at the beginning of the cue card, sometimes at the end and sometimes on a separate card, but every marked utterance will have its contrastive unmarked utterance nearby, with which to be compared.
3.2.2 The Informants

The informants in this experiment are considered to be representa-
tives of Bangkok Thai speakers who come from the same socio-economic
background and the same age-group. They all meet the following criteria:

1. Their age is between 30-45.
2. Their socio-economic background is the middle class, profes-
sional group.
3. They all speak Bangkok Thai in their social activities and at
   home.

The names and the abbreviations which will be used to refer to them
in the discussion are as follow:

Miss Sawakhon Ajjimakorn (AS), aged 37, a gynaecologist.
Mr. Santi Jamroonkul (JS) aged 30, a surgeon.
Mrs. Sudaporn Luksaneeyanawin (LS) aged 35, a lecturer.

3.2.3 The Auditory Analysis

The auditory analysis of the intonation of one-word utterances
presented in this chapter consists of the phonetic analysis of pitch,
duration, and degree of loudness, which are the three phonetic charac-
teristics taken into account in the study of the tonal behaviour or
the phonetic realization of the lexical tones under different intona-
tional meanings.

The Analysis of Pitch

The analysis of pitch described here will be a phonetic analysis
which will describe the relative pitches within the system of the
auditory repertoire of the analyst. The problems in the auditory
analysis of pitch are usually of the why-and-how nature i.e. how we
are going to describe it and why we use a particular method.

I have chosen Chao's system with five levels of auditory pitch
and his system of tone letters with some of my own modification which
I will discuss later. The reason that I choose this system is that it seems to be the only good system to describe pitch phonetically and systematically. With the five pitch levels represented on the vertical line and the time dimension on the horizontal line, this system is reasonably adequate to give a clear description of pitch, which is quite an abstract auditory perception.

The question of how many pitch levels one should use for the analysis of pitch in speech is always raised in the literature. Some systems, for example, Pike (1945), Wang (1967), Maddieson (1970), are based on phonological reasons. The 5 levels in this analysis are not arbitrary either, but my choice of 5 levels is based on phonetic grounds, which is the same reason as that given in the postulation of 3 levels of, what Crystal (1971) calls, "absolute" pitch. He found evidence from his experiment to show that in some respects, if people are asked to judge pitches in speech in terms of high, mid and low, they will act as if they are using some absolute norms, i.e. there is an upper and a lower limit of the mid or the norm in their judgement. He suggests:

"I would propose a model in which pitch relativity is constrained by the existence of absolute levels, and would hypothesize that people operate with at least three pitch reference areas (norm, low, high), within which any system of intonation analysis must be accommodated" (Crystal: 1971, 27; my underlining.)

From my experience in the analysis of tone and intonation, I have found it is very practical and accurate to start one's analysis from a reference point—the mid. Any deviation from the mid is either high or low, and the extreme deviation from the mid is either extra high or extra low. However, I found that 3 levels are inadequate for the phonetic description of pitch in speech, so I have been using 5 levels.

1 See detail in Chapter 1.2
2 In Hainanese (Luksaneeyanawin, personal study) there are 3 level tones which are auditorily mid, low and very low e.g. ['be:]-[to be sick], ['be:]-[to scratch],[be:]-[clsf. for a knife];[tgi:a]-[to cover],[tgi:a]-[to be finished], [tgi:a]-[sugar cane]. There is also a language reported to have 5 lexical level tones (F.K. Li-Black Miao).
instead of the 3 levels of pitch suggested by Crystal. This system of 5-levels is postulated with the idea of an auditory reference area—the mid and the deviation from this area.

The description of pitch levels represented on vertical lines is illustrated below.

```
   G H H H L
Extra High High Mid Low Extra Low
```

The horizontal line extended to the right hand side of the vertical line, represents the time dimension (see discussion later in this chapter) and the direction of the up and down movement of pitch, if there is any.

If the pitch is not level, it will move either up (i.e. rise) or down (i.e. fall) or a combination of the two. A fall is a change of pitch from a relatively higher to a relatively lower pitch, and the opposite direction to a fall is a rise which is a change of pitch from a relatively lower to a relatively higher pitch. These falls and rises of pitch can be of different types. In the literature there has never been any objective system provided to describe them clearly, though there are some subjective labels, for example, 'glide' and 'leap' but these terms are too vague.

I would like to propose here a two-term label for a systematic description of different kinds of fall and rise.

1. The first term is posited on the basis of the distance between the beginning and the ending point of the pitch, i.e. one can distinguish
a wide-range fall or rise (where the pitch changes more than one step upwards or downwards from the beginning point), from a narrow-range fall or rise (where the pitch moves only one step upwards or downwards from the beginning point).

<table>
<thead>
<tr>
<th>Narrow Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wide Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. The second term of label for kinetic tone is posited on the basis of pace and time of change. One can distinguish four types of change by this criteria:

a. A continuous fall or rise where the change is continuous from the beginning point.

b. A delayed fall or rise where the pitch remains level at the beginning point before the change occurs.

c. A stepping fall or rise where the change is between two level pitches i.e. the change is a stepping from one level pitch to another level pitch.

d. A level-ending fall or rise where the pitch continuously changes from the beginning point and then remains level before dying away.

1 There are many terms used in past literature: glided fall, rapid fall, gradual fall for this type of pitch change. These terms do not help to distinguish different kinds of fall described here. I have discussed this problem with Mr. J. A. Kemp and he suggested the term 'continuous' which I found the most clear and suitable to be used as a label for this kind of pitch movement.
1. The pitch height of the beginning point, which can be either extra high, high, mid, low, or extra low.

2. The pitch direction, which can be level (i.e. the pitch remains at one level from beginning to end), or kinetic (i.e. the pitch moves up or down or up and down). The kinetic pitch can be either a fall or a rise or a combination of the fall and the rise.

For a kinetic pitch, there are two more terms of the label which I have just discussed.

3. The pitch range, which can be either a wide range or a narrow range.

<table>
<thead>
<tr>
<th></th>
<th>Continuous Fall or Rise</th>
<th>Delayed Fall or Rise</th>
<th>Stepping Fall or Rise</th>
<th>Level Ending Fall or Rise</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Narrow</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rise</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wide</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rise</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

With the system of description I propose here we can explicitly and objectively describe pitch with a four-term label.
4. The pitch shape, which can be either continuous or delayed or stepping or level-ending.

The description of pitch in terms of four-term labels described above is much clearer and more objective than the vague subjective terms e.g. 'gliding' tones, 'rapid fall or rise', 'leap' etc. used in the literature.

I will give some examples to illustrate how this system of four-term labels is used to describe pitch.

Example from Thai The pitches described below are the different realizations of the word /'phi:/ (sister or brother used as the term of address or second person pronoun) uttered with different shades of meaning.

/ˈphiː/ - neutral statement

High Continuous Wide Fall

/ˈphiː/ - address with a soothing tone of voice

High Delayed Wide Fall

/ˈphiː/ - address with a warning tone of voice

High Stepping Wide Fall
Example from English The pitches described below are Halliday's tone 2 and tone 3 on the word 'yes'.

\[ /'jes/ - \text{neutral question} \]
\[ \text{Low Continuous Wide Rise} \]

\[ /'jes/ - \text{non-committal answer} \]
\[ \text{Low Delayed Narrow Rise} \]

At the phonological level, there might be some situations in which some of the terms are redundant and it is easier to use only the terms which are phonologically contrastive to refer to the contrastive phonological pitch. However, at the phonetic level I think it is very important to describe pitch with the complete four-term labels before one goes on to the phonological level.

The Analysis of Length

Actually one cannot completely separate this auditory aspect of length from the pitch. Chao (1924) uses tone sticks with the horizontal lines extended to the left. The tone sticks are accompanied by figures and the colon on the right. He postulates short tones, straight tones, and circumflex tones according to their length, for example:

1: short tone
11: 15: straight tone
513: circumflex tone

1 Chao uses the term 'tone' to refer to auditory pitch.
He does not explain his system explicitly. I take it from his example that he considers that length is one of the important aspects of the auditory analysis of pitch, and that there is some restriction of length in relation to the type of pitch, e.g. short tones must be level and circumflex tones must be long. It seems that he postulated 3 units of length, i.e. one unit for short level, two units for long level tones and long falling and rising tones, and 3 units for circumflex tones. He does not explain why he had such a restriction, e.g. whether he perceived them like that always, or what.

However my analysis of length is quite different from Chao's. I postulate four units of length: very short, short, long, and very long for the auditory analysis of the length of the pitch. There is a crucial question here, namely, 'Can we judge on purely phonetic grounds whether the sound is very short, short, long, or very long?' Length is another auditory aspect of sound which is problematic because of its relative nature. My postulation starts from the concept of 'norm value' and 'deviation from the norm value'. For a language which does not have phonemic length, one might postulate three degrees of length, i.e. norm, short, and long. However, since Thai is a language with a phonemic length distinction, so that we have a norm value of phonemic short vowel, and a norm value of phonemic long vowel, from this concept of the 'norm value' and its deviation in the diagram below, I then postulate 4 units of length:

```
1 unit | 2 units | 3 units | 4 units
```

![Diagram of length units](image-url)
Since I intend to reserve numerals for the phonological description of intonation, I will use the tone sticks or the tone letters to describe both pitch and length. The horizontal line which extends to the right-hand side of the vertical line, besides representing the direction and movement of the pitch as discussed before, will also represent the length of the pitch. Units of length will be indicated by dots extending to the right at the bottom of the tone sticks as shown below.

| 1 unit | 2 units | 3 units | 4 units |

I will represent a phonemic short vowel with two length units when it is normally stressed, three units when it is longer and one unit when it is shorter than the norm one. A phonemic long vowel will be represented with three length units when it is normally stressed, four units when it is longer and two units when it is shorter than the norm one.

**The Auditory Analysis of Degree of Loudness**

This analysis has the same basis as the analysis of pitch and length, i.e. the analysis starts from one reference point—the norm. It is quite clear that one can tell whether a speaker is speaking at his normal degree of loundess or more softly or louder than normal.

I postulate 3 degrees of loudness:

1. normal
2. loud
3. soft

Normal is the degree which is used when the speaker is reading or speaking without any emotion. The deviation from this normal degree can either be louder (loud) or softer (soft).
I will represent degree of loudness with a small square box on the bottom left of the tone stick as follows:

- Normal
- Loud
- Soft

The auditory analysis of pitch, length and degree of loudness presented here is not absolute but rather relative. However, I can say that it is not phonologically but auditorily relative. This relativity is systematic. My judgement or my perception of the auditory quality is always based on one reference point—the norm, and the deviation from this point. My own 'auditory repertoire' (i.e. my concept of the norm and its deviation) may have been influenced by my past experience as a native speaker of the language, my training in phonetics, and other factors. The listener must have access to the overall voice range and appearance of the speakers when they read or speak in order to make the right judgement of the norm value.

Although this system of auditory analysis is based on my own auditory repertoire, I think the method can be used for the auditory

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1 The judgement in speech perception is very complicated. Listeners do not base their judgement on the phonetic quality of the sounds alone. They have a reference system which they use in the perception of speech sounds. This 'internal reference' system (Studdert-Kennedy : 1979), undoubtedly, is learned by any normal language speaker through the process of learning his mother tongue. Every linguistically naive speaker is able to tell whether the speech is normal or not, whether the speaker is speaking the same dialect as his or not, whether the speaker is a foreigner etc., although he can't describe objectively which physical quality of speech sounds is different from his. Phoneticians also learn this internal reference system as a language speaker. Besides this system they may learn many other reference systems which they use in categorical perception and description of speech sounds. Phoneticians with different language backgrounds but trained under the same reference system will be able to perceive and describe or refer to the physical referent in a similar way to each other (see Ladefoged : 1967, on the auditory judgements of vowel quality).
analysis of speech sounds of any other dialect or language. Language X speaker can tell whether the pitch, the length and the degree of loudness is normal for that language or not and so can Language Y speaker. A 'high' might be different from another 'high' when one compares the fundamental frequencies, but the two 'high's are 'high' as related to their 'norm', which in this hypothetical case may be the same or different. Cross-language research on auditory judgement based on this model of the norm and its deviation will be very illuminating to the question which I raise here.

3.2.4. The Instruments

The instruments mainly used for this research are

1. The F-J Electronics Aps Pitch Computer type PC 1400
2. The F-J Electronics Aps Intensity Meter
3. The Siemens AB Mingograf 34T, 4-channel oscillograph recorder or printer.

The advantage of these three instruments is that they do not have time limitations like the spectrograph, which is ideal for the analysis of spontaneous speech. The print-out shows separate traces of fundamental frequencies (f0) in Hz, intensity in db, and duration in seconds and the wave form of the audio signal. This type of record gives a clear picture of the different objective acoustic parameters which will be compared with the auditory analysis of pitch, loudness, and length respectively.

The print-out also gives a trace of overall audio signals which are very useful for the segmentation of connected speech to be dealt with in Chapter 4.

The illustration of the data in this chapter will be through:

1. The tone-stick showing the auditory pitch, length and degree of loudness (see 3.2.3).
2. The print out of the Mingograf showing the acoustic properties of the utterances, i.e. the intensity in db, the fundamental frequency in Hz, the duration in centiseconds (cs) and the wave form of the whole audio signal.

To magnify and compare the objective aspect of the pitches found in one-word utterances with different intonations, I will illustrate the variations of the fundamental frequencies (fØ) of each set of utterances on diagrams along with the mingograms and the auditory description of pitch previously discussed.
The f0 shown on the graphic diagrams are extracted by a computer program using the parallel processing for estimating pitch technique (Gold and Rabiner: 1969). The program works on the ILS (Interactive Laboratory System) which is an organized collection of interrelated but independent program modules. This program module called PGR (Pitch Extraction: Gold and Rabiner) was implemented by Steven Hiller at the Phonetics Laboratory, University of Edinburgh. PGR with 6 pitch period estimators extracts f0 by estimating the pitch periods of speech according to the time specified and gives the inversion of the pitch periods i.e. f0 in digital forms. I have programmed to analyse the f0 of the utterances at every 10 millisecond (ms) or 1 centisecond (cs). The techniques proved to be very effective i.e. accurate and exceedingly fast in operation compared with other techniques. However, the f0 for 20-50 ms at the beginning and at the end of some utterances moved up and down drastically despite a smooth auditorily perceived pitch. In these cases, I have relied on my auditory analysis and have shown this drastically changing pitch by a wavy line in stead of a smooth line. This up and down movement of f0 detected by the computer may be real.

1. It can be programmed to analyse at every 1 millisecond (ms), but to examine the overall pitch contour of the whole utterance the analysis at every centisecond gives enough details to draw a pitch contour.

2. The execution time of the program is about 1.3 to 1.5 times real time. (Gold and Rabiner: 1969, 151)
due to the physiological adjustment of the tension of the vocal folds when they are brought together before the vibration starts and before the termination of voicing.

The scale used in the graphic diagrams is not linear. Lehiste has a very clear remark on the non-linearity of pitch perception, she states:

"The fact that the abstract differential threshold varies with frequency raises the question of whether a listener responds to absolute (linear) differences in frequency or to ratios between frequencies. There is abundant evidence that pitch perception is not linear. The difference between 200 and 100 Hz is perceptually different from the difference between 300 and 200 Hz, although the absolute difference is 100 Hz in both cases. On the other hand, the difference between 400 and 200 Hz is in an important way perceptually the same as that between 200 and 100 Hz." (1979, 64-65)

Being aware of this problem I have chosen to use the non-linear scale on the fO axis as shown in the diagram below. This scale seems to give graphic results which correspond fairly closely to the auditory perception of pitch analysed by ear. However, the auditory aspect of pitch is very complicated. There are still many unanswered questions about the perception of pitch, for example, whether the time domain

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1 It is noteworthy that in an examination of the fO in the word /'khaːt/ (to be torn) I found that when I increased the intensity of the input by turning up the volume of the tape recorder, the program gave a sharp rise of the fO for 20-50 ms of the ending part. This might be interesting to those who are interested in the physiological aspect of voice onset time of stop consonants in Thai. From my observation of my vocal folds some time ago with fibre optic bundles when pronouncing words with the voiceless unaspirated and unreleased stops at the end, glottal closure occurs at the same time as the closure in the oral cavity. The sharp rise which is detected by the computer may be real and is due to tension of the vocal folds while being brought together to form a closure. The sharp rise would not occur if there was only the oral closure since there would be a higher oral pressure and a drop of subglottal air pressure which would have given a fall of fO.
plays an important role in pitch perception, and whether language background\textsuperscript{1} or linguistic training have any influence on pitch perception. The auditory analysis through my 'auditory repertoire' will be given along with the acoustic analysis of these one word utterances.

\begin{itemize}
\item Gandour (1978) has done a cross-language study of pitch perception. He found that subjects with different language backgrounds use different primary cues in their judgements of pitch.
\end{itemize}
3.3 Results and Conclusions

The tonal behaviour of one word utterances elicited by three subjects is reported in terms of pitch height and pitch range primarily, and in terms of length and degree of loudness secondarily. The acoustic records and the auditory analyses are given in Appendix 2. The term 'normal' is used when the behaviour of the tone is similar to the normal reading pronunciation and the normal unemphatic citation form.

3.3.1 The Tonal Behaviour of One-Word Utterances with Different Grammatical Meanings

The following table is the summary of the tonal behaviours of one-word utterances with different grammatical meanings. It gives a general view of the characteristics of every phonemic tone. The phonetic characteristics of each phonemic tone when superimposed with these meanings will be given in Table 3.2.

Table 3.1

The results reported in this table is based on the acoustic and the auditory records Fig 3.1-3.30 in Appendix 2.

<table>
<thead>
<tr>
<th>Semantic contrasts</th>
<th>Pitch Height</th>
<th>Pitch Range</th>
<th>Length</th>
<th>Degree of Loudness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Statement</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>2. Question</td>
<td>higher</td>
<td>narrower</td>
<td>+shorter</td>
<td>+louder</td>
</tr>
<tr>
<td>3. Unfinished statement</td>
<td>higher</td>
<td>narrower</td>
<td>longer</td>
<td>normal</td>
</tr>
<tr>
<td>4. 'Telephone Yes' intonation</td>
<td>lower</td>
<td>narrower</td>
<td>shorter</td>
<td>softer</td>
</tr>
</tbody>
</table>

1 + means that the feature does not consistently occur, for example, in this case sometimes there is a normal degree of length but there is a higher degree of loudness or vice versa. However, in most cases they do occur.
From table 3.1 we can conclude that there are 3 types of behaviour:

1. The behaviour which is found in statements is similar to the reading and the unmarked citation intonation.

2. The pitch is raised and the pitch range of the tones is narrower. This behaviour when found in questions is always accompanied by shortness and loudness. But when it is found in unfinished statements expressing non-finality, it is always accompanied by longer duration.

3. The pitch is lowered and the pitch range of the tones is narrower. This is always accompanied by shortness and a softer degree of loudness. The behaviour is found in the consultative code label of agreement or the 'telephone yes' intonation.

Concerning the behaviour of each phonemic tone, Table 3.2 below gives the phonetic details of each phonemic tone, grouped into two major classes: the static tones (the high, the mid and the low), and the dynamic or kinetic tones (the rise and the fall).

Table 3.2

<table>
<thead>
<tr>
<th>Semantic contrasts</th>
<th>Statement</th>
<th>Question</th>
<th>Unfinished statement</th>
<th>'Telephone yes'</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phonemic tones</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I) 1. the high</td>
<td>high narrow continuous rise &amp; fall</td>
<td>extra high level</td>
<td>extra high level</td>
<td>mid level</td>
</tr>
<tr>
<td>2. the mid</td>
<td>mid narrow continuous fall</td>
<td>high level</td>
<td>high level</td>
<td>low level</td>
</tr>
<tr>
<td>3. the low</td>
<td>low narrow continuous fall</td>
<td>mid level</td>
<td>mid level</td>
<td>extra low level</td>
</tr>
<tr>
<td>II) 4. the rise</td>
<td>low wide delayed rise</td>
<td>mid narrow delayed rise</td>
<td>low narrow level ending rise</td>
<td>low narrow continuous rise</td>
</tr>
</tbody>
</table>
We can see from Table 3.2 that the static phonemic tones which have a narrow continuous fall (the mid, and the low) and a narrow continuous rise and fall ending (the high) become very static i.e. the pitch level is very stable throughout the utterance when superimposed with the question, the unfinished statement and the non-committal answer intonation. The pitch patterns of the three static tones elicited as questions and unfinished statements are quite similar but questions are usually marked by other prosodic features i.e. shortness and loudness and unfinished statements are marked by longer duration (see table 3.1).

Auditorily speaking, if one listens to the utterances which are superimposed by the question and non-finality intonation, it is very difficult to distinguish the three static tones from each other. Research on the recognition of the phonemic tones in Thai has shown that subjects have difficulties to distinguish the mid and the low tone from each other, especially when the subjects do not have any access to the pitch patterns of the speakers (Abramson: 1975, 1978). In terms of pitch pattern, we can see from Fig 3.1-3.12 (Appendix 2) that in reading style the mid and the low are quite similar and both are quite different from the high which usually has a narrow rise and a sudden fall at the end. However, if we look at the intensity traces, the mid and the low which are quite similar in terms of pitch, are...
quite different. The low tone has a sharp lowering of intensity (\(\wedge\)) as compared to the mid and the high (\(\wedge\) or \(\wedge\)). The difference in intensity is believed to be another phonetic cue used in recognition of tones, especially when there is no auditory pitch i.e. in whispering (Abramson: 1972, Gsell: 1981). The differences in intensity found in the reading and the statement intonation are not found in the question and the unfinished statement intonation (Fig 3.13-3.30 in appendix2). The intensity is high from the beginning and throughout the utterances (\(\wedge\)). This may increase the problems in recognition of the static tones under this intonation. However, perception tests need to be done to answer this question. The argument about the unmarked and marked 'Breath Group' put forward by Lieberman (1967) is tenable. From the acoustic evidence of this study, the question and unfinished statement intonation is marked not only by higher fundamental frequency but also by higher intensity towards the end of the utterance. However, instrumental articulatory techniques, in terms of airflow or supraglottal pressure measurements which are not used in this research, need to be conducted to investigate this aspect of intonation and this is recommended for further research.

The two dynamic tones, the rise and the fall, still keep their distinctive pitch patterns under different intonations. We can see from table 3.1 and 3.2 that under the question and unfinished statement intonation, the pitch height becomes higher and the pitch range is narrower. The pitch height is lower and the pitch range is narrower under the 'telephone yes' intonation. Both behaviours, in turn, give a narrower and higher rise or fall in questions and unfinished statements, and a narrower and lower rise or fall for 'telephone yes' answers. The two behaviours are quite marked off from the wider rise or fall found in the statement and citation intonations. The pitch pattern of the question intonation is quite different
from the pitch pattern found in the unfinished statement intonation. The unfinished statement intonation was postulated as the 'sustained contour' as opposed to the 'rise contour' of the questions in previous studies on intonation (see Chapter 1.3.2). We can see that this intonation is marked off from the question intonation by a different shape of rise and fall. It has a 'level ending' rise and fall as compared to the delayed rise, and the continuous or delayed fall found in statements and questions of the phonemic rise and fall tones respectively.

From the above result, I would like to propose that in terms of grammatical contrasts we can postulate 3 intonation contours or three contrastive tunes.

1. **Tune 1** is the unmarked tune found in the reading citation forms and statements. All the static tones have a final fall and the dynamic tones have a wide rise (the rise) and a wide fall (the fall). This tune is similar to the 'the Falling Contour' of the phonemicists (see Chapter 1.3.1).

2. **Tune 2** has two members:
   2.1 **Tune 2** is the marked tune found in questions. All the static tones lose their final fall and become level. The dynamic tones have a narrower and higher rise (the rise) and a narrower and higher fall (the fall). This tune is comparable to 'the Rising Contour' of the phonemicists.
   2.2 **Tune 2+** is the marked tune found in unfinished statements. This tune is distinguished from the ordinary Tune 2 by a level ending pitch configuration in dynamic tones and a longer duration in static tones. This tune is comparable to 'the Sustained Contour' of the phonemicists.

3. **Tune 3** is the marked tune found in the 'telephone yes' answers. The pitch height becomes lower and the pitch range narrower. It is also marked by a shorter duration and softer degree of loudness. This
tune has never been proposed by previous phonemic postulations, but I found that it is quite a distinct tune especially when we go on to the intonations used to convey attitudinal meaning which will be discussed in the next section.

3.3.2 The Tonal Behaviour of One-Word Utterances with Different Attitudinal Meanings

The following table is the summary of the tonal behaviours of one word-utterances elicited with different attitudes. Table 3.3 will illustrate the general characteristics of the phonemic tones under different attitudes. And Table 3.4 will give the phonetic details of each phonemic tone when uttered with different attitudes.

It is interesting that the attitudinally and emotionally unmarked utterances or the 'neutral' which are put on cue cards in a systematic random order in the elicitation process (see p. 147), have similar behaviours.

Table 3.3

The result reported in this table is based on the acoustic and the auditory records Fig 3.31-3.120 in Appendix 2.

<table>
<thead>
<tr>
<th>Semantic contrasts</th>
<th>Phonetic characteristics</th>
<th>Pitch Height</th>
<th>Pitch Range</th>
<th>Length</th>
<th>Degree of Loudness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unmarked or Neutral</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>2. Emphatic</td>
<td>higher &amp; lower</td>
<td>wider</td>
<td>longer</td>
<td>louder</td>
<td></td>
</tr>
<tr>
<td>3. Anger</td>
<td>higher &amp; lower</td>
<td>wider</td>
<td>longer</td>
<td>very loud</td>
<td></td>
</tr>
<tr>
<td>4. Concealed Anger</td>
<td>lower</td>
<td>narrower</td>
<td>shorter</td>
<td>softer</td>
<td></td>
</tr>
<tr>
<td>5. Agreeable</td>
<td>higher &amp; lower</td>
<td>wider</td>
<td>longer</td>
<td>louder</td>
<td></td>
</tr>
<tr>
<td>6. Disagreeable</td>
<td>higher</td>
<td>narrower</td>
<td>shorter</td>
<td>louder</td>
<td></td>
</tr>
<tr>
<td>Semantic</td>
<td>Pitch Height</td>
<td>Pitch Range</td>
<td>Length</td>
<td>Degree of Loudness</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>--------------</td>
<td>-------------</td>
<td>--------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phonetic</td>
<td>Pitch</td>
<td>Pitch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>characteristics</td>
<td>Height</td>
<td>Range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Interested</td>
<td>higher &amp;</td>
<td>wider</td>
<td>normal</td>
<td>normal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lower</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Bored</td>
<td>lower</td>
<td>narrower</td>
<td>shorter</td>
<td>softer</td>
<td></td>
</tr>
<tr>
<td>9. Believing</td>
<td>higher &amp;</td>
<td>wider</td>
<td>longer</td>
<td>louder</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lower</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Disbelieving</td>
<td>higher</td>
<td>narrower</td>
<td>+shorter</td>
<td>+louder</td>
<td></td>
</tr>
<tr>
<td>11. Authoritative</td>
<td>lower</td>
<td>normal</td>
<td>+shorter</td>
<td>+louder</td>
<td></td>
</tr>
<tr>
<td>12. Submissive</td>
<td>normal</td>
<td>normal</td>
<td>+longer</td>
<td>softer</td>
<td></td>
</tr>
<tr>
<td>13. Surprised</td>
<td>higher</td>
<td>narrower</td>
<td>+shorter</td>
<td>+louder</td>
<td></td>
</tr>
</tbody>
</table>

From table 3.3 we can conclude that in terms of pitch fluctuation, there are 4 types of behaviour.

1. The pitch height and the pitch range are similar to the reading citation forms and statements or Tune 1 postulated in 3.3.1. This behaviour is found in utterances which are attitudinally and emotionally unmarked. The neutral utterances are put in in the elicitation process in a systematic random order (see Chapter 3.2.1, The Cue-Cards).

Utterances which are marked with submissive attitude also have the same behaviour in terms of pitch but are marked by other prosodic features i.e. softer degree of loudness and sometimes by lengthening of duration. This behaviour can be postulated as a subclass of Tune 1 and will be called Tune 1+.

2. The pitch height is higher and the pitch range is narrower. This behaviour is similar to those found in questions or Tune 2 postulated in 3.3.1. This tune is usually accompanied by shortness and loudness. The behaviour is found in utterances elicited with disagreeable, disbelieving and surprised attitude.
3. The pitch height is lower. Two subclasses of this behaviour can be postulated from the description of pitch patterns. Tune 3 has a lower pitch height and a narrower pitch range, this tune is always accompanied by shortness and softer degree of loudness. This is found in utterances marked with concealed anger, or bored attitude. It is similar to the tune found in 'telephone yes' statement discussed in 3.3.1 above.

The second class of Tune 3 has a lower pitch height but the pitch range is normal. This behaviour is found in utterances marked with authoritative attitude. This tune will be called Tune 3+. It is always accompanied by shortness and louder degree of loudness.

4. The pitch height is higher in the phonemic high, mid, and fall tones which have a non-low beginning point. The pitch height is lower in the low and the rise phonemic tones which have a low beginning point. The pitch range is wider, the static tones become non-static and the dynamic tones become more dynamic. In other words, there is a marked pitch fluctuation, up and down or down and up, found in both the static and the dynamic tones. (See details in Table 3.4 below.) This behaviour is found in utterances marked with emphatic, agreeable, interested, or believing attitude. It is usually accompanied by longer duration and a louder degree of loudness. This behaviour will be postulated as Tune 4 here.

We may conclude that there are 4 contrastive tunes postulated from the behaviours of one-word utterances elicited with different attitudinal meanings.

Tune 1 or the 'neutral tune' is found in unmarked utterances.

Tune 1+ has the same pitch behaviour as Tune 1 but is accompanied by a softer degree of loudness and sometimes a longer duration. It is found in utterances marked with submissive attitude.

Tune 2 has higher pitch height and narrower pitch range. This tune is always accompanied by shortness and loudness. It is found
in utterances marked with disagreeable, disbelieving or surprised attitude.

Tune 3 has a lower pitch height and a narrower pitch range. It is always accompanied by shortness and softness. This tune is found in utterances marked with concealed anger, or bored attitude.

Tune 3+ has lower pitch height and a narrower pitch range. It is usually accompanied by shortness and loudness. It is found in utterances marked with authoritative attitude.

Tune 4 has wider pitch range and is clearly marked by the kinetic pitch movement. It is usually accompanied by loudness and longer duration. This tune is found in utterances marked with emphatic, anger, agreeable, interested, believing attitudes.

Concerning the behaviour of each phonemic tone when superimposed with these 4 contrastive tunes, Table 3.4 below gives the phonetic details of each phonemic tone grouped into two classes: the static and the dynamic.

<table>
<thead>
<tr>
<th>Tune contrasts</th>
<th>Phonemic tone contrasts</th>
<th>Tune 1</th>
<th>Tune 2</th>
<th>Tune 3</th>
<th>Tune 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I) the high</td>
<td>high narrow continuous rise &amp; fall</td>
<td>extra high level</td>
<td>mid level</td>
<td>high wide continuous rise &amp; fall</td>
<td></td>
</tr>
<tr>
<td>2. the mid</td>
<td>mid narrow continuous fall</td>
<td>high level</td>
<td>low level</td>
<td>mid wide continuous rise &amp; fall</td>
<td></td>
</tr>
<tr>
<td>3. the low</td>
<td>low narrow continuous fall</td>
<td>mid level</td>
<td>extra low level</td>
<td>mid narrow delayed rise</td>
<td></td>
</tr>
<tr>
<td>Phonemic tone contrasts</td>
<td>Tune 1</td>
<td>Tune 2</td>
<td>Tune 3</td>
<td>Tune 4</td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td><strong>II)4. the rise</strong></td>
<td>low wide delayed rise</td>
<td>mid narrow delayed rise</td>
<td>low narrow continuous rise</td>
<td>low wide continuous fall &amp; rise</td>
<td></td>
</tr>
<tr>
<td>5. the fall</td>
<td>high wide continuous or delayed fall</td>
<td>high or extra high narrow delayed fall</td>
<td>mid or high wide continuous fall</td>
<td>high wide continuous rise &amp; fall</td>
<td></td>
</tr>
</tbody>
</table>

The behaviour of the phonemic tones when they are superimposed by Tune 1, Tune 2, and Tune 3 have already been discussed in 3.3.1 and the first part of this section.

Another interesting behaviour is the behaviour postulated as Tune 4 in this section. The two static tones i.e. the high and the mid, and the dynamic fall tone become a rise and fall under this intonation. This, I believe, gives a lot of problems in recognition of these 3 tones especially if the listener does not have any auditory reference from the context. Pantupong (1973) reported her observation that the phonemic mid and the fall have the same phonetic realization when the word occurs before a pause and is uttered with emphasis (see also p. 133). From this study the phonemic high tone also has a rise-fall phonetic realization when the word is uttered with emphasis.

Another static tone, the low has a rise at the end. Its behaviour under Tune 4 is quite different from the behaviour of the phonemic mid tone as compared to their similar behaviour under Tune 2 (see table 3.4 above). The dynamic rise tone has a fall before its rise and becomes a fall-rise when the word is uttered with emphasis. It seems
that speakers put emphasis on the utterances by expanding the pitch range of the tones, in turn, the static tones become dynamic and the dynamic tones become more dynamic as compared with the behaviours found under other intonations. Speakers also increase the degree of loudness and the length of the utterances under emphatic intonation.

From the study of tonal behaviours of one-word utterances in Thai, we can conclude that:

1. The 'Tonal System' of intonation does not contaminate the system of tone in the language. Each phonemic tone still keeps its phonetic feature distinct from other phonemic tones. Under some tunes, the physical acoustic pitches of the tones are similar, but auditorily speaking one can recognize the tones when there is an access to the pitch range, pitch height and pitch shape of other phonemic tones nearby. However, I believe that if these one word utterances are decontextualized and used for recognition tests, subjects would have more difficulties compared to the previous report of recognition tests of tones(with citation intonation) in the past. This needs to be proved by further research.

2. There are 4 primary tunes in the tonal system:

Tune 1 or the 'Falling Tune' is realized with a normal pitch range, pitch height, length and degree of loudness. Tune 1+ is similar to Tune 1 in terms of its pitch height and pitch range but is marked off from Tune 1 by a softer degree of loudness and sometimes a longer duration.

Tune 2 or the 'Rising Tune' is realized with a higher pitch height and a narrower pitch range. There are two members of this tune. Tune 2 with tense ending; this tune is always accompanied by shortness and loudness. Tenseness and glottal constriction is clearly perceived but there is no instrumental evidence to support this auditory observation. The second member, Tune 2+, has a lax ending; it is always accompanied by longer duration. In dynamic tones the pitch contour is quite
distinct i.e. they have level ending rises or falls as compared to the continuous or delayed rises or falls found under other intonations. This tune has been called 'the sustained contour' by the phonemicists (see chapter 1.3.2).

Tune 3 or the 'Lowering Tune' is realized with lower pitch height. There are two members of this tune. Tune 3 is always accompanied by a narrower pitch range, shortness and softness. Tune 3+ is always accompanied by a normal pitch range and sometimes by shortness and loudness.

Tune 4 or the 'Raising Tune' is realized with a wider pitch range. In terms of pitch height, the phonemic tones which have a non-low starting point (the high, the mid, and the fall) will have a high starting point; then the pitch is raised to a higher point and falls down. The ending point has a lower pitch than normal i.e. the pitch range is wider. The phonemic tones which have a low starting point (the low, and the rise) will have a higher starting point. The phonemic low tones have a final rise which is very distinct. The phonemic rise tones have a fall before the rise. Since there is a wider pitch range, the ending point is higher than normal.

3. The 4 Tunes are used to convey different grammatical and attitudinal meanings as summarized in Table 3.5 below.

<table>
<thead>
<tr>
<th>Tune 1</th>
<th>Tune 2</th>
<th>Tune 3</th>
<th>Tune 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Statement</td>
<td>1. Question</td>
<td>1. 'Telephone Yes' intonation</td>
<td>1. Emphatic</td>
</tr>
<tr>
<td>2. Citation</td>
<td>2. Disagreeable</td>
<td>2. Concealed anger</td>
<td>2. Anger</td>
</tr>
<tr>
<td>5. Unfinished statement (2+)</td>
<td></td>
<td>5. Believing</td>
<td></td>
</tr>
</tbody>
</table>
3.3.3 The Universal Falls and Rises

'Intonation universals' has been an interest among linguists who work on linguistics across languages (Malecot: 1974, Bolinger: 1978, Cruttenden: 1981). From this view one can look at this system of pitch as a system of two non-arbitrary signs or 'ideophones': the Falls and the Rises. In terms of meanings, the Falls convey 'Finality' (closed) and the Rises convey 'Non-Finality' (open).

This hypothesis proposes a more abstract level of meanings of intonation. In the literature, one can see that intonation universals is not a new concept. Beach (1924), as discussed in chapter 1.2, mentions three systems of pitch which are classified by their functions in speech: 1) the semantic tone is the most arbitrary among the three types and is found only in some languages, 2) the grammatical tone is non-arbitrary; Beach's discussion on this function of pitch is very similar to our contemporary linguists's discussion on the 'discourse function' of intonation (Brazil: 1975, 1978; Cruttenden: 1981); Beach's view on grammatical function is quite different from the Question/Answer grammatical distinction found in earlier British literature and in many recent text books used for English language teaching (see Armstrong & Ward: 1929, Jones: 1918), 3) the emotional tone is also non-arbitrary; his view of this function of pitch is very similar to our 'attitudinal function' of intonation.

The question of 'questions' considered as a grammatical category is a problematic one (Pope: 1977; Searle: 1969, 1972, 1979). What is a question? If questions are 'what we use to ask for new information then the polar questions are not questions. Polar questions are used to express the presupposed belief, the attitude of the speakers towards the matter being asked; in other words, the information is given by

1 In Thai polar questions can be asked with different final question particles which expound the presupposed belief and the attitude of the speaker, and the proposition of the question situation (see Kullavaniyajaya, 1980 a & b and chapter 1.4.3 of this thesis).
the context of situation but it may be the same or different from the speaker's believed information. Contrary to polar questions, information questions or wh-questions are used to ask for new information.

Result and conclusions on the tonal behaviours of one-word utterances in Thai give a support to the intonation universals hypothesis. If we summarize the tonal behaviours of the traditional grammatical contrasts and the attitudinal contrasts in terms of 'Falls' and 'Rises', we will see a clear connection between the tunes and the meanings they conveyed.

**The Falls**
1. Statement (Tune 1)
2. Consultative code label of agreement or 'telephone yes' intonation (Tune 3)
3. Attitudinally unmarked response (Tune 1)
4. Marked with concealed anger (Tune 3)
5. Marked with bored attitude (Tune 3)
6. Marked with authoritative attitude (Tune 3+)
7. Marked with submissive attitude (Tune 1+)

**The Rises**
1. Question (Tune 2)
2. Unfinished statements (Tune 2+)
3. Marked with disagreement (Tune 2)
4. Marked with disbelieving attitude (Tune 2)
5. Marked with surprise (Tune 2)

**The Falls: Finality**

Finality, found as the core of statements, responses with agreement, neutral or attitudinally unmarked responses to questions, and authoritative answers is quite explicit and needs no explanation. Response with concealed anger is realized with a fall, semantic 'finality' can be
discussed in terms of 'hidden' or concealed arguments shown by a lowering pitch. Responses with boredom also show a finality or tiresomeness of arguments by a lowering pitch. Submissive responses show a finality in terms of withdrawal of arguments.  

The Rises: Non-Finality

Non-finality found as the core of questions and responses with disagreement, disbelieving attitude, or in surprised answers i.e. quite explicit and can be viewed as 'non-finality' of arguments. Unfinished statements also show non-finality of arguments. Actually, we can divide the Rises into two subclasses: the tense ending rise and the lax ending rise. Questions and responses with disagreement, disbelieving and surprised attitudes are marked with the tense ending rise i.e. they are usually realized with shortness, loudness and sometimes glottal constriction is perceived. Unfinished statements are marked with the lax ending rise, they are usually realized with longer duration and a normal degree of loudness. The tense ending rise seems to express a stronger non-finality and a sign of insistence on more arguments whereas the lax ending rise is used to express a weaker non-finality and a need of tenable argument both from the speaker himself or from the listener.  

There is another tune which I have not brought into the discussion on the Universal Falls and Rises yet. Tune 4 or the 'Raising' tune in the postulation of Thai intonation. This tune is found in responses marked with emphasis, anger, strong agreement, belief, and interest.  

1 When I gave a seminar on this aspect of intonation, another aspect of submissiveness was raised i.e. politeness. I did not deal with this aspect of intonation in my study but from my observation politeness is always realized with a higher pitch height and a narrow pitch range. However, it is not accompanied by tense ending as in questions. It has an intonation which is similar to the unfinished statements (Tune 2+).  

2 This can be interpreted in terms of politeness. (See note 1 above.)
In terms of universality, one may put this tune under the Falls and discuss its semantic finality. However, I would like to raise a question here. Is it possible to postulate the 'Universal Convolution'? Is there a universality of contradiction or controversy of finality and non-finality. The contradiction might be the disagreement of what the speaker believes and what the speaker is informed or sees from the context of situation. The semantic of this tune is quite similar to Halliday's tone 4 and tone 5. Halliday's tone 4 (a fall-rise) is discussed in terms of non-finality (i.e. ...there is a 'but' about it...) but I think it does not only express non-finality as tone 2 (wide rise) and tone 3 (narrow rise), or tune 2 and tune 2+ in this thesis, but it also expresses a contradiction in the speaker's mind on the subject. Halliday's tone 5 (a rise-fall) may be discussed in terms of finality i.e. insistence, emphasis, definiteness etc., but I think that it does not only express finality as tune 1. It is used to express a contradiction in the speaker's mind on the subject being spoken about.

The semantic of 'emphasis' is a problematic one. Why do speakers have to emphasize after all? Emphasis is reported in the literature to show contrastiveness, definiteness, contradiction, anger etc. (see Coleman: 1914; Halliday: 1963, 1967; Greenberg: 1969; Chafe: 1976; Enkvist: 1980). I have observed that words with lexical 'positive value' such as /'diːm/ (good), /suːʃəl/ (beautiful), /ˈrʊʊd/ (delicious) etc. are usually taken as sarcastic when spoken with tune 4, whereas words with lexical 'negative value' such as /'raːj/ (wicked), /ˈbaːf/ (mad), /ˈkʰɪːf ɾeːl/ (ugly) are usually taken as tenderness and affection of the speaker towards the subject.

I would like to propose that the theory of intonation universals should cover the aspect of emphasis postulated as the phonological
'convolution' which is phonetically realized as complex tunes. More investigation on this aspect of intonation in languages or across languages should be done for a better understanding of this complex tune.
Description of intonation can be in terms of a contrastive system of pitch contour of sentences in a language but past work on intonation has shown that this kind of analysis\(^1\), especially in languages in which stresses are linguistically significant, gives a very generalized view of this complex phenomenon. Rhythmical variation of stressed and unstressed syllables in connected speech caused by different placement of pauses and accents plays an important role in Thai sentence prosody (Henderson : 1949, Noss : 1964, 1972, Hiranburana : 1971, Gandour : 1976, Luangthongkum : 1978). The description of intonation, defined as the pitch contour of the utterance used to convey the grammatical and attitudinal meaning of a syntactic unit, will not be explicitly done if one does not take rhythmical variation of speech into account. Undoubtedly there is interplay between the system of rhythm in Thai, which has been proved by past research to have an influence on the pitch of stressed and unstressed syllables (Henderson : 1949, Hiranburana : 1971, Gandour : 1976), and the system of intonation contrasts described in the previous chapter, to produce the overall pitch contours of the utterances in Thai speech. Describing intonation, which is one of the complex realizations of the meaning of an utterance, is just like describing a complicated engine. The mechanical engineer can start from pieces of the engine, describe each piece as he continues to put them together, then when all the pieces are put together he can show how the engine works. Or the other way round, he can show the engine and its function first then dismantle it into small pieces, describe each piece as he goes.

\(^1\) See discussion on the past literature in Chapter 1.3.
on dismantling until he cannot break it up into smaller pieces. To my way of thinking, which ever way one chooses in one's description one still describes the same thing. In linguistic analysis, if the analyst is a speaker of the language himself, he seems to know intuitively where to start and where to stop, and the second way of description may be more convenient to exemplify how the system and structure work.

Speech can be viewed as a big chunk of continuous though segmentable sounds which the speaker uses to explain and describe things and at the same time to express his attitudes and emotion towards things. These continuous sounds can be descriptively divided into units of different sizes and structures according to their phonetic hierarchy. Brosnahan and Malmberg have an interesting remark about these 'phonetic groups':

"In all languages the sounds occurring in the chain of speech show a tendency to cluster or group themselves in such a way that the transitions between members of such groups are distinguishable, usually in their greater degree of closeness or tightness of combination, from the transitions between members of different groups. Such clusters or groups may be termed 'phonetic group'. The most important and widespread are the syllable, the stress group, the tone group and the breath group." (1970 : 139-140)

The most suitable description of these 'phonetic groups' is still in question. There is a trend towards saying that the description of these groups in purely general phonetic terms is inadequate for languages of the world and phoneticians need to take other aspects of linguistics: phonological, syntactic and semantic into account.¹

I believe that phoneticians can descriptively analyse connected speech into smaller units, and along the time scale we can describe sounds as short as one millisecond, especially with the aid of modern instrumental techniques, but it is interesting to find out how these acoustic phenomena combine together and form a meaningful unit in a particular language.

¹ Valuable arguments on the descriptions of syllable, stress and stress group or foot, tone group and tonic are found in Ladefoged (1975), Dauer (1980), Brown, Currie and Kenworthy (1980) respectively.
In the analysis of intonation in this chapter, I will describe and exemplify intonation in Thai on the assumption that the pitch contour of any syntactic unit is the realization of the integrated system of stress and intonation.

There will be five sections in this chapter:

4.1 The pause-defined unit and the prominent stressed syllable
4.2 On postulating the intonation unit: the tone group
4.3 The foot and tonality contrasts
4.4 The tonic and tonicity contrasts
4.5 The tonal behaviour of the tonic and the overall contour.

4.1 The pause-defined units and the prominent stressed syllables

In continuous speech, the clearest phonetic cues which enable the analyst to divide speech into smaller units are pauses. From a general point of view it seems that speakers may put pauses at any of the syntagmatic boundaries: between syllables, words, phrases, clauses or sentences. In conversational speech one might even find pauses between segments especially when the speakers are thinking or hesitating. When there are no pauses we sometimes find 'pause fillers' such as [a:], [v:] or [m] etc.

From the phonetic point of view using pauses as the phonetic signals we can make the first analytic split of continuous speech into pause-defined units. A pause-defined unit is a unit at the phonetic level; it is the stretch of sound continuum from one pause to another pause. Within this unit we have sounds which cluster into syllables, stressed and unstressed. Among the stressed syllables in a pause-defined unit, there is always a stressed syllable which is relatively

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1 The term is borrowed from Brown, Currie and Kenworthy (1980), though I will strictly use this term in a general phonetic sense. I found their concept of 'pause-defined unit' is quite similar to the American phonemicists' 'juncture' (Trager and Smith ; 1951)
more prominent than any other stressed syllable which I should like to call at this stage 'a prominent stressed syllable'. There may be only one or more than one, prominent stressed syllable within a pause-defined unit. In past work done on stress in Thai, stressed syllables are reported to have longer duration and higher intensity, and unstressed syllables are reported to be realized with a complex of phonetic correlates i.e. shorter duration, lower intensity, and changes in the realization of lexical tones and consonants and vowels. However, past research has put a lot of emphasis on the unstressed syllable, and it has been taken for granted that the realization of lexical tones and consonants and vowels of the stressed syllable in connected speech is similar to that of the syllable spoken in isolation. It has also been reported that the last stressed syllable before a pause is usually the most prominent i.e. has the longest duration, and in some situations when emphasis or contrastiveness of information is put on to the word or words in the utterance, the most prominent stressed syllable will be shifted to the emphasis or contrastive point.

The Spoken Paragraph

I should like to start my analysis of intonation in continuous speech in Thai by investigating the unmarked (non-emotional) intonation used by speakers in the reading pronunciation before going on to the

1 See discussion in Chapter 1.

2 Luangthongkum (1978) posited 4 abstract lengths for monosyllabic feet after she did the phonetic analysis of the duration of stressed and unstressed syllables: Length 2 for a monosyllabic foot after a pause, Length 4 for a monosyllabic foot before a pause, Length 5 for a monosyllabic foot before a pause (where she noted that the extra length helps the utterance to sound more pleasant and smooth), and Length 3 when the foot occurs elsewhere in the stretch of speech.

more complex conversational speech. With this style of speech I do not have to take the emotional and attitudinal contrasts into account at the moment. However, the semantic, syntactic and phonetic factors will be brought into discussion.

The spoken paragraph analyzed here is the abstract of an article. It has been chosen for two reasons; firstly, being an abstract it is semantically unified, short and comprises the complete whole which is ideal for this preliminary analysis; secondly, being an academic article it has many polysyllabic coined words and compounds which have interesting accentual patterns relevant to the study of stress and rhythmical variation connected with the study of intonation in continuous speech in Thai. The paragraph was read by myself (SL), and Dr. Napaporn Jamroonkul (NJ) who is a native speaker of Bangkok Thai and has the same socio-economic background as I do.

The analysis will be directed to answer these questions:

1. On the assumption that continuous speech can be descriptively divided into smaller units, what are the phonetic cues one can use to divide the spoken paragraph into smaller units?

2. In past work done on Thai rhythm, speakers use pauses to divide their speech into smaller units of information. Pauses tend to have durational differences within the speech of a speaker and also within the speech of different speakers. Does the variation have any function in speech?

1 The two main types of spoken language proposed by Abercrombie (1959) are 'spoken prose' which includes reading aloud and monologue, and 'conversation' which includes all linguistic occasions when there is the opportunity for give and take i.e. there is more than one active participant in the situation.

2 In the study of rhythm in Thai, Luangthongkum (1978) found that there are durational differences in pauses within the speech of one subject and also between the speech of different subjects. She then posited one, two and three rhythmical silent stresses according to the length of the pauses. However, she did not discuss the function of these silent stresses as related to the structure of text.
3. In each pause-defined unit, there is a stretch of sound continuum of stressed and unstressed syllables. On the assumption that a tone group is an intonation unit or a pitch contour of a syntactic unit what are the problems facing the analyst in dividing speech into tone groups?

4. What is the tune or intonation of this emotionally unmarked, informative style of speech?

The passage in its original form and its English translation together with the phonemic transcription are given below. The asterisks given in the English translation stand for the blank spaces which are the only punctuation marks used in Thai script.\(^1\) In the Thai writing system, there is not always a blank space between words as in English. One will find blank spaces either between words or phrases or sometimes between clauses or sentences. Any Thai who learns to read and write is able to use the blank spaces in their writing without being taught, and there are no definite rules as to how the blank spaces are used or should be used. However, any educated Thai will be able to judge by the use of blank spaces whether the writer is illiterate or whether he is still not very fluent in his writing, e.g. children who try to write a few words or foreigners who have just started their writing lessons, etc. No research has been done on the use of these blanks in the Thai writing system. It seems as if blank spaces in Thai are used to mark syntactic boundaries, emphasis etc. in the same way as punctuation marks such as periods, commas, colons, semi colons etc. are used in English. It will be interesting to find out whether these blank spaces are used as syntactic markers alone or whether they are

\(^1\) In modern writing styles such as scientific or technical reports or academic writing, one might find some punctuation marks i.e. colon, periods etc. In script writing for plays and drama, question marks and exclamation marks are also used.
used to mark other information, such as emotion, points of emphasis, or termination, or whether they have some other function such as 'tentative or pseudo-tentative function' or 'rhetorical function'\(^1\) in some styles of writing. We still need solid research on this aspect of Thai linguistics.

Besides the asterisks, dashes (--) will be given to indicate the ends of the lines in the Thai script. The word or words in parenthesis are words which do not occur in the Thai sentence but without which the translation into English will not make sense. The literal meanings of the words are given under the phonemic transcription. The line under sequences of syllables in the phonemic transcription indicates that the underlined syllables together form a word i.e. polysyllabic words or compounds. If the syllable is not underlined, it is a word i.e. a monosyllabic word by itself. Accent placements in words are given according to the rules posited in Chapter 2.

The passage in its original form:

In his discussion on the functions of silent stress Abercrombie (1968) exemplifies the 5 functions of silent stress he found in English: 1) syntactic function 2) emphatic function 3) terminal function 4) tentative or pseudotentative function i.e. when the silent stress shows that there is a hesitation about the subject, and 5) rhetorical function which is the rhythmic elegant variation. I believe that the blank spaces in different styles of Thai writing will reveal more or less the same functions as the silent stress found in spoken English.
Euphonic Couplets: Another aspect of phonology and meaning in Thai.

Reduplicatives, the kind which are called elaborated reduplicatives or euphonic couplets (are what) speakers of Thai normally use in everyday conversational speech. Most people who study reduplicatives give the explanation that to reduplicate (is) to create euphony - beautiful sounds and a convenient way to speaking. The author (of) this article has her view that this kind of euphonic reduplication not only creates euphony, beautiful sounds but (it) also has characteristics which are rule governed (and it) has meanings which should be studied in other words (it) has both specific sound - patterning which may be able to specify and (it) has specific meanings which every Thai speaker knows and uses effectively and fluently.

The phonemic transcription of the passage:

```
kham^m 'sam^h 'ut^l ca^m 'ra^h 'na^h +12 wi^h lai^f
```

```
reduplicative euphonic *
```

```
'rik^l 'qa^f 'ma^l kho^r^ 'ra^h 'bop^l 'sa^f 'la^h
```

more aspect one of sound system and

```
'riak^f wa^f kham^m 'sam^h svg^r 'sa^j
```

kind which call that elaborated reduplicative or reduplicative euphonic that *

```
phu^f 'phuif^f pha^m 'sa^f 'thaj^m 'chaj^h kan^m
```

speaker Thai language use (reciprocal Post V.)

1 This is the only punctuation mark, besides the blank spaces, which is used in this piece of writing.
normally in language conversation

everyday people who study reduplicative

most give explanation that

reduplication that for create euphony - Beautiful sounds and convenience for speaking

writer article this have opinion that * reduplication kind euphonic this * not only create euphony beautiful sounds * but have characteristics which have rule * have meaning which should study * say that * have both pattern specific of sounds which may specify able * and have meaning specific which speaker language

Thai everyone learn and use effectively *

fluently
I have done three kinds of analysis of this spoken paragraph:

1. A semantic analysis
2. A syntactic analysis
3. A phonetic analysis.

With these analyses which I will report below, I will then propose my phonological analysis of the units of intonation or tone groups in my language.

4.1.1 The semantic analysis

The spoken paragraph which is analysed here is the abstract of an article. It is composed of the topic which is the name of the article, and the comments which are divided into 3 parts as shown below.

Topic "Euphonic Couplets: Another aspect of Phonology and meaning in Thai."

Comments are divided into 3 parts

1. The present topic:
   "Reduplicatives, the kind which are called elaborated reduplicatives or euphonic couplets (are what) speakers of Thai use in everyday conversational speech."

2. Past work on the present topic:
   "Most people who study reduplicatives give the explanation that to reduplicate (is) to create euphony, beautiful sounds and a convenient way to speaking."

3. The author's proposal:
   "The author (of) this article has (her) view that this kind (of) euphonic reduplication not only creates euphony, beautiful sounds but (it also) has meaning which should be studied, in other words, (it) has both specific sounds patterning which may be able to specify and (it) has specific meaning which every Thai speaker knows and uses effectively (and) fluently."
4.1.2 The syntactic analysis

The paragraph is syntactically composed of 1 NP (noun phrase) which is the name or the topic of the article and 3 sentences which are the comments. The syntactic structure of the NP and the sentences are shown in Figures 4.1 to 4.6 below. Numbers in the rectangular frames show the duration of pauses in centiseconds. The upper numbers are the duration of NJ's pauses and the lower numbers are the duration of SL's pauses. The ordinary rectangular frames stand for pauses which correspond to the blank spaces in the Thai script, the ones with dashed lines are the pauses which the speakers put in by themselves, and the double rectangular frames stand for the pauses which are relatively very long in both speakers. Where prominent stressed syllables occur other than before the pauses, this is shown by inserting double slant lines after them.

1 See details and discussion in the phonetic description of pause-defined units later in this chapter.
Euphonic Couplets: Another aspect of phonology – and meaning in Thai.
Sentence 1 in the comments: "Reduplicatives, the kind which are called elaborated reduplicatives (or euphonic couplets) (are what) speakers of Thai normally use - in everyday conversational speech."
Most people who study reduplicatives give explanation that it to reduplicate (is) to create euphony — beautiful sounds and a convenient way to speaking.
"The author (or) this article has (her) view that *this kind (of) euphonous reduplication *not - only creates euphony, beautiful sounds - but (it also) has characteristics which are rule governed *(and it) has meaning which should be studied *in other words *(it) has both specific sound patterning which may be able to specify *and (it) has specific meaning which every Thai speaker knows and uses effectively *(and) fluently."
but it also has characteristics which are (it) has enough which usually in other (it) has both specific sound categories which may be able to specify

rule governed
and have meaning specific which speaker Thai language everyone know and use effectively fluently.

And (it) has specific meaning which every Thai speaker known and use effectively (and) fluently.
4.1.3 The Phonetic Analysis

The phonetic analysis of the spoken paragraph will be described and discussed in the following order:

a. Pauses and the pause-defined unit.

b. The stressed, the unstressed and the prominent stressed syllables.

c. Arguments about the realization of unstressed lexical tones in Thai.
   - The notion of 'Neutral Tone'.
   - The changes in the realization of lexical tones when the syllables are unstressed.

d. The acoustic analysis.

e. The auditory analysis.

f. The phonetic realization of the lexical tones.
   - The neutral tone.
   - The unstressed non-linker syllables.
   - The stressed tones.
   - The pitch contour of the PDU.

a. Pauses and the pause-defined units. The spoken paragraph is phonetically divided into pause-defined units (from now on abbreviated as PDU) i.e. units of sound continuum from one pause to another pause. Within the paragraph each speaker has 25 PDU’s. Though sometimes the speakers put pauses at different places, most of the pauses occur at the same places and they always correspond to the syntactic boundaries (see Figs. 4.1-4.6).

The mingograms of the whole spoken paragraph of the two speakers are given in Figure 4.7 and 4.8 below. The figures illustrate clearly the durational variation of pauses within a speaker and between the two speakers.
The first speaker, NJ, has 24 pauses. Including the silent periods before the speech started and after the speech terminated, she has 25 PDU's. The range of the duration of her pauses is 74 centiseconds (Max 82 - Min 8). The pauses are put in ranks from the longest to the shortest in Fig 4.9.

The second speaker, SL, also has 24 pauses within her speech and 25 PDU's. The range of the duration of pauses is a lot wider than NJ's, namely 180 centiseconds (Max 186 - Min 6). SL's pauses are put in ranks and compared with NJ's pauses in Fig 4.9.

Fig 4.9 shows the variation of pauses within a speaker and between two speakers. Pauses which correspond to the blank spaces in the Thai script are generally longer than pauses that the speakers put in by themselves. However, there is some overlapping of the duration of the two kinds of pause as shown in the shaded area.

The pauses which correspond to the blank spaces seem to occur at the major syntactic constituent boundaries, for examples, between the two NP's of the topic NP (Fig 4.1), between sentences, between embedded sentences, between NP's and VP's of the main sentences (Fig. 4.2 - 4.6). The pauses the speakers put in by themselves also occur at the syntactic boundaries but they seem to be at the minor constituent boundaries, for example, between constituents of the embedded sentences or between two constituents of the major constituents (Fig. 4.1 - 4.6).

NJ has two relatively very long pauses (82 cs) both of which occur at the same places as the two long pauses of SL (186, 176 cs). One of the two occurs between the topic and the comments and the other occurs before the third sentence of the comments. It is interesting that the third sentence is semantically more prominent than the other two sentences, since it is what the author proposed and it is new information, whereas the first and the second sentences are the given background information.
Duration of pause in centiseconds

. = NJ
x = SL
a = pauses correspond to the blank spaces
b = pauses the speakers put in by themselves

Fig 4.9
Pauses that the speakers put in by themselves, generally speaking, occur at the same places, (i.e. after the NP of the major S in sentence 1) the occurrences of pauses are all at the same places; see Fig. 4.2 - 4.6 and cf. Fig. 4.7 and 4.8). However, there are some differences, and the differences noted here will be brought into the discussion on the analysis of tone groups at the phonological level later in this part.

NJ has a pause between the two minor NP's in the second major NP of the topic NP (see Fig. 4.1, 4.7, 4.8), whereas SL does not have a pause there. It is shown below.

**NJ**

>i: kl ' :f 'nayl kho:, r ra? h 'bop' 'si:ay/ ..pause..

/læ?h ra?q khwa:m 'ma:jr najm pha:m 'sa:lar 'thajm/

Another aspect of phonology ..pause.. and meaning in Thai.

In the major NP of sentence 1 of the comments, SL has a pause between the two N's of the Head NP, whereas NJ does not have one there, but she has a pause after the V of the sentence where SL does not have a pause (see Fig. 4.2 and cf. Fig. 4.7, 4.8).

**SL**

/kham 'sam / ..pause.. /cha? h 'nith thi: f 'ri:ak f wa;/

/kham 'sam sv:mr 'soj /

Reduplicatives ..pause.. the kind which are called elaborated reduplicatives.

**NJ**

/kham 'sam cha? h 'nith thi: f 'ri:ak f wa;/ ..pause..

/kham 'sam sv:mr 'soj /

Reduplicatives the kind which are called ..pause.. elaborated reduplicatives.

Using the same number of class intervals (10), the distribution of the durational variation of pauses of the two speakers is shown in Figure 4.10. Apart from the two very long pauses previously discussed,
Fig. 4.10

Duration of pauses in centiseconds

SL

Duration of pauses in centiseconds

NJ

min. 6 CS
max. 186 CS
average 62.92
median 42
mode 51 CS

min. 8 CS
max. 82 CS
average 45.42
median 45
mode 63.50 CS
SL seems to have more variation in the duration of pauses than NJ. The median of the distribution of the two speakers is not very different from each other (SL-42, NJ-45). The differences may have an effect on the rhetorical aspect of the reading, but this needs to be proved by further research.

The analysis of the f0 in the speech of the two speakers by PGR1 shows that f0 zero takes up about one-third of the whole speech. In SL's reading the overall duration is 62.05 seconds and there are 26.07 seconds of the f0 zero i.e. 42.01% of the speech, and in NJ's reading the overall duration is 55.91 seconds and there are 19.36 seconds of the f0 zero i.e. 34.62% of the speech. This f0 zero includes partly the silent periods during the closures of the stops and affricates, the noises of the aspirated part of the stops, the fricative release of the affricates and the voiceless fricatives but mainly it consists of the silence of the pauses. The distribution of the f0 in the speech of NJ and SL is shown in Figure 4.11 below.

b. The stressed, the unstressed and the prominent stressed syllables.

In the first part of 4.1 the spoken paragraph is divided into pause-defined units; within these units there are sequences of sounds which cluster into syllables, stressed and unstressed. At the word level, accents or the potentiality of the syllables to be realized as stressed syllables can be hypothetically assigned to words in a given language by rules. In speech the accented syllables are usually, but not always, realized as stressed syllables, whereas the unaccented syllables are usually but not always realized as unstressed syllables (see discussion in Chapter 2). The phonetic realization of stressed and unstressed syllables is quite complicated, or rather it has been

\[^1\] The computer program module, Pitch Extraction: Gold and Rabiner. (See Chapter 3.2.4.)
Described in a previous paper, it was shown that the correlate of the subjective effort was the number of overt sounds in non-stop speech. The difference in the number of objects in one language and another may be explained by the difference in the number of objects in the two languages. It is still problematic whether these differences are the result of different individual differences or the result of the language itself. The subjective effort as shown by the 'zero' individual differences may help us to recognize the correlation of stressed words with extra effort. This physiological condition should be considered in the analysis of the stressed syllables with extra effort. In this physiological condition, the stressed syllables are relatively lower in frequency.
described in a complicated way. Past research done on different language as early as Classe (1939) on English up to Dauer (1980) on Greek\(^1\) has shown that stress can be realized with a number of acoustic and auditory correlates. The problem is whether we can describe stress in general phonetic terms. Subjectively speaking, stressed syllables are syllables that the speaker produces with more effort\(^2\), to make them more prominent than the neighbouring syllables. The subjective effort is shown by a number of objective phonetic correlates. It is still problematic whether these correlates are always the same in every language or even in every speaker of the same language. Dauer has a very interesting remark in the conclusion of her study on stress in Modern Greek:

"Speech is goal-oriented: all speakers try to produce the same effect in terms of linguistic units, but the way they go about it may differ. Perhaps we could think of each speaker as having his own particular 'recipe' for producing stressed syllables some making more use of pitch variation other length etc. yet the result is linguistically the 'same'. Individual differences help us to recognize the speaker, yet altogether the type of 'cake' produced by Greek speakers is distinct from that produced by English speakers." (1980, 305.)

It is still in question how far there are common characteristics of stressed syllables in different languages. If it is true that stressed syllables are produced with extra effort, this physiological condition should produce syllables with relatively longer duration,

1 Dauer (1980) phonetically describes 'stress' in Modern Greek and compares it with 'stress' in other languages. I found her work one of the most notable contemporary contributions to the understanding of the notion 'stress'.

2 Catford tries to describe stress in articulatory or motor phonetic terms. He believes that stress is produced with higher initiatory power and has been proved to be so in English. (Catford; 1977, 84)
higher intensity and higher pitch. Stressed syllables in many languages have been shown to have common characteristics eg. relatively longer duration and higher intensity as reported in English, Greek, Thai etc. However stressed syllables in different languages often have some characteristics which are specific to the languages described, for example, the changes of the consonant and vowel qualities or other properties of the syllable, such as lexical tones in tone languages. The realization of stressed syllables in terms of pitch is very interesting and complicated. If only the system of stress is superimposed on the syllables as in pronouncing isolated words in English, the stressed syllables are usually realized with a relatively higher pitch due to increase of subglottal air pressure. In connected speech the system of intonation must also be taken into account when one investigates the pitch of stressed syllables. In tone languages there is also another system which concerns pitch, i.e. the inherent lexical tones, and these must be taken into account.

There are two pieces of research which I consider as the most substantial contributions to the phonetic aspect of stress in Thai: Hiranburana (1971) and Luangthongkum (1978). The latter author uses instrumental aids to measure the duration of stressed and unstressed syllables in order to posit the unit of rhythm i.e. the foot, which is a rhythmical unit of speech from one stressed syllable up to but not including the next stressed syllable. She does not discuss other aspects of stressed syllables, and for her, duration is the only cue used to determine whether the syllables are stressed or not. Hiranburana (1971) has done a more total study of the phonetic realization of stressed and unstressed syllables to posit the phonetic realization rules for

1 The concept of rhythmical unit has been taken up from Steele (1779) and explicitly described by Abercrombie (1951, 1964 a, 1964 b, 1967).
what she calls 'accented' and 'unaccented' syllables. The two authors both report that stressed syllables are realized with relatively longer duration. Hiranburana reports that stressed syllables are usually louder, and she also reports 3 major segmental changes of unstressed syllables: 1) The vocalic segments are centralized and modified by the phonetic context. 2) There is glottal stop deletion in syllables which, when stressed, end with glottal stops. 3) There is an elision of non-vocalic or consonantal units when the consonant occurs in front of an identical unit. The changes reported are particular to Thai, although the first and the third changes are similar to what occurs in some other languages. These changes might be due to reduced effort expended on the unstressed syllables. However, the inherent qualities of the segments are still there and they are specific to the sounds of that particular language.

c. Arguments about the realization of unstressed lexical tones in Thai.

In tone languages, pitch is a property of the syllable as much as the consonants and vowels. The system of stress superimposed on to the syllables has a strong influence on the realization of lexical tones as much as on the duration and qualities of vowels or consonants. Because of this aspect one cannot state a generalized view of the realization of pitch in stressed and unstressed syllables as in English, Greek or other languages which do not have lexically significant pitch like Thai or Chinese. The voiced segmental units in tone languages which already carry two systems of pitch, i.e. lexical pitch and syntactic pitch simultaneously have the system of stress superimposed on them. This system, undoubtedly, affects the two systems above both in absolute acoustic terms and in perceptual auditory terms.

1 See discussion on the definitions of pitch, tone and intonation in Chapter 1.
Reports on the changes in the realization of lexical tones when the syllables are unstressed are found in many major works on Thai as early as Henderson (1949) when instrumental techniques were not easily available, and the analysis is based on the auditory aspect of pitch only up to Gandour (1975) when instrumental techniques were making great advances.

No research has been done on the realization of the stressed lexical tones in connected speech. It has been taken for granted that they are similar to those pronounced in isolation. This aspect will be examined in this part.

The main arguments in past work about the realization of the unstressed lexical tones in Thai are:

1. The notion of 'neutral tone' posited by Henderson (1949).
2. The changes of the realization of lexical tones when the syllables are unstressed.

**The Notion of 'Neutral Tone'**

Henderson (1949) posited the 'neutral tone' which she stated clearly is a one unit tone system, as contrasted with the five unit tone system of the ordinary syllables. It is clear to me that this unit is an abstract phonological unit as she states: "The actual pitch of the 'neutral tone' may vary according to context, but is most commonly mid-level." (1949: 36)

This tone is posited as the prosody of linking syllables i.e. syllables beginning with any consonant followed by a short /a/ and a glottal stop found in polysyllabic words of Pali and Sanskritic origins.

1 I will not bring in the arguments on the phonological representation of lexical tones in terms of features as Gandour (1975) does, but I will discuss the phonetic realization of the stressed and unstressed tones.

2 See detailed discussed on 'linker syllables' in Chapter 2.
I take her 'neutral tone' as an abstract unit at the phonological level whereas Gandour (1975), I believe, misinterpreted her analysis taking it as a phonetic statement and attacked her view, saying that there is no such thing as tone neutralizations and the contrast between all five lexical tones is still maintained in fast casual speech (1975: 177).

Henderson left the linker syllables tonally unmarked. However, in my notation these linker syllables will be assigned one of the two lexical tones i.e. the low or the high. My phonological representation of these linker syllables is always accompanied by one lexical tone, since these syllables, when pronounced with stress in some situations, acquire a lexical tone like other types of syllable in the language.

The phonetic realization of the 'neutral tone' in linker syllables will be investigated in this part.

The Changes in the Realization of Lexical Tones When the Syllables are Unstressed.

Lexical tones, as stated before, are the properties of the syllables in tone languages used to differentiate the meanings of words. When the syllables are not stressed, there are some changes in the acoustic and auditory characteristics of the lexical tones which have been reported in the past. However, the most recent argument which Gandour (1975) put forward, I found quite confusing and misleading. His argument concerning unstressed lexical tones is mainly on the question of their phonological representation, namely whether the dynamic tones i.e. the fall and the rise should be treated as single contour tones or sequences of level tones. He investigates the acoustic characteristics of these two tones when unstressed and concludes that the two tones still keep their fall and rise, so phonologically speaking, these tones should be represented

1 See distribution of tones in different syllable types in Chapter 1.
as single contour tones. He has brought many pieces of past work into his discussion, in what seems to me an illogical manner.\footnote{I doubt whether it is logical that he represented the description of the phonetic realization of unstressed tones described by different authors with his own interpretation and phonetic features in terms of 'sandhi tones' (1975, 172-173). As far as I am concerned, the descriptions of unstressed tones by Noss (1964) and Hiranburana (1971) presented by him are not complete. He did not take Noss's constricted high and plain high into his representation. He also did not take the feature \([+\text{modify}]\) which is one of the three phonetic realizations of unstressed tones described by Hiranburana into his account. In my view, Henderson's analysis is wrongly represented. Firstly, Henderson (1949) postulated linking prosodies of compound words and stated that these prosodies commonly affect tone and quantity (p.35), i.e. the two phonetic realizations are together represented. Gandour did not take quantity or length of syllable which is as important as tone in Henderson's work into his account; secondly, Henderson posited 'neutral tone' restricted only to a special type of syllable i.e. linking syllables (1949, 36), but he did not mention this postulation. (See discussion above and later in f) the phonetic realization of the lexical tone.) For example, some of the authors use a completely different approach of both phonological analysis and phonetic analysis. Henderson based her phonetic analysis on the auditory aspect of pitch. Using her 'auditory repertoire' and some other features of the unstressed syllables such as the shortness of the syllables, the degree of loudness etc., which undoubtedly play an important role in the reception of pitch, Henderson stated that the unstressed neutral tones are most commonly mid level, but she also stated that they can vary according to the context. If Gandour had done an auditory analysis as well as an acoustic analysis, his arguments might have been more convincing.

I found that both Hiranburana (1971) and Gandour (1975), using the generative model, are too keen on the phonological representation and nice, neat phonetic realization rules that they have forgotten that lexical tones are like any other units of sound in a language. They have their inherent properties, which one might call the phonological representation, and these properties vary according to the phonetic contexts and mostly can be explicitly described in terms of...
physiological accommodation, economy of effort and in some particular
cases in terms of language specific characteristics.¹

In all the past work done on Thai lexical tones in connected speech
I have not found any research done on the realization of these tones
when two distinct systems are superimposed on them i.e. stress and in-
tonation. I will attempt to do this here.

As I have just pointed out that the arguments as to the influence of
stress on the changes in the realization of lexical tones partly result
from the different techniques the analysts used, I have decided to use
both the acoustic and the auditory techniques to analyse this spoken
paragraph.

d. The Acoustic Analysis

The Pitch Computer and the Intensity Meter were mainly used as
the analyzers.² The 4-channel Mingograf, oscilloscope recorder, was
used to print out the record which gives 4 types of acoustic information:
the acoustic pitch or f₀ in Hz, the intensity in db, the time or duration

¹ There are languages in which one lexical tone is changed to another
lexical tone or to a definite allotone under certain phonological
or morphological rules e.g. Southern Thai (Thamthawat : 1978),
Mandarin (Chang : 1954), Hainanese (Luksaneeyanawin : unpublished
personal study), but Bangkok Thai does not display the same phenomenon.
These changes of the realization of the lexical tones either influenced
by the phonetic context or morphological context are referred to under
the same heading 'Tone Sandhi'.

² See details in Chapter 3.2.3.
in cs and the audio waveform. Spectrograms were made when information about segmental qualities was needed.

From these acoustic records, I segmented the stretch of sound continuum between two pauses i.e. a pause-defined unit (PDU) into syllables. The records are used as supporting evidence for my auditory analysis. It will also help to clarify some of the past arguments on the phonetic realization of stressed and unstressed lexical tones discussed earlier in this part. Above all, these acoustic records together with my auditory analysis will illustrate very clearly the pitch contour of the utterances with emotionally unmarked intonation, and neutral tonality\(^1\) in these fluent readings.

The acoustic records of the whole spoken paragraph are shown in Figures 4.12-4.20. Records of the two subjects were put parallel to each other for comparison, SL's records being placed above NJ's records. In the discussion I will refer to the records by the name of the speaker, followed by the number of pause-defined unit and the number of the figure, for example, NJ 14 (Fig 4.16) means that the record is in Fig 4.16 and it is NJ's 14\(^{th}\) PDU.

The phonemic transcription of each syllable is given under the base line of the pitch traces in the mingograms. Syllables are phonetically divided from each other, the vertical lines showing the syllable boundaries. When the boundaries are arbitrary, i.e. when I cannot find any acoustic evidence to show where the boundaries are (e.g. between two stops where the former one is unreleased, or when the beginning of the stop occurs initially in the first syllable of the stretch of sounds, or the ending of an unreleased stop occurs at the end of the utterance etc.), I will use a dashed line instead of a normal line to indicate the arbitrary boundary.

\(^1\) The concept of 'marked' and 'unmarked' or neutral' tonality will be discussed in detail later in this chapter.
Lexical tone marks (m, l, h, f, r) are removed from their usual place in the transcription, and are put on top of the pitch traces. The stress mark (') is put in front of the tone mark to show that lexical tone of the syllable has stress superimposed on it. Note that I use the term 'stress' here, not 'accent', since the stress marks were assigned to the syllables after I had done both the auditory and the acoustic analysis of these syllables and decided that the syllables were phonetically stressed. Most stress occurrences correspond to the underlying word accents discussed before, but there are some accented syllables which are unstressed and some unaccented syllables which are stressed; these will be brought into discussion later.

For the sake of clearer comparison and representation of relative acoustic pitch (fo), I have drawn a reference line at fo 100 Hz. This 100 Hz reference line can be considered as relative to the auditorily low pitch in both speakers since the two speakers are female whose average voice pitch is 184.3 Hz (SL) and 206.5 Hz (NJ). The fo distribution of the two speakers in their readings are shown in Fig 4.11. One can see clearly that SL has a lower voice pitch than NJ. Although the actual pitch range is quite wide in both speakers (SL 414.47 Hz or min 61.73 & max 476.2, and NJ 424.24 Hz or min 61.35 & max 485.6), the histograms show that fo mainly ranges between 60.0 - 292.9 Hz (SL), and 60.0 - 305.9 (NJ).

1 In the phonemic transcription given, the phonological word accents are assigned to words in the passage according to the rules described in Chapter 2.
e. The Auditory Analysis

My assumption is that in normal reading and conversational speech the rhythm in Thai is stress-timed, i.e. the stressed syllables will occur at roughly regular intervals of time, in other words, the rhythmical beats which are isochronous will usually fall on the stressed syllables and from time to time on the silent part of the speech. The rhythmical unit from one stressed syllable up to but not including the next stressed syllable is called a 'foot'. The foot usually begins with a stressed syllable but if the rhythmical beat falls on the silent part before an unstressed syllable or syllables, the foot then begins with a silent ictus. I have done an auditory analysis of stress in Thai by means of the following procedures:

a) Listening to and imitating each PDU to feel the rhythmical variation of stresses then dividing the succession of syllables into rhythmical units or feet. The beginning of each rhythmical unit is marked with a foot boundary (/).

b) Repeating the listening and imitating process as in (a.), but this time paying more attention to the syllable quantity and quality, then deciding whether the first syllable of the foot is stressed or whether the beat falls on silence. Length and quality of vowels, for me, are the most prominent cues in the judgement. Glottal stop deletion and pitch changes are useful cues when there is no difference between the length and quality of vowels. Degree of loudness of the syllables, auditorily speaking, does not vary much in this style of speech, although acoustically speaking the variation of intensity traces is quite considerable. The variation of the acoustic intensity might be partly due to the inherent properties of the consonants and vowels of the syllables; however, the intensity traces are very helpful for segmentation and judgement of stressed and unstressed syllables by comparing the intensity of adjacent syllables.
I found that disyllabic compounds which have one accent are mostly double-stressed in the speech of both speakers, for example, /kham\(^m\) 'sam\(^h\)/ (reduplicatives) in SL 1, NJ 1 (Fig 4.12), SL 3, 4, 5 and NJ 4, 5, 6 (Fig 4.13), SL 19, NJ 10 (Fig 4.15) are phonetically ['kham 'sam]\(^1\) /khwa:m 'ma:j]/ (meaning) in SL 2, NJ 3 (Fig 4.12), SL 23, NJ 23 (Fig 4.20) are phonetically ['khwa:m 'ma:j], but in SL 19, NJ 19 (Fig 4.19) are phonetically [khwa:m 'ma:j]/ /ka:n 'sam\(^h\)/ (reduplication) in SL 11, NJ 12 (Fig 4.16), SL 16, NJ 16 (Fig 4.17) are phonetically ['ka:n 'sam]. Mor-phologically speaking, these compounds can be represented as follow:\:
/kham\(^m\)/ (N-word) + /'sam\(^h\)/ (Vt -to reduplicate), /ka:n\(^m\)/ (lexical prefix)\(^1\) + /'sam\(^h\)/ (Vt -to reduplicate), /khwa:m\(^m\)/ (lexical prefix) + /ma:j]/ (Vt. to mean). One can see that it does not cause any ambiguity in the meaning of these compounds whether the words are single-stressed or double-stressed as compared to the case of ['pa:k 'ka:] (a beak of crow) and [p\(\check{a}\)k 'ka:] (a pen) or ['ta: 'ma:] (Grandad came.) and [te 'ma:] (Mr. Maa) (see discussion in Chapter 2.4).

NJ tends to put stresses on to the phonological secondary accents more than SL does, for example, /pha:m 'sa: 'thaj\(^m\)/ (Thai language) was pronounced as [phe 'sa: 'thaj] by NJ, but [phe 'sa: 'thaj] by SL (cf. NJ 3 and SL 2 (Fig 4.12), NJ 7 and SL 6 (Fig 4.14), NJ 24, SL 24 (Fig 4.20)).

The unaccented monosyllabic grammatical words are sometimes phonetically stressed in the reading of both speakers, for example, the preposition /kho:q]/ (of) in NJ 2 (Fig 4.12), the conjunction /la:h]/ (and) in NJ 3 (Fig 4.12), the conjunction /ru:/ (or) in NJ 6 (Fig 4.13), the preposition /naj\(^m\)/ (in) in SL 8, NJ 9 (Fig 4.14), the conjunction /wa:/ (that) in SL 15, NJ 15 (Fig 4.17), the auxiliary /khu:an\(^m\)/ (should)

1 The phonetic description of the pitch of the lexical tones is not given here but will be reported later when I discuss the realization of stressed and unstressed tones.
in SL 19, NJ 19 (Fig 4.19), the relative pronoun /suŋ f/ (which) in SL 24, NJ 24 (Fig 4.10). It seems that NJ put stresses on these grammatical words more than SL; she tended to put stress on the first syllable of a PDU even though it is phonologically unaccented. However, unaccented monosyllabic grammatical words are usually unstressed in places other than those mentioned.

Many pauses occur after the grammatical words /nan h/ and /ni h/. These two words, in these cases, are structurally labelled as demonstrative pronouns and demonstrative adjectives. (See Fig 4.2, 4.3, 4.4.) Taking semantic factors into account they are deictics in these contexts of situation.¹ In the reading of both speakers these words are phonetically stressed and are also the most prominent stressed syllables in the PDU's in which they occur. See SL 5, NJ 6 (Fig 4.13), SL 11, NJ 12 (Fig 4.16), SL 16, NJ 16 (Fig 4.17).

Another interesting point is the stress assignment in the expression /'?i:k¹ 'nɔː m swore 1/ (one -aspect - more i.e. one more aspect, or another aspect) which in the reading of both speakers is phonetically [ik 'nɔː m swore] (see SL 2, NJ 2*(Fig 4.12) ), the accented /'?i:k¹/ being unstressed; also the stress assignment in /'pen m + 'pok kæ1 'ti?¹/ (as - normal i.e. normally) is phonetically ['pen po kæ 'ti?] in SL 7, and ['pen po kæ 'ti?] in NJ 8 (Fig 4.14). The stress patterns found are different from the phonological accentual patterns, and the changes might be due to the fact that these expressions have become institutionalized i.e. lexicalized, and are going towards the double-accented patterns which are the favoured accentual patterns in Thai.²

¹ See discussion on 'deixis' in Lyons (1981, 163-180).
² Discussion on double accented patterns and the favoured accentual pattern is in Chapter 2.1.
The primary-accented syllables in polysyllabic words are always stressed, and any syllable (accented or unaccented) which occurs before a pause is always stressed in this style of speech.

c). From among the stressed syllables in each PDU, I listened to find which was the relatively most prominent stressed syllable in the unit. I found that it is not very difficult to distinguish the prominent stressed syllable (from now on abbreviated as PSS), from other stressed syllables. It is always realized as the relatively longest and loudest and it usually has a pitch contour and consonant and vowel qualities more or less similar to those of the syllables spoken in isolation. The acoustic evidence confirmed that PSS's are quite prominent in their duration, intensity and f0 contour as compared with other stressed syllables in the PDU. Most of the PDU's in these readings have only one PSS per PDU and the PSS is usually the last stressed syllable before the pause. However, there are a few PDU's which have more than one PSS per PDU. NJ has 2 PSS's in NJ 13 and NJ 15 (Fig 4.16 and 4.17 respectively), SL has 2 PSS's in SL 2 and SL 15 (Fig 4.12 and 4.17 respectively). I also did a spectrographic analysis of these PSS's occurring in the middle of the PDU, to give a better representation of acoustic properties of the PSS's. The spectrograms both with wide-bandwidth filter (500 Hz) and narrow-bandwidth filter (45 Hz) are shown in Figs. 4.21-4.27 below.

There are some interesting points to be noted here. The phrase /hajf 'kyt'1 'khw'am phaj'm 'ro'2 ha?1 'la?1 sa?1 lu:aj'1/ (create euphony, beautiful sounds) occurs twice in this paragraph. Firstly, it occurs in sentence 2 in the comments (see Fig 4.3) "Most people who study reduplicatives give the explanation that to reduplicate (is) to create euphony, beautiful sounds and a convenient way to speaking." This phrase occurs again in sentence 3 in the comments (see Fig 4.4) "The author (of) this article has (her) view that this kind (of) euphonic reduplication not
only creates euphony, beautiful sounds but it also...". In the first occurrence both speakers have a very prominent stress on the syllable /ro’h/ (SL 12, NJ 13), and SL also has a pause after the syllable. In the second occurrence the syllable /ro’h/ is normally stressed (SL 17, NJ 17). Figs 4.22 and 4.23 (NJ) and Figs 4.24 and 4.25 (SL) show the spectrographic analysis of the two /ro’h/’s which are quite different from each other. The PSS /ro’h/ has a relatively longer duration and a very clear glottal stop, whereas the duration of the normally stressed /ro’h/ is shorter and the glottal stop is not very clear. Semantically speaking, the first occurrence can be considered as 'new' information whereas the second one is 'given', so it is predictable that more emphasis is put on to the first occurrence by the assignment of a pause (in SL's case) or a prominent stress on the primary accent of the first noun in the phrase (in NJ's case).

The assignment of prominent stress to the primary accent of the word for more emphasis on that information is also found in the phrase "Another aspect of phonology and meaning in Thai." (see Fig 4.1) /'i:k k'ræf 'nu:n l khɔɪጐ r a'h, bɔp l 'siːaŋ l a:h r a h, bɔp l khɔim'majf nɔj m phaɪ'maːr thaj'm/. NJ in this case has a pause between the 2 NP's, whereas SL has a prominent stress on the primary accent of the last word of the first NP (cf. NJ 2 and NJ 3 with SL 2 in Fig 4.12, and for a clearer view of the PSS /siːaŋ/ see Fig 4.21).

In the third sentence of the comments (Fig 4.4) both speakers put emphasis on the major NP /phu 'khiːan bɔt l 'khɔim niːh/ (the author (of) this article) by assigning a prominent stress on the last syllable of the phrase i.e. /niːh/ (see SL 15 and NJ 15 in Fig 4.17 and Fig 4.26, 4.27).

d) I have also done an auditory analysis of the pitch contours of these PDU's. Figs 4.28 and 4.29 given below show the auditory pitch of
Auditory Pitch of PDU 1-12

Conventional Symbols:
#  pause-defined unit boundary
/  beginning of a rhythmical beat with stress
\  a rhythmical beat without a stressed syllable
PSS  a prominent stressed syllable (PSS)

The scale represents 5 levels of auditory pitch: extra high, high, mid, low, and extra low. (See Chapter 3.2.3.)
Auditory Pitch of PDU 13-25

Conventional Symbols:
- # pause-defined unit boundary
- / beginning of a rhythmical beat with stress
- \ a rhythmical beat without a stressed syllable
- ] a prominent stressed syllable (PSS)

The scale represents 5 levels of auditory pitch: extra high, high, mid, low, and extra low. (See Chapter 3.2.3.)
the PDU's of both speakers running from PDU 1-12 in Fig 4.28 and PDU 13-25 in Fig 4.29. The auditory pitch is represented in scalar notation using the descriptive system discussed in Chapter 3.2.3; briefly speaking, the system consists of 5 levels of pitch, and the length of the pitch is not purely phonetic i.e. it is relative to the phonemic length. I have posited 3 units of length for the phonemic long vowels and 2 units for the phonemic short vowels. One length unit is given to any vowel which is longer than the normally stressed vowel and one length unit is taken away from any vowel which is shorter than the normally stressed vowel. (See details in Chapter 3.2.3.)

A stressed syllable will be indicated by a single bar (/) in front of it, while a single bar with a caret (^) simply shows a rhythmical beat which occurs without a stressed syllable. A PDU boundary is indicated by # and the PSS's are underlined. The transcription under the scale is the phonemic transcription.

f. The phonetic realization of the lexical tones

The neutral tone

I discussed the notion of 'neutral tone' earlier on in this chapter. I also proposed assigning the phonological tone 'high' and 'low' to the linker syllables owing to the afore-mentioned fact that their realization is the same as any other short syllables with high or low tone when they are stressed. Henderson (1949) proposed the term 'neutral tone' for linker syllables. She found that they are usually unstressed and when unstressed they are auditorily realized as 'mid level pitch'.
There are many unstressed linker syllables in this spoken paragraph. Auditorily these syllables are always realized with a short mid level pitch. The acoustic evidence also shows that the f0 of these syllables is fairly close to the f0 of the mid-tone syllables nearby. The acoustic pitch of these syllables is relatively lower than the f0 of the high-tone syllables and higher than the f0 of the low-tone syllables nearby. The occurrences of linker syllables and their auditory and acoustic realization can be found in the following records:

/ra?h/ from ['?ut1 ca ra na?h wi?h 'lai:f]3 in NJ 1, 5, 16 and SL 1.6, 16 (cf. the neighbouring /ca:m/, /'na?h/ and /wi?h/).

/ra?h/ from [ra 'bop1] in SL 2 (cf. the neighbouring /'bop1/).

This syllable is realized with a high level pitch in NJ 2, 3. This is the only exception to the mid level pitch realization of unstressed linker syllables found in the whole reading.

1 My study here is based on the phonetically stressed and unstressed syllables found in spoken prose whereas Gandour (1975) based his study on constructed sentences which have the same phonetic frame 'khaw' 'chop'/.... compound (He likes ... compound). Compounds have different underlying accentual patterns from endocentric phrases, but some of his examples which are supposed to have the same accentual pattern as the compound in his terms i.e. (' ') kha:/1' / and /kha: 1' / do have different underlying constructions. /kha:1/ (leg) + /'o:n/ (soft) = /kha:1' 'o:n/ (thigh) is a compound with the (' ') accentual pattern but /kha:1/ (galangal) + /'o:n/ (young) = /kha:1' 'o:n/ (galangal sprout) is an endocentric NP with the (' ') accentual pattern also /kha: 'o:n/ (galangal sprout) is an endocentric NP with the (' ') accentual pattern also /kha: 'o:n/ (witch doctor) and /kha: 'o:n/ (mystery pot). See discussion on the compounding process vs endocentric NP in Chapter 1.3.2.

2 Overall, there is only one exception found i.e. /ra?h/ in NJ's /ra?h'hop1/, reported below.

3 This is the comparative allophonic transcription. The phonetic pitch of the neutral tone is not given here. If one wants to examine any PDU cited one can look at the auditory and acoustic records of the PDU's in Fig 4.12-20 and 4.28-29.
/cha?h/ from [cha'nit’h] in SL 4, NJ 4 (cf. the neighbouring /’khamm/ and /’nit’h/).


/tha?h/ from [’son thə ’na:’m] in SL 8 and NJ 9 (cf. the neighbouring /pha:’m/ and /’na:’m/).

/prə’1/ from [prə ’camm ’wan’m] in SL 8, NJ 9 (cf. the neighbouring /’na:’m/ and /’cam’m/).

/’a?1/ from [ə thi’h ’ba:j] in SL 10 and NJ 11 (cf. the neighbouring /’kham’/ , /’thi?h/ and /’ba:j’/).

/sa?1/ from [sa’la?1 se ’lu:aj] in SL 13, 17 and NJ 13, 17 (cf. the neighbouring /’phaj’/ , /’ro:’h/ and /’la?1’/).

/sa?1/ from [sa ’du:ak1] in SL 14 and NJ 14 (cf. the neighbouring /’du:ak’/ , /’ka:n’/).

/prə?1/ from [prə ’phis’t] in SL 16 and NJ 16 (cf. the neighbouring /’kham’/ , and /’?ut’/).

/sa?1/ from [’lak h se ’na?1] in SL 18 and NJ 18 (cf. the neighbouring /’mi:’/ , /’lak’/ and /’na?1’/).

/cha?1/ from [che ’pho?h] in SL 21 and NJ 21 (cf. the neighbouring /’bm:’/ , /’pho?h/ and /’tha:q’/).

/cha?1/ from [che ’pho?h] in SL 23, NJ 23 (cf. the neighbouring /’khwa:’m/ , and /’pho?h’/).

The notion of 'neutral tone' for the linker syllables is tenable, if the postulation is restricted only to linker syllables which usually occur as (a) morphological junction markers in compound words of which the first component is of Pali and Sanskrit origin, e.g. ḍāṇiḥ /chon’/ + /’tain’/ → /chon’ 1a?h ’tain’/, noṣṭaḥ /kam’/ + /’phan’/ → /’kam’.

1 Henderson (1949, 36).
math 'phanm/ or (b) as syllables inserted to break up the sequences of consonants in words of foreign origin which do not occur in Thai phonological structure e.g. ลิพ/ /sa?1 'trajh' (strike), มิหลา /sa?1 'te:l/ (corset) etc. These syllables then can be considered as 'toneless' or 'neutral'.

The unstressed non-linker syllables

The notion of 'neutral tone', from my point of view, should be restricted to the linker syllables. From my analysis of unstressed non-linker syllables, these syllables still keep inherent properties of pitch both auditorily and acoustically. I will discuss the unstressed kinetic tones and the unstressed static tone respectively in the following part.

The realization of the two kinetic tones 'the fall' and the 'rise' has been a major interest in the past literature. My auditory and acoustic analysis of the unstressed 'fall' and 'rise' is as follows:

The unstressed 'fall'

The fall is realized either with a short high level pitch or a short narrow high falling pitch. There is no definite rule whether the unstressed fall will be realized as one or the other under any specific condition. However, SL tends to have a falling contour more than NJ, but for much of the time she has a high level pitch for the unstressed fall. The auditory and acoustic records of the unstressed fall are reported below.

/this/ from [che 'nith thi 'risak 'wa:] in SL 4 and NJ 4 is phonetically high level. See the acoustic and auditory records (Fig 4.12-20 and Fig 4.28-29).

/phut/ from [phu 'phut'] is phonetically high fall in SL 6 but high level in NJ 7.
/phuː f/ from [phu thī 'sukl 'saː] is phonetically high level in SL 9. The syllable is stressed and is phonetically high fall in NJ 10.

/thiː f/ from [phu thī 'sukl 'saː] is phonetically high level in SL 9 but high fall in NJ 10.

/haj f/ from [hej 'kham m ethi 'ba:j m] is phonetically high level in NJ 11. The syllable is stressed and realized with a high falling contour in SL 10.

/phuː a f/ in [phuə hej 'kyːt] is phonetically high level in both speakers (SL 12, NJ 13).

/haj f/ in the same PDU is phonetically high level in both speakers.

/phuː f/ from [phu 'khiːən] bot 'khwaːm] is phonetically high falling in SL 15 but high level in NJ 15.

/haj f/ from ['phiːəq m hej 'kyːt] is phonetically high level in both speakers (SL 17, NJ 17).

/thiː f/ from ['la:k hə 'naːl thī 'miː] is phonetically high level in both speakers (SL 18, NJ 18).

/thiː f/ from [khwam 'ma:j thī 'khuːan m] is phonetically high level in both speakers (SL 19, NJ 19).

/thiː f/ from [thī '?astl] is phonetically high level in SL 22 but high falling in NJ 22.

/phuː f/ from ['smq phu 'phuːt f] is phonetically high level in both speakers (SL 24, NJ 24).

/daːj f/ from ['chaj hə 'phon] is phonetically high level in both speakers (SL 25, NJ 25).

The unstressed 'rise'

The unstressed rising tone is always realized with a rising contour no matter how much the syllable is reduced in duration when unstressed. It is found in the following records.
/saːr/ from [pha se 'thajm] in SL 2, 6, 24 is phonetically lower-mid or low rise. The syllable is stressed in NJ 3, 7, 24.

/rwːr/ from [rhw 'khamm 'samʰ] in SL 5 is phonetically lower-mid rise. The syllable is stressed in NJ 6.

The unstressed 'high'

The unstressed high tone is always realized with a high level pitch if the syllables are non-linkers. It is found in the following records.

/wiʔʰ/ from ['ʔut'] ce re 'naʔʰ wi 'laːtʰ'] is always realized with high level pitch in SL 1, 5, 16 and NJ 1, 6, 16.

/thiʔʰ/ from ['khamm e thi 'baːjʰ'] is realized with a high level pitch in SL 10, NJ 11.

/miʔʰ/ from [mi 'daːjʰ 'phiːaqm] is phonetically high level in SL 17, NJ 17.

/thaːqʰ/ from ['miːm thaːq 'ruːpʰ 'baːpʰ'] is phonetically high level in SL 21, NJ 21.

/laʔʰ/ seems to be an exceptional word. This conjunction (and, also, likewise) is in very common use in the language. The realization of this conjunction seems to vary quite a lot. Sometimes it is realized with a high level pitch (SL 2, SL 25 NJ 23, NJ 25), sometimes with a low level pitch (SL 23) and sometimes with a mid level pitch (SL 14). The word is stressed in NJ 3 and NJ 14 and realized with a high level pitch with a glottal stop.

The unstressed mid tone

The unstressed non-linker, mid-tone syllables are auditorily realized with mid level pitch, although sometimes the acoustic evidence shows a fall of f0. This perceived level might be influenced by the

1 There are three words in Thai wəː /laʔʰ/, wəː /laʔʰ/, and wəː /laʔʰ/, all of which function as a conjunction and have the same meaning: and, also.
short duration of the syllables. Unstressed mid-tone syllables are found in the following records.

/najm/ from [noj pha 'sa:] in SL 2, NJ 3.
/pha:m/ from [pha 'sa:] in SL 2, 8, 24 and NJ 3, 9, 24.
/ca:m/ from ['?ut co ro 'na?] in SL 1, 5, 16 and NJ 1, 6, 16.
/phajm/ from ['khwa:m phaj Oro?] in SL 17 this syllable is stressed in SL 12 and NJ 13, 17.
/khwa:m/ from ['mi:m khwam 'ma:j'] in SL 19, NJ 19.
/kanm/ from [kan 'not] in SL 22, NJ 22.

The unstressed low tone

The unstressed non-linker, low-tone syllables are always realized with a relatively low level pitch. Acoustically the fo of some of these syllables is very similar to that of the unstressed mid-tone, but relatively speaking it is usually lower. If the syllables occur somewhere in the beginning part of the PDU, they are usually realized with a lower mid level pitch. They are auditorily realized with a low level pitch elsewhere. They are found in the following records.

/ti:k1/ from [ik 'ye:f 'nuq1] in SL 2 and NJ 2 is phonetically short lower-mid level.
/to:1/ from [se 'du:ak1 to 'ka:n] in SL 14 and NJ 14 is phonetically short low level.
/bot1/ from [phu 'khi:an bot 'khwa:m] in SL 15 and NJ 15 is phonetically short low level.
/to:1/ from [to 'mi:m 'lakh se 'na?] in SL 18 and NJ 18 is phonetically short lower-mid level.
/suk1/ from ['khui:an suk 'sa:] in SL 19 and NJ 19 is phonetically short low level.
The stressed tones

The lexical tones in Thai have been classified (Abramson: 1962) into 2 groups: the static tones (the high, the mid, the low), and the dynamic tones (the fall, the rise). This classification is due to the relatively wider change of pitch auditorily in the dynamic tones as compared to the relatively narrower change of pitch in the static tones.

The stressed dynamic tones in connected speech are investigated in this study; they are always realized both auditorily and acoustically with a clear change of pitch. The fall always has a noticeable fall and the rise, a very clear rise. The fall of the stressed fall-tone syllables is not as wide as the fall of the prominent stressed fall-tone syllables, just as the rise of the stressed rise-tone syllables is not as wide as the rise of the prominent stressed rise-tone syllables.

The stressed and the prominent stressed falling tones sometimes show a slight rise of \( f_0 \) before the fall. This rise of \( f_0 \) is not auditorily clear; these syllables are usually perceived as a delayed high wide fall i.e. there is a sustained high pitch before the fall. The rise of \( f_0 \) which is not auditorily clear might due to the physiological linkages which are commonly found in the process of connected speech production, and in these particular cases (see SL 2, 10, 22 and NJ 2, 11, 22 in Figs 4.12, 4.15, 4.19 respectively) the preceding syllables before the fall have a lower pitch. It seems to be impossible for the \( f_0 \) to jump up without a continuous glide of the rate of vocal fold vibration.

The so called static tones are actually not always static in pitch. Judging from this analysis, the stressed mid-tone syllables are usually,
The stressed high tones are usually perceived as high-level although the acoustic evidence sometimes shows a slight rise of $f_0$. This might be due to the duration of syllables which undoubtedly plays an important role in the perception of pitch in Thai. The prominent stressed low tone syllables are perceptually and acoustically realized as a low narrow continuous fall. The acoustic evidence has shown that the $f_0$ of the low tones and the mid tones is not very different, specially if one compares the $f_0$ of the low tones which occur somewhere at the beginning of the PDU and the $f_0$ of the mid tones following later on in the same PDU. Research done on the perception of Thai tones (Abramson : 1975, 1976) has shown though, that when individual speakers utter words in isolation, they keep the low and the mid tone distinct. From the five tones, identifying the low and the mid is the most difficult. This is especially so when the tones are free of the linguistic context and the listeners do not have any access to the speaker's tone space. From my analysis of the stressed mid and low tones in continuous speech, the two tones are noticeably distinct when they occur near each other in the same PDU.

The stressed high tones are usually perceived as high level although the acoustic evidence sometimes shows a slight rise of $f_0$. This might be due to the duration of syllables which undoubtedly plays an important role in the perception of pitch in Thai. The prominent stressed high tones are perceived as a high narrow rise, most of the time with a slight fall at the end.

The Pitch Contour of the PDU

In the examination of the pitch contour of the 25 PDU's of both speakers in this non-emotional reading style of speech, there is a very clear lowering of pitch in each PDU. This phenomenon has been referred to in past literature as 'downdrift'. The term was first used in
reporting the lowering of the auditory pitch of the same lexical tones of tone languages (Kikuyu: Armstrong 1940, Thai: Henderson 1949, Yoruba: Ward 1952). Ward states:

"In all sentences, in all languages, there is a 'down-drift' in tone, due mainly to the diminution in breath force towards the end of the sentence. Thus, a normally high tone is lower towards the end of a sentence than at the beginning. This tendency is perhaps not so strongly marked in Yoruba as in other languages, since the three levels must be preserved and no risk must be taken of confusing high and mid tones." (1952: 37-38)

With the extensive study of intonation in none-tone languages and tone languages in the past few decades, this statement about the pitch contour of sentences in languages seems to be a very general claim. It is not necessary for every sentence, or rather, for every utterance to have downdrift. However, from the analysis of this spoken paragraph, which semantically can be considered as sequences of connected pieces of information stated in a non-emotional, i.e. neutral, reading style, there is downdrift in every PDU. This lowering of pitch can be considered as another phonetic marker of the boundary of units of information, divided by the speakers, besides the pause and the prominent stressed syllables formerly discussed. The downdrift is clearly audible and there is a clear lowering of acoustic pitch to be seen in the records (Fig 4.12-4.20). The $f_0$ of a low tone which occurs at the beginning of the PDU can be higher than the $f_0$ of a mid tone, which has very similar pitch contour to the low, but occurs at the end of the PDU. (See SL 2 Fig 4.12, SL 9, NJ 10 Fig 4.15). Although there is $f_0$ lowering, speakers still keep the tones distinct, as one can notice a lower $f_0$ in low tones as compared to a higher $f_0$ in mid tones which occur near by (see SL 20, NJ 20 Fig 4.19).

1. To be discussed later in this chapter.
The acoustic evidence has also shown that the $f_0$ of the same lexical tones is noticeably different, depending on the position of the syllables, namely whether they occur at the beginning or at the end of the PDU. One can examine the lowering of $f_0$ of the same lexical tones when they occur in different positions in a PDU clearly in these following records.

The fall in SL 4, (Fig 4.13), SL 10 (Fig 4.15), NJ 16 (Fig 4.17).

The rise in SL 19, NJ 19 (Fig 4.19).

The high in SL 5, NJ 6 (Fig 4.13), SL 11, NJ 12 (Fig 4.16), SL 16, NJ 16 (Fig 4.17).

The mid in SL 2, NJ 3 (Fig 4.12), SL 8, NJ 9 (Fig 4.14), SL 11, NJ 12 (Fig 4.16).

The low in SL 9, NJ 10 (Fig 4.15).

Downdrift, which seems to be a universal phenomenon of pitch (used to convey certain syntactic meanings i.e. statement) in both tone languages and non-tone languages alike, has been a major interest for contemporary phoneticians. Ohala, who has recently done an extensive study of the production of tone states:

"Most (all?) languages exhibit a gradual fall in pitch from the beginning to the end of an utterance, that is, over a stretch of speech that has been called variously a 'phonological phrase', a 'breath group' or a 'syntagm'. (This need not apply to questions, however.) In many tone languages this results in successive tones becoming phonetically lower and lower in pitch until at the end of the phrase, the high tones could be phonetically as low or even lower than the low tones at the beginning of the phrase. This is called downdrift in African languages but is evident in non-tone languages as well." (1978, 31)

Ohala has also raised a very interesting question about the causes and origins of downdrift. There are two main hypotheses in recent arguments about the physiological mechanism of downdrift. The first hypothesis suggests that downdrift is 'automatic' due to the 'diminution in breath force towards the end of the utterances caused by the lower subglottal air pressure provided by the elastic recoil of the lung' (Ward :
The second hypothesis, suggested by Ohala, is that downdrift is 'purposeful' and is controlled purposefully by the laryngeal activities i.e. tension of vocal cords.

If speech is the means that speakers use to convey their ideas, and attitudes towards things, any mechanism which controls the production of speech should be purposefully controlled. Downdrift occurs only in certain types of utterance. The raising of the pitch contour of the whole utterance, when the speaker wants to convey some syntactic meanings (for example, when he still has some question or doubt in his mind about the matter, he still wants to argue, he still wants to continue talking, or he wants to leave the matter to the listener to decide etc.), is found in both tone languages and non-tone languages. It might be an interesting question for neurolinguists to find the answer to whether it is the lungs or the larynx, or more likely a co-ordination of both mechanisms which control the rate of vocal cord vibration in speech. However, it is clear that normal speakers never fail to make use of these mechanisms to control the rate of vocal cord vibration so as to convey the meanings of the utterances in their speech, and when they are emotionally aroused it is difficult for them to conceal the changes of pitch conveying their emotion and attitudes towards the matter.

1 Ohala suggests 3 hypotheses, but I consider Maeda's work proposes the same hypothesis as Lieberman since his study on larynx height in speech is done under the assumption that the larynx is linked to the sternum; the lowering of the larynx then deals with the lung volume, in other words, with the subglottal air pressure in Lieberman's terms.

2 See extensive discussion on the semantic function of the universal rising or raising contour and the falling contour in Cruttenden (1981).
4.2 On Postulating the Intonation Unit: The Tone Group

In describing continuous speech, the problem facing the phonetician in postulating any speech unit after his analysis is 'what are the criteria he is going to use to delimit the unit'. When naive speakers listen to speech what they perceive is not the acoustic phenomena such as the rise and fall of pitch, the friction of particular sounds or the silent periods etc., but rather the information which these sounds together as a whole convey i.e. what the speaker is talking about, whether he is asking or informing, or what his attitudes towards the things he is talking about are. The phonetician, on the other hand, seems to wear two hats when he listens to speech. Most of the time for the need of communication, he perceives speech sounds like any other listeners but when he listens to a stretch of sounds analytically he can concentrate his listening to detect the changes or variation in these sounds in order to divide them into smaller units according to certain general phonetic criteria he sets up i.e. in articulatory, acoustic or auditory terms. His task as a phonetician, from my point of view, does not stop here. He also needs to find out how these sound units are synthesized to form meaningful speech units in the language. Sweet (1890, 1908) puts emphasis on both analysis and synthesis in the description of sounds in speech, and his view has been taken up by many outstanding British phoneticians. David Abercrombie, to whom I owe this view, always emphasized this principle in his teaching. I believe that although the two aspects must be kept strictly distinct in the process of description, they are interrelated and complementary to each other and

1 If he stops here I would rather call him 'a speech scientist' instead of 'a phonetician'.

need to go together or else one would either fail to have a satisfactory theoretical understanding of how speech sounds are organized into meaningful units, or fail to provide a good systematic description of the units of speech sounds in a language for practical purposes.

The notion of ideal units of phoneme, syllable, foot and tone group put in hierarchical order proves to be very practical1 although there are still theoretical arguments as to how to define these units. Contemporary phoneticians tend to agree that these units cannot be satisfactorily defined in general phonetic terms alone. Although units like phoneme, syllable, stress, tonic or tone group can be described in general phonetic terms, the phonetic realization of these units seems to vary from one language to another and sometimes even from one dialect to another. We would not have problems in learning another language or another dialect at all if sounds in every language were selected and grouped together into speech sound units in the same manner.

Under the assumption that sounds are selected and put together to form speech units in taxonomic phonological constituents, phoneme, syllable, foot or stress group and tone group (Halliday: 1963, 1967),

1 Undoubtedly, the concepts of phoneme and syllable have proved to be very practical. They were employed in the invention of many writing systems in ancient times (Gelb: 1952, development of pictographic to syllabary and alphabetic writing), and it is still an ideal concept in working out a writing system for languages which do not have their own system of recording the language with accuracy and speed. (See discussion in Swadesh: 1934 and Abercrombie: 1937, 1949, 1954.)

The notion of foot and tone group proves to be very useful for pedagogical purposes. From my experience of learning spoken English as a foreign student and teaching English to Thai students, I found that starting to learn the language from the rhythm of speech by means of practicing to perceive and perform the variation of foot structure and the variation in meaning, and then going on to learn the tune is remarkably successful in learning spoken English. I owe this practical approach to my teacher, Colin Mortimer, who as a very practically oriented and excellent teacher produced a series of books which help the students to cope with difficulties in spoken English. (See Mortimer C. 1976. Elements of Pronunciation Series, Stress Time. Cambridge University Press.)
I should like to discuss here the development of the principles and the problems in postulating the tone group which is considered here as the biggest phonological constituent in the rank scale, the unit which by itself forms an information unit in a discourse, and when several are put together form a discourse.

Phoneticians have tried to postulate units of intonation as steps to a synthesis of speech for a long time, Sweet, I believe, started it in the British tradition. He states:

"The ordinary division of speech into sentences, and of sentences into words is logical, not phonetic: we cannot mark off the sentences in continuous discourse, and cut them up into words, till we know the meaning of these words and sentences, and are able to analyse them grammatically.

But the logical and grammatical division into sentences corresponds to some extent with the phonetic division into 'breath groups'. marked off through our inability to utter more than a certain number of sounds in succession without pausing to take breath.

Within these breath groups there is no pause or break between the words except where we pause for emphasis or to make grammatical distinctions. The only necessary phonetic distinctions within a breath-group are into syllables, sounds and intervening 'glides'.

The three general factors of synthesis are quantity (length), stress (force), and intonation." (1908, 49)

Here Sweet distinguished two kinds of division of a continuous discourse: logical and phonetic. The first phonetic division is marked off by 'pausing to take breath' to which he gave the term 'breath group'. Within this breath group, pauses can also occur as he says for 'emphasis' or to make 'grammatical distinctions'. The breath group boundary, from his observation, corresponds to some extent to the logical and grammatical division into sentences. The logical division within the breath group is the division into sentences and words. I take Sweet's logical sentences as the 'potential division of a discourse' into smaller information units which are larger than words. His phonetic division can be interpreted as the 'actual division of discourse' into smaller phonetic units the breath group, and within the breath group smaller units, in his terms, syllables, sounds and intervening glides (i.e. in modern terminology
syllables, phonemes, and changes of the quality of sounds when put in linear succession, called 'glides'). Sweet posited three factors in synthesis: quantity (length), stress (force), and intonation. It seems to me that he tried to distinguish these phonetic factors from the consonants and vowels which he discusses under his 'analysis'. These factors are the properties of the whole syllable or of any units larger than syllables and they are now known as 'prosodies' or 'suprasegmentals'.

Daniel Jones took Sweet's view of the division of speech into breath groups and introduced another unit of speech called 'sense group', he states:

"Pauses are continually made in speaking. They are made chiefly (1) for the purpose of taking breath, (2) for the purpose of making the meaning of the words clear.

It is usual to employ the term 'breath group' to denote a complete sentence that can conveniently be said with a single breath, or, in the case of very long sentences, the longest portions that can conveniently be said with single breath.

Pauses for breath are normally made at points where pauses are necessary or allowable from the point of view of meaning. Sentences are usually divisible into smaller sequences between which pauses may be made, though they are not essential. The shortest possible of such sequences (i.e. sequences which are not capable of being further subdivided by pauses) are called 'sense-groups'. Each sense-group consists of a few words in close grammatical connexion, such as would be said together in giving a slow dictation exercise." (1918, 274; my underlining.)

The notion of 'sense-group' which has been attacked as vague or ill-defined (Crystal, 1969, 40) is very interesting to me. It seems that Jones was trying to postulate two units in the same manner as Sweet, discussed earlier, but he is clearer than Sweet. The two units are 1) the breath group or the actual phonetic division of speech by pauses and 2) the sense group or the potential division of speech (potential in terms of meaning) into breath groups. Jones also remarked that pauses are made for the purpose of taking breath and for emphasis i.e. making

1 Sweet used the term 'intonation' as a general phonetic term to mean pitch fluctuation in speech.
the meaning of the words clear, and the breath group boundaries where
pauses occur normally correspond to the boundaries of sense groups
(the points where pauses are necessary or allowable in terms of meaning).

I take it that sense group is the shortest possible sequence of sounds
which together form an information unit represented in terms of word or
words which are grammatically tied together. The beginning and the end
of this group are potential places for pauses.

The concept of 'potential division' will be brought into the pos-
tulation of intonation unit in Thai later on in this chapter. However,
the two terms 'breath group' and 'sense group' will not be adopted here
for the following reasons. Firstly, the term 'breath group' seems to
imply that the group is a phonetic group defined in physiological terms
i.e. the unit boundary corresponds to the point where speakers take air
in. I have not done any work on the articulatory aspect of pauses or
silent periods in continuous speech and I am not sure that the silent
periods are the periods when the speaker takes air in.1 I have adopted

the term 'pause-defined unit' from Brown, Currie and Kenworthy to refer
to the phonetic group defined in acoustic and auditory terms as the unit
of which the boundary is marked by the auditorily perceived silent period
or pause and the acoustic f0 zero found between stretches of sounds in
the acoustic records. Secondly, the term 'sense group' implies 'sense'

1 In the study of Airflow in Speech, John Anthony has posited two phone-
tic units defined in general phonetic terms: 1) Speech Breath Cycle
(SBC) which is defined in articulatory terms i.e. the unit which starts
from the point where the speaker takes air in and starts to talk, upto
but not including the next period when he starts taking air in again.
The cycle consists of 2 phases, the speech inspiration and the speech
expiration. 2) Speech Breath Group (SBG) which is a unit within the
speech expiration phase, defined in acoustic and auditory terms, i.e.
the unit bounded by periods where there is no voice (zero in the
acoustic and auditory signal). (Personal communication, July, 1982.)
My pause-defined units are defined in auditory and acoustic terms, the
pauses might correspond to the period when the speaker takes air in
(speech inspiration phase) or when he breathes out quietly without
voice (speech expiration phase) while he is talking.
or 'meaning', and since I am going to postulate a unit of intonation which is a unit of sound, the term would be inappropriate since it refers to 'sense' rather than 'sound'. Although the unit of intonation is quite abstract, and to postulate this unit one needs to bring 'sense' into consideration, the unit is still a synthesis of sounds and should have a label which is related to 'sound' not 'sense'.

Armstrong and Ward have brought the concept of sense group into their analysis of intonation in connected speech, and they remark:

"Connected speech consists of sense-groups (either one or a series), each of which is an intonation group. ... Different people divide their speech into different sense-groups and there is a corresponding difference in their intonation groups. A speaker varies his sense-groups and consequently the rhythm and intonation of the passage he is reading or speaking, according, to the style of his subject matter and the speed or deliberation with which he speaks. In conversational style the sense-groups are longer than in description or narration. The more deliberate the speech the more groups are made." (1926, 25)

It is not always clear whether they use sense-group to mean the 'potential' or the 'actual' division of speech. But from the above quotation it seems that they use the term in the latter sense. For them, speakers divide speech into sense-groups and each sense-group obtains a tune and is an intonation group. I take it that their 'sense-group' is quite different from Jones's sense-group discussed above.

The notion of 'tone group' and 'tonic', I believe, was first started by Coleman (1914), (though the term 'tone group' was first employed by Palmer: 1922). This concept, however, although it refers to an 'intonation unit' which is called elsewhere 'sentence tone' (Sweet: 1877), 'intonation curve' (Jones: 1909), 'intonation group' (Armstrong and Ward: 1926), has been postulated on a different basis.

Coleman looks at intonation and the unit of intonation in terms of 'point of emphasis'. There are two kinds of 'emphasis' in his theory: 'prominence' and intensity. Prominence is confined to the purpose of
contrast, or to the purpose of calling attention to a prominent word in the utterance (in his terms 'the last word that one would sacrifice to save a halfpenny on a telegram' (1914, 9)). Intensity is emphasis defined as the manner of utterance which imparts an added degree of intensity to some part of the idea represented by a word. Both types of 'prominence' in his study are recognized by 'a sudden turn' (rise or fall) in the intonation (1914, 11-14). However, 'intensity' is quite different from 'prominence'. It is always recognized with extra phonetic and linguistic cues as he states:

"Intonation cannot, however, be regarded as the essential of intensifying expression. There enter into it a number of other factors—special stress, extra slowness, extra quickness, length of word, additional words before the intensified word to gain attention by keeping one waiting, pauses with the same object, and other devices, such as repetition or additional words generally." (1914, 17)

For Coleman, every sentence has to have a 'prominence' and prominence can be intensified and becomes 'intensity', as he suggests, 'for contrast' or 'new information'. The concept of 'new' and 'given' information in a discourse is introduced though not explicitly defined and described, but many examples and discussion on this notion are given throughout his article (eg. Severe is not the word; it was a terrific storm. p. 18, or examples from 'As You Like It' on page 23 etc.).

He has put it clearly that:

"(I) Intonation is in most cases based on mere considerations of emphasis, and (II) that it is the chief factor in the expression of emphasis." (1914, 24)

If we consider that intonation has two functions as suggested by Gimson (1962, 266-284), we can say that the accentual function is represented by tonic and the non-accentual function is represented by tune. I think Coleman's notion of 'emphasis' in a unit of information makes a great contribution to the description of intonation. The theory has helped linguists of the present day to understand and to be able to describe intonation in connected
speech or discourse in a fuller way. I should like to borrow some wise words from Pilch who recently states:

"Intonation can be viewed in at least two different ways, either as 'phonological structure' or as 'topical usage'. As linguistic structure, intonation can be analyzed in terms of an inventory of discrete contrastive elements (emes') and of their hierarchy (clusters, groups etc.). As far as the usage of intonation is concerned, i.e., in actual communication, intonation is a topical device. It acts as a 'plot cue', to use Pike's term. When skilfully used by the speaker, it helps to establish focus, making it easier for the listener to follow the thread of the argument, of the narrative or whatever." (1980, 55)

From my point of view, Coleman's theory of emphasis in the description of intonation which he put forward with sharp observations and extensive examples, not only started a theory which concerns the syntagmatic relations of the intonation units as well as the paradigmatic relation of the contrastive tunes, but his arguments and examples also started off the 'parametric approach' to the study of intonation i.e. looking at tempo, degree of loudness and voice quality as part of the description of intonation, the approach which is fully developed by Crystal (1969, 1975).

Undoubtedly, Coleman's work has had a strong influence on the British approach to intonation in terms of tone group and its structure of a compulsory nucleus or nuclear tone or tonic and the optional head or pretonic and tail. Looking through the literature, after Coleman's work in 1914, the notions of 'nucleus' and 'tone group' were first put forward by Palmer (with full recognition paid to Coleman). He states:

"Various forms and shades of emphasis (such as word-prominence, word-group prominence, intensity, command, doubt, concession, reassurance, etc.) are expressed in English by the use of musical tones (i.e. by varying the pitch of the elements contained in the sentence). All phenomena connected with the musical pitch or tone are designated by the term Intonation. ... For the purpose of determining and classifying the phenomena connected with intonation, we must consider that English speech is cut up into Tone-Groups.
A Tone-Group may be defined as a word or series of words in connected speech containing one and only one maximum of prominence. The limits of a Tone-Group may be marked by placing the signs // or / on either side of it, or two adjacent Tone-Groups may be separated by the same sign.

Each Tone-Group contains a Nucleus, which is the stressed syllable of the most prominent word in the Tone-Group. (1922, 7, my underlining.)

It is clear to me that Palmer distinguished two units of different levels here, firstly the 'subjective prominence' and secondly the 'phonetic realization of this prominence' in terms of 'nucleus' or the stressed syllable of the most prominent word in the tone group. It seems that he divides connected speech into tone-groups by 'prominence in the information structure', not by the 'nucleus' since when he describes a whole discourse (p. 100-105) he postulates special tone-groups containing no nucleus i.e. the contour of this special tone group is low level without any prominent pitch. However, from his example, 'prominence' is usually realized with a 'nucleus' with bigger movement of pitch and relatively higher pitch. Palmer, like many of the pioneer British writers on intonation pays a lot of attention to the different movements of pitch at the point of prominence and the meaning they convey. Although the concept of 'prominence' was used in his description and delimitation of an intonation unit, he did not work much on the theoretical aspect of phonological system and structure of intonation. His work reached, what we might refer to in TG terms, as 'the highest point of observational adequacy'.

Halliday (1963, 1967) developed the concept of 'prominence' into a fuller account in the description of intonation. His view of intonation in connected speech is in terms of a complex of three independent

1 This kind of tone group, from his example, is the clause which the speaker uses as a break point to turn the attention of the listener to a new topic. The examples are from the third text in section 12. In this text where the speaker is talking about a conversation between himself and another person, the clauses 'So he began the conversation by saying...', 'so he said', 'so I said', 'so he went on' etc. were used to indicate to which speaker the direct speech he was repeating belonged.
but interrelated phonological variables 1) tonality, or the division of an utterance into tone groups and the placement of tone group boundaries 2) tonicity, or the placement of the tonic or the nuclear syllables and 3) tone, or the different pitch contours eg. fall, rise, rise-fall etc. of the tone groups. Besides these three phonological systems he postulates the notions of 'markedness' and 'unmarkedness or neutral', posited according to specific linguistic criteria in order to cover a wide range of utterances, constructed from these systems. These exemplify the rhythmical and intonation variation of different varieties of speech ranging from fluent unemotional reading style to complicated (complicated to describe and explain linguistically) conversational style.

It is not clear how Halliday defined tonic and delimited tone group, and this view has been attacked by Brown, Currie and Kenworthy (1980, and especially by Currie (1978, 1979) in separate papers) in their study of Edinburgh Scottish English. They state:

"Halliday's tone group is specified in terms of one tonic movement, though of course the stressed item initial in the pretonic may constitute another peak of prominence. Clearly our peak-initial contours and double peaked contours must constitute a problem for a Hallidaian analysis, though the final-peaked contours could be accommodated if we assume the initial peak(s) is indeed merely prominent in the pretonic." (1980, 65)

One of their questions of intonation is about the nature of tonic. They have taken Halliday's tonic as the 'maximal prominence in terms of phonetics' i.e. the phonological unit realized with maximum pitch height, maximum pitch movement and maximum intensity. They have run many recognition tests of the tonics under different conditions i.e. they asked the judges, who were linguists or phoneticians, to identify tonics 1) in terms of phonetic cues alone 2) in terms of syntactic cues alone (in written form) and 3) in terms of phonetic, syntactic and illocutionary information. Undoubtedly, judges could identify tonics
best in the last condition. The experiments showed clearly that in
the situation of 'new information' or 'contrast' judges can identify
quite well on the basis of phonetic cues without the context, compared
with the case where judges obtain only the context without the phone-
etic cues (in written form). I believe, we contemporary linguists all
accept that in a real speech situation listeners use any available cues,
both linguistic and paralinguistic, to interpret the meaning of the
utterances they are listening to. Whether they get the message that
the speakers want to convey or not, strictly speaking, does not depend
on the 'form' alone but it also depends on the listeners' attitude and
their presupposition of what they expect to hear as well. However, it
is the linguists' task not only to describe 'what happened' but also
'what can happen' first, and then to go on to the 'ambiguities of what
can happen' in terms of 'what happened'.

I accept that Halliday's notion of 'tonic' and his description
and delimitation of tone group are not explicit or not easy to understand. 
But I completely disagree with the over simplified version of Halliday's
theory which Brown (et al) gave for the sake of their own hypothesis. If
one examines his analysis of British English (RP) intonation thoroughly,
one will find that his theory is much more complicated than their inter-
pretation suggests. Halliday has double-tonic tone groups (13 and 53)
as well as monotonic tone groups. He obviously brought in grammatical
criteria in the limitation of unmarked tone groups, as he states:

"It has sometimes been suggested that the division of an utterance
into tone groups is congruent with its division into grammatical units. 
There is no agreement, however, as to which of the grammatical units is
co-extensive with one tone group; and this is not surprising, since in
fact the tone group bears no fixed relation to any of the grammatical
units of spoken English. There is a tendency for the tone group to cor-
respond in extent with the clause; we may take advantage of this tendency
by regarding the selection of one complete tone group for one complete
clause as the neutral term in the first of the three systems. (Neutral
or unmarked tonality)." (1967, 18-19; my parenthesis.)
He continued his remark on the limitation of the tone group by saying that it is very regular that it may correspond to more than one or less than one clause, and it does not necessarily correspond to any grammatical unit at all. The most important point in the postulation of tone group for Halliday is that different tonality can distinguish different meanings of utterances as he states:

"Selection for tonality can be regarded as the distribution of 'information units' though if this view is taken it is important to keep in mind the relation of tonality to clause structure, and to various other systems operating at the rank of the clause. Each tone group is then considered to contain one major information point, 'double tonic' tone groups having one major followed by one minor." (1967, 22

From his analysis there are a lot of tone groups with more than one pitch-prominent point eg. tone groups with compound primary tones, or double-tonic tone groups, tone groups with 'bouncing' pretonic which convey 'insistent' etc. The number of tones and types of tones seem to be arbitrary to speakers of different accents, but the system and structure put forward seem to be tenable and widely adopted by linguists and phoneticians of the same background. Whether Halliday's analysis is truly arbitrary or whether he, as a native speaker of the language, has intuitively taken other considerations into account in his choice of tones in double-tonic tone groups, as compared with two tone groups in succession, is beyond the scope of this thesis. However, it would be interesting for British students to do a reanalysis of Halliday's theory of intonation using the same kind of British English as the example, especially when one can still ask for his advice.

Up to the present, I have described the spoken paragraph phonetically in terms of 1) pause-defined unit 2) foot or stress group and 3) prominent stressed syllable within a pause-defined unit. I have also explained and discussed my views on some major contributions to the postulation of intonation units. I will adopt Halliday's approach in
postulating intonation units in Thai, firstly, because I found that his theory as discussed above not only provides a sophisticated theoretical framework for the description of potential utterances or 'what can happen' in a language, but it is also applicable to the description of actual utterances or 'what happened' in particular situations in a language. Although there are some weak points, which have been pointed out by Brown, Currie and Kenworthy, the theory is still solid and extensive enough for a description of any language with stress-timed rhythm both theoretically and pedagogically speaking. As I stated before that my view of intonation is in terms of two interrelated systems 'rhythm' and 'tune or pitch contour' of an information unit, Halliday's theory is ideal for the description according to this view. However, any problems that arise from the theory will be discussed, and suggestions for alteration at particular points in the description of Thai Intonation will be given.

4.3 Tonality Contrasts: The Foot and the Tone Group

From the analysis of the text in 4.1, it is clear that when native Thais want to convey a long piece of information (in this case, a paragraph), they divide the whole information into continuous smaller units of information. In the written form they use blank spaces, and in the spoken form they use pauses. We can also observe that without the occurrence of any punctuation mark, Thai speakers further divide each small piece of written information bounded by two blank spaces into smaller units of information by means of pauses. Examining the grammatical structure of the text as a whole in terms of syntactic and semantic analysis, it is interesting that these small units of information in spoken form, i.e. the pause defined units, are syntactically and semantically coherent. Let me exemplify this point with a clause from the paragraph.
In sentence 1 (Fig 4.1), S2 which is a clause functioning as a subject complement of the V, is one information unit in the written form:

... speakers (of) Thai normally use in everyday conversational speech.

In the spoken form both speakers insert pauses to break up this written information unit into 3 PDU's (see SL 6, 7, 8 and NJ 7, 8, 9 Fig 4.14).

1. นักภาษาไทย (speakers (of) Thai)
   # phu:/phu:/pha:/sa:/r/thaj/#

2. ใช้กันเป็นที่ (normally use)
   # chaj^h kan^pen pok^l ka?^l/ti?^l#

3. ในการสนับสนุนการสื่อสาร (in everyday conversational speech)
   # naj^m/pha:/sa:/r/son^thajh/na:^m/pra?^l/cam^m/wan^m#

Syntactically speaking, the first PDU is the NP functioning as the subject of this clause, the second PDU is the V and the adverb of manner and the third PDU is the prepositional phrase modifying the V /chaj^h/(use). The pauses the speakers put in without any punctuation marks occurring correspond to the syntactic boundaries, and divide this piece of written information into 3 spoken information units which are semantically coherent. We can consider the points where the speakers put in pauses without altering the meaning of the whole information, as potential points of information division. These potential points have been proved to be potential for division by the actual division into smaller information units. This has three phonetic realizations: 1) a prominent stressed syllable (PSS) 2) a pause after this prominent stress and 3) a single pitch contour, which in this style of speech is a narrow continuous fall (downdrift). These information units are syntactically and semantically congruent and unified, but they are realized
as separated spoken units by means of the phonetic cues mentioned. Each of these separated units will be labelled here a 'tone group'.

However, there are a few PDU's in this reading which have more than one PSS, and these PDU's raise the problem of the delimitation of tone groups. I should like to examine these PDU's before going on to the conclusion as to how we are going to delimit tone groups.

If we look at the grammatical structure of the topic of the paragraph (Fig 4.1) and the PDU's in the acoustic records (Fig 4.12), we can see that SL divided the topic into 2 PDU's:

1) คำนำหูลำวสิริ (Euphonic Couplets)
2) นิยมพัฒนาของระบบเสียงและระบบความหมายในภาษาไทย
   (Another aspect of phonology and meaning in Thai.)

In the second PDU, there are 2 PSS's as follow:

# ?i: k\textsuperscript{1}/qm\textsuperscript{1}/kh\textsuperscript{1}/h\textsuperscript{1}/b\textsuperscript{1}/s\textsuperscript{1}/l\textsuperscript{1}/h\textsuperscript{1}/b\textsuperscript{1}/k\textsuperscript{1}/m\textsuperscript{1}/m\textsuperscript{1}/
mas\textsuperscript{m}\textsuperscript{m}/p\textsuperscript{m}/s\textsuperscript{m}/th\textsuperscript{m}#

Examining most of the PDU's, we can see that speakers always assigned a prominent stress to the last syllable of the PDU's. If we take it that speakers divide their whole information into smaller units of information by means of assigning a prominent stress to the last syllable of the information unit, and this may or may not be accompanied by a pause (i.e. the end point of a spoken information unit is indicated by a PSS and this is the point which is potential for a pause), then we can postulate a unit of pitch which represents an information unit with a single prominent stress or a tonic (to be discussed in details in 4.4), and is called 'tone group'. A tone group, then, can be defined as a pitch contour of an information unit (which can be either a word, a phrase, a clause, or a sentence) delimited by one PSS or one tonic syllable. We can also conclude that in neutral non-emotional and non-contrastive speech, it is very common for each
tone group to have one tonic, and the termination of the group (whether semantically final or non-final) is identified by a tonic or a prominent stress on the last syllable of the whole information.

The topic of the spoken paragraph then is divided into three tone groups, as follows:

**Convention** // tone group boundary

. / foot boundary indicating that the syllable which follows it is phonetically stressed

^ silent stress

... pause

prominent stress or tonic of the tone group

---

**SL**

//kham真情/ut1ca男t/na真情/la男f// ... // ?i1k真情/ma真情

mu真情/kho真情/ra真情/bop真情/si真情// // la真情/ra真情/bop真情/kwa真情/ma真情

**NJ**

//kham真情/ut1ca男t/na真情/la男f// ... // ?i1k真情/ma真情

kho真情/ra真情/bop真情/si真情// ... // la真情/ra真情/bop真情/kwa真情/ma真情

With this definition and delimation of tone group, we can represent the distribution of tone groups in the PP (prepositional phrase) of the minor sentence (S2) in the second sentence of the comments (Fig 4.3) "เพื่อให้เกิดความไพเราะและสง่าและสะดวกในการพูด" (to create euphony, beautiful sounds and a convenient way to speaking) as follows: (see also the acoustic records in Fig 4.16)

**SL**

//phu真情/sa真情/la真情/la真情/lui真情// ...

//la真情/sa真情/lui真情//...

//la真情/sa真情/lui真情//...
I should like to emphasize here that the word which receives a prominent stress in this style of speech (the tonic) need not be the focus of information. In Thai the tonic is used not only to show the focus of information in contrastive situations (discussed later in 4.4, the tonic and tonicity contrast) but it is also used to show a terminal transition i.e. the ending of one information unit or ending of one information unit followed by another information unit (not necessarily the ending of a discourse). In English this terminal transition is realized as a pause or a prominent stressed syllable in the rightmost lexical word, whereas in Thai this is indicated by a prominent stress on the final syllable of the last word (whether lexical or grammatical) which is syntactically and semantically unified with other words in that information unit. It would be interesting to find out whether there is any linguistic universality in indicating terminal transition (such as phonetic prominence of the rightmost unit - in English, the lexical word, - in Thai, any word connected to the information unit).

1 I believe there are many speech signals which are used to show terminal transition. Abercrombie (1968) in his discussion on the functions of silent stress reported that in English the occurrences of silent stress between the last two stressed syllables of the utterance, and immediately following the word containing the penultimate stress, signal an impending transition either from one speaker to another or from one topic to another, and he called this function of silent stress terminal function.

2 Lexical words are words which have lexical meaning or semantic contrast as opposed to grammatical words whose function is only to signal grammatical relationships. Quirk referred to this group of words as an open class (N, N, Adj, Adv) as opposed to a closed class (Conj, Pron etc.). He said that the neutral position of focus or 'end focus' is on the last open-class item or proper noun in the clause. (See Quirk: 1973, 19-20, 406, and 452-3)
And if there is this universality, what are the common characteristics or language specific characteristics indicating terminal transition in languages of the world. These points are still open for further research.

The distributions of the tone groups in the spoken paragraph of both speakers are almost the same. (See Fig 4.1-4.6.) There is only one difference in tonality between the two speakers found in sentence one of the comments\(^1\) (Fig 4.2). The written form of the information is

\[
\text{Reduplicatives the kind which are called elaborated reduplicatives} \quad * \quad \text{or euphonic couplets *}
\]

These two written information units form the major NP of sentence 1. This NP is composed of a head N (Reduplicatives) and a modifying clause (the kind which are called elaborated reduplicatives * or euphonic couplets *).

From the written form it is as if the writer has put emphasis on the last NP (or euphonic couplets) by putting a blank space to separate it from the rest of the structure. This is plausible since the label 'euphonic couplets' was first introduced here and was going to be discussed for the rest of the paragraph. However the interesting point is that the first written information unit is represented differently by the two speakers as follows:

**SL**

```
//kham\textsuperscript{m}/sam\textsuperscript{h}// ... // cha\textsuperscript{h}/nit\textsuperscript{h}/thi\textsuperscript{f}/ri\textsuperscript{f}/ak\textsuperscript{f}/wa\textsuperscript{f}/kham\textsuperscript{m}/sam\textsuperscript{h}/sy\textsuperscript{m}/
```

Reduplicatives... the kind which are called elatorated reduplicatives.

\(^1\) There are some differences in tonalities between the two speakers in terms of differences of foot boundaries due to the occurrences of stress. SL tends to unstress the secondary accent of a word, whereas NJ tends to stress both secondary and primary accent of a word (see report in 4.1.3). However, I found these differences are not semantically interesting so I am not going to bring them into discussion here.
Reduplicatives the kind which are called ... elaborated reduplicatives.

In SL's speech, she put a prominent stress on the last syllable of the word /kham^m sam^h/ and had a pause after it. This separates the Head N 'reduplicatives' from the modifying clause 'the kind which are called elaborated reduplicatives', which is post-modification. The unaccented grammatical word /wa: f/ (the postV of the V-call) in the modifying clause was stressed. We can say that she represented this NP with two tone groups. The first tone group is syntactically the Head N and the second tone group is the post-modifying clause.

IN NJ's speech, she put a prominent stress on the unaccented grammatical word /wa: f/ and had a pause after it. The modifying clause was not separated from the Head N. We can say that she represented this NP with two tone groups. The first tone group is syntactically the Head N and the NP and VP of the post modifying clause, the second tone group is the subject complement of the modifying clause.

We can conclude that the two speakers have different distributions of tone groups or different tonalities. The question is whether these differences reflect different underlying meanings i.e. whether they form 2 tonality contrasts or not.

**Tonality Contrasts**

In the last section, I defined a tone group as 'a pitch contour of an information unit with a single prominent stress or tonic'. Assuming that an information unit can be composed of one independent meaningful unit called 'word' or a set of words which are syntactically and semantically coherent and unified, then tone group boundaries will
correspond to the boundaries of the word or words which form that
information unit. In spoken form this unit is realized as a stretch
of sounds. These sounds can be phonologically described in terms of
units of sound in hierarchical order: phoneme, syllable, foot or stress
group, and intonation unit or tone group.

I should like to propose here that tonality, or the distribution
of foot and tone group in an information unit, can be described in terms
of two different factors:

1. The underlying phonological accents which are the inherent
properties of the word and the underlying syntactic structure of the
word or words which make up that information unit.

2. The emphasis, or the center of the speaker's communicative
interest, which the speaker assigns to a particular word or words, to
highlight particular points in an information unit. This may be either
to show contrastiveness, or to express his emotion and attitude about
things in a conversational interaction (to be discussed in details in
Chapter 4.4), in other words, it relates to the underlying pragmatic
structure of that information unit.¹

I will exemplify these points by giving example of tonality
differences in Thai which reflect the differences in the underlying
factors proposed above. Examples in this part will run from (A),
(B),... and so on. Word boundary will be indicated by a dot; a compound
is considered as one word and is different from an endocentric noun
phrase which is composed of two or more words (see discussion in Chapter
1.3.2).

¹ Pragmatic structure concerns the actual situation or context where
the information unit occurs in a discourse, whether it is a spoken
prose or a conversation. (cf Brown et al : 1980, who use the term
'interactional structure' in describing conversational speech.)
The written de-contextualized information unit,

- /taːm maːm juː1 thiːf baːnf/

can have different meanings. They can be represented in terms of underlying syntactic structures and phonological accents, as shown below:

(A) \[ S \rightarrow NP \rightarrow Lexical \prefix \rightarrow N \rightarrow Prep \rightarrow V \rightarrow PP \]

(Mr. Maa stays at home.)

(B) \[ S \rightarrow NP \rightarrow V \rightarrow Prep \rightarrow N \rightarrow PreV \rightarrow V \rightarrow Prep \rightarrow N \]

(Grandad came to stay at home.)

In (A), the information unit is composed of 4 words: /taːm maːm/

(Mr. Maa), /juː1/ (stay), /thiːf/ (at), /baːnf/ (home).

In (B), the information unit is composed of 5 words: /'taː/ (grandad), /maː/ (come, a PreV showing the direction of the V towards the speaker), /'juː/ (stay), /thiː/ (at), /'baːn/ (home).

If the speaker is given the information about word components, any Thai is likely to read:

(A) //.taːm maːm/ juː1 thiːf baːnf// (Mr. Maa stays at home.)

(B) //taːm maːm/ juː1 thiːf baːnf// (Grandad came to stay at home.)

The differences in rhythmical variation or distribution of feet between (A) and (B) help to distinguish their meanings. We can say that the different tonalities are in contrast. In other words, these

1 /taːm maːm/ is a compound N. The word /taːm/(maternal grandad) is used as a lexical prefix in a lot of compound N indicating that the N that follows is human, male and either old but inferior in social status or young but intimate to the speaker (cf /jaːjmaː/ (maternal grandmother) in Ch. 2.2.4)
two contrastive tonalities reflect the fact that the two information units are made up from different words. These words, which are syntactically and semantically unified, have their inherent phonological properties which help to distinguish them from other words. In my language, these properties are: the consonants, the vowels, the tones, the length, and the accents. This example exemplifies my first hypothesis which says that 'the tonality of an information unit is influenced by the underlying phonological accents of the word or words and the underlying syntactic structure of these words which form the information unit'.

As we can see from the reading style, analysed in 4.1, that speakers usually put a prominent stress on the last syllable (whether accented or unaccented) of the last word before a pause in an information unit, we can take advantage of this by bringing in the notion of 'unmarkedness or neutrality' applied to the norm and 'markedness' applied to any deviation from the norm, and specifying that the tone group which has a single tonic occurring at the end of the group is neutral or unmarked in tonicity. In a neutral unemphatic and non-emotional style of speech, (A) and (B) are likely to have neutral tonicity as shown, but in some situations where speakers want to show contrastiveness or to emphasize any particular point or points in that information unit for the sake of their argument, or clearer statement or expression etc. they can put the prominent stress on any word, either grammatical or lexical, which they want to highlight. If the speakers still keep the prominent stress, functioning as end focus, on the last syllable of the right most word connected to the information unit, then they will have 2 PSS's in the unit and divide the information unit into two tone groups.

1 Quirk (1972, Ch. 14) described two kinds of focus: end focus and contrastive focus. In this case, end focus is used to refer to focus which shows terminal transition, either final or non final, by means of different phonetic cues: pause, downdrift and prominent stress (see discussion in 4.1).
In (A), if the speakers want to emphasize the word /'juː/ (to stay), they may have tone group distribution as in the following context:

//chan/ phuːt/ wai/ //taː/ maː/ juː/ //
I say that Mr. Maa stay

//thiː/ bain/ //məʃ/ chaj/ //taː/ maː/ phak/ //
at home not Mr. Maa rest

//thiː/ bain/ //
at home

(I said that Mr. Maa stays at home not Mr. Maa rests at home.)

The difference in the tonality of

//taː/ maː/ juː. thiː/ bain/ (Mr. Maa stays at home.) and
//taː/ maː/ juː/ //thiː/ bain/ (Mr. Maa stays at home not Mr. Maa rests at home.) are influenced by the second factor, the underlying pragmatic structure of the information unit in a real context of situation.

If the speaker has only one prominent stress in the information unit, i.e. only on the contrastive word, then the differences between the normal form and the contrastive form will be in terms of different tonicity or placement of tonic, as follows:

Neutral Tonicity //taː/ maː/ juː. thiː/ bain/ (Mr. Maa stays at home.)

Marked Tonicity //taː/ maː/ juː. thiː/ bain/ (Mr. Maa stays at home, not Mr. Maa rests at home.)

We can also notice that differences in tonality which are influenced by differences in the underlying pragmatic structures of the information unit do not change the sentence meaning of the information unit, i.e.

1 Sentence meaning is used here to refer to the potential meaning or a set of meaning possibilities which a linguistic structure has, as opposed to actual meaning which is the meaning of that linguistic structure in a context of situation. The actual meaning cannot be given by the information from the linguistic structure alone, but needs to be interpreted in a specific context of situation and context of culture. (See Halliday (1973) especially the 3rd and the 4th paper and cf Lyons (1981, Ch. 5) on sentence meaning and utterance meaning.)
the different tonalities are not linguistically in contrast. However, the differences indicate where the center of the speaker's communication interest is. We can say that the differences in tonality which can be described within certain presuppositions and contexts of situation are pragmatically in contrast.

The information unit (A) พระมา (Mr. Maa stays at home.) may be realized with different tonalities and tonicities according to the context, as follows:

(A) .a : Reading style, "Mr. Maa stays at home."

//taː m/ maː m/ juː l thiː f/ baː n f//

(A) .b : I said, "Mr. Maa stays at home." not "Mr. Maa rests at home."

//taː m/ maː m/ juː l thiː f/ baː n f//
or
//taː m/ maː m/ juː l/ (.) // thiː f/ baː n f//

(A) .c : I said, "Mr. Maa stays at home." not "Mr. Dang stays at home."

//taː m/ maː m/ juː l thiː f/ baː n f//
or
//taː m/ maː m/ (.) // juː l thiː f/ baː n f//

(A) .d : Write down that I say : Mr. Maa, stays, at home.

//taː m/ maː m/ (.) // juː l/ (.) // thiː f/ baː n f//

e等。

The information unit (B) พระมา (Grandad came to stay at home.) may be realized with different tonalities and tonicities according to the context, as follows:

(B) .a : Reading style, "Grandad came to stay at home."

// taː m/ maː m/ juː l thiː f/ baː n f//

(B) .b : I said, "Grandad came to stay at home." not Grandad came to rest at home."

// taː m/ maː m/ juː l thiː f/ baː n f//
or
// taː m/ maː m/ juː l/ (.) // thiː f/ baː n f//
(B) c: I said, "Grandad came to stay at home." not "Uncle came to stay at home."

or

(B) d: Write down what I say: grandad, came, to stay, at home.

etc.

So far, I have illustrated that tonality differences in a string of identical set of syllables are influenced by 1). the underlying phonological accents and the underlying syntactic structure of the word or words which make up the information unit, and, 2). the underlying pragmatic structure of the information unit which can be described in terms of emphasis or prominent point of information within specific context of situation.

We can see that, strictly speaking, the tonality differences derived from the first factor reflect the differences of sentence meaning of the information unit, i.e. the tonalities in (A) and (B) are linguistically in contrast, whereas the tonality differences derived from the second factor reflect the differences in point of emphasis given to particular point of information without changing the underlying sentence meaning of the information unit, i.e. the tonalities in (A) a, b, c, d or (B) a, b, c, d are not linguistically but pragmatically in contrast. Let me exemplify this point by another example:

(C) ฉันพบคุณภรรยาของคุณ (I met your beautiful wife.)

This information unit is composed of 7 words: /chanF/ (I), /'phoph/ (meet), /'phanm raph 'ja;m/ (wife), /khonm/ (person or people,
here used as a pronoun) /ˈsuːajr/ (beautiful), /kʰəːŋ/ (of), /kʰunm/ (you). These words are syntactically unified and together form an information unit of which the syntactic structure is shown below:

```
S
  NP  VP
    V   NP
      ProN  N  NP2
  I  meet  wife  one beautiful of  you
```

chant. /ˈphɔːp həˈɲmjəː/ (I met your beautiful wife.)

If we ask any Thai to read this written information unit, he is likely to say:

(C) /ˈpʰɔːp həˈɲmjəː 'sʊːajr kʰəːŋ /kʰunm//

The unaccented ProN /kʰunm/ (you) will usually receive the prominent stress showing end focus in this unmarked style of speech.

However, in a real context of situation this information unit may be realized with different tonalities, for example:

If the speaker wants to put the emphasis on the word 'beautiful' either for sarcasm, or to show restrictiveness in the situation that the interlocutor has many wives and the speaker wants to refer to this beautiful one only, he may say:

```
1 /kʰonm/ (person or people) has many grammatical functions in Thai. It can be a lexical prefix in a compound eg. /kʰonm 'ŋaːnːm/ (worker), or a classifier for N which is human eg. /nəkʰ 'rɪːjanːm 'sʊːajr kʰonm/ (student, two, persons). In this information unit it functions as the subject of the modifying clause.

2 This modification can be considered as a modifying phrase or a clause because Thai is a language in which Adj functions as an intransitive V (i.e. we do not need an auxiliary V before an Adj as in English) for example, /ˈsʊːajr kʰonm/ (dress, beautiful) can mean either 'beautiful dress' or 'the dress is beautiful'.
```
If restrictiveness can be described in terms of emphasis, there is a tendency in Thai for a separate tone group caused by emphasis to indicate restrictive modification. As a native Thai I find that I can understand the notion of restrictiveness and non-restrictiveness in the English sentence //A I /met your /beautiful /wife./ and //A I /met your/beautiful/wife./ which is a similar to the Thai shifting of tonic in (C) .b. However, non-restrictiveness in English which is shown by parenthetic post-head modification endorsed by a separate tone group given to this non-restrictive modification, as in // The /pretty/girl// /who is a /typist// /is /Mary Smith./, is quite difficult for me to understand. The logic of this parenthetic modification does not seem to apply to Thai in the same way as it does in English. 1 We can see that in (C) c, d, e, f, the restrictive modification gets the emphasis realized in terms of a separate tone group.

Restrictiveness is a very complicated notion, Quirk in his description of English grammar states:

1 In some situations if the speaker assumes that the listener knows the referent he refers to and then realizes that the listener does not know (maybe from his facial expression), he may pause and add a parenthetic modification which in this case, is restrictive both in Thai and English. ประจำที่มาถึงเมื่อวานนี้มาหาฉันอีกครั้ง (Praesert ... the one who came to see you yesterday ... came to see me again today.)
"Modification at its 'most restrictive' tends to come after the head; that is, our decision to use an item as a premodifier (such as silly in the silly boy got lost) often reflects our wish that it be taken for granted and not be interpreted as a specific identifier. Secondly, restrictive modification tends to be given more prosodic emphasis than the head; non-restrictive modification on the other hand, tends to be unstressed in prehead position, while in post-head position its 'parenthetical' relation is endorsed by being given a separate tone unit, or - in writing - by being enclosed by commas." (1973, 377; my underlining)

In Thai, which is a language with post-head modification (see chapter 1.3.3), restrictiveness is shown by more prosodic emphasis being given to the modification which usually, in turn, separates the modification phrase or clause from the head N. However, the interpretation of prosodic emphasis given to any word or words need to be done pragmatically. Quirk gave an example that "...if a man (in a monogamous) society says 'Come and meet my beautiful wife' the modification is understood as non-restrictive." (1973, 376). He does not indicate whether the word 'wife' or beautiful' is the tonic. It is likely that in the unmarked situation the word 'wife' will be the tonic, but if the speaker puts the emphasis on the word 'beautiful' and the listener knows that he has only one wife, the listener may interpret this marked tonicity as marking something, either that the speaker wants to tease his wife who spent a lot of time dressing up for this occasion, or that she has a new hairdo etc.

If restrictiveness can be described in terms of emphasis and its meaning is to be interpreted pragmatically, linguists might be able to describe restrictiveness not only in terms of prosodic prominence, i.e. tonicity and tonality, but also in terms of choice of lexical words used in an utterance or the syntactic structure of the component words, for example:

(D) ช่านห/เห/ผา/ข้าม/ขาน้ี/ช่วยต่อ/ทำ/[:
// Chan· /Phop· /Phan· /Ra· /Ja· /Khon· /Chyi· /Cho· /Kho· /Khum· //
In this information unit, instead of the ordinary word /'sua:j/ the speaker uses the a lexical word /'chaoi m/ which can be considered marked since it is not used in ordinary language. Emphasis which is given to the modification by the choice of word may reflect restrictiveness or sarcasm or other marked meaning, and the interpretation of this meaning can be made by means of the information from the context of situation.

One also finds that speakers of Thai may add a particle indicating specification after the restrictive modifier, for example:

(E) //chan m//phop h//phan m//ra h//ja m//(...) //khon m//sua:j khun m//na? /.

The use of a general antecedent as the HeadN and a definite post-modifying clause also reflects restrictiveness, for example:

(F) // phu e//thi://mas m//chua:j //pa n m//kla p m//paj m//lai w h//

one that PreV help work return PostV already

(The one who came to help (my) work has gone.)

Even without the prosodic emphasis on the modifying clause, the unit has its inherent restrictiveness, one cannot say

* phu e//kla p m//paj m//lai w h//

one return PostV already.

We have discussed the potential meanings of different tonalities from the constructed examples so far. I think we can go back to the

1 /na?/ which is a final particle does not have inherent tone or length. In this case, where it shows specification, it is usually realized with a mid falling pitch, short and with glottal constriction.

2 See Quirk (1973) Restrictive and non-restrictive apposition (Ch. 9) and Post modification (Ch. 13)
tonality differences found in the spoken paragraph which I left in
question before the discussion on tonality contrasts in this section.

SL // kham^m/sam^h//...//cha^h/nit^h/thi:f/ri:ak^f/wa:f/kham^m/
reduplicatives kind which call that ela-
sam^h/sam^r/sol //
borated reduplicatives

NJ // kham^m/sam^h cha^h/nit^h thi:f/ri:ak^f/wa:f// ...
reduplicatives kind which call that
// kham^m/sam^h/sam^r/sol^f//
elaborated reduplicatives

SL put the prosodic emphasis on both the headN and the modifying
clause. She had the headN and the modifying clause separated into two
tone groups. She also put a stress on the unaccented grammatical word
/wa:f/ (that).

NJ had the first part of the modifying clause connected to the
headN in the same tone group and had the subject complement of the
modifying clause as a separate tone group. We can say that the differ-
ences in tonality between the two speakers are not linguistically
significant i.e. they do not change the underlying grammatical meaning
of the information unit. However, the differences may be interpreted
in terms of differences in points of emphasis. SL who is also the
writer of this article knows that there are many types of reduplicatives
in Thai and she is going to talk about the type which is called 'ela-
borated reduplicatives or euphonic couplets' only, whereas NJ may have
thought about only one type of reduplicative which happened to be called
'elaborated reduplicatives' and used the modifying clause in a non-
restrictive sense. Both speakers put the emphasis on the V 'to call',
SL by assigning a stress, and NJ -a prominent stress on the postV /wa:f/
which is phonologically unaccented. It seems as if both speakers put
the emphasis on the 'technical label' - elaborated reduplicatives or
euphonic couplets, which is mentioned here for the first time and is
going to be the topic of the rest of the paragraph.

Another example of a modifying clause from the paragraph which I want to bring into discussion is in the third sentence (see Fig 4.6, and SL and NJ 23, 24 Fig 4.20).

and (it) has specific meaning which every Thai speaker knows.

In this information unit both speakers put the emphasis on the modifying clause by having the clause as a separate tone group, as follows

\[ \text{phu:}^{f} \text{phu:}^{m} \text{sa:}^{r} \text{thaj}^{m} \text{thuk}^{h} \text{khon}^{h} \text{ri:an}^{m} \text{xui}^{h} \]

speaker language Thai everyone know

It is quite clear that both speakers use the modifying clause in a restrictive sense, firstly because the phonetic realization in terms of prosodic emphasis is given to the modifying clause, and secondly from the context we can see that without this clause the information would not be completed.

The last example from the spoken paragraph is the major NP in sentence 2 (see Fig 4.3, and SL 9, NJ 10 Fig 4.15).

Most people who study reduplicatives give the explanation that.

\[ \text{SL} // \text{phu:}^{f} \text{thi:}^{r} \text{xuk}^{l} \text{sa:}^{r} \text{tham}^{m} \text{sam}^{h} \text{xuan}^{l} \text{jaj}^{l} \] ... \text{haif}...

one that study reduplicative most give

\[ \text{NJ} // \text{phu:}^{f} \text{thi:}^{r} \text{xuk}^{l} \text{sa:}^{r} \text{tham}^{m} \text{sam}^{h} \text{xuan}^{l} \text{jaj}^{l} \] ... \text{haif}...

one that study reduplicative most give

The word \( \text{phu:}^{f} \) is used as a general antecedent functioning as the headN (cf. example F ผู้มาช่วยงานกับไม่เปล่า The one who came to help my work has gone.) The modifying clause is a definite modification, and is inherently restrictive; the unit would be grammatically
ill-formed without the modifying clause. In this case there is no need to put prosodic emphasis on the modifying clause to show restrictiveness by a separate tone group as in other cases cited before.

I should like to give a conclusion about tonality and tonality contrasts with this following schema:

<table>
<thead>
<tr>
<th>Actual Meaning</th>
<th>UTTERANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Contextualized)</td>
<td>Real Context of Situation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potential Meaning</th>
<th>INFORMATION UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Decontextualized)</td>
<td></td>
</tr>
<tr>
<td>[. . . [X] [Y] [Z] . . . ]</td>
<td>I</td>
</tr>
</tbody>
</table>

(X, Y, Z are words which are semantically and syntactically unified and form an information unit or the linguistic grammatical structure or the sentence.)

---------

[ ] [X2[..Xn]] [Y2[..Yn]] [Z2[Z2[.Zn]] II

(X1-n', or Y1-n', or Z1-n are syllables which are phonologically unified and form a word.)

The diagram illustrates that an information unit is composed of a word or a set of words of which the number is indefinite ([... [X [Y] Z] ...]). These words are semantically and syntactically unified to form the information unit bigger than a word which is usually referred to as a grammatical sentence. If a set of sentences are semantically unified, they will form a discourse which in spoken form can be either spoken prose or a conversation. Each word in a sentence is composed of a syllable or a series of accented and unaccented
syllables \( (x_1 \ x_2 \ldots x_n) \) which are phonologically unified to form a word.

The rhythmical variation (in terms of foot distribution, and tone group distribution known as tonality) is determined by

1) the phonological structure of the component words of the information unit and the underlying syntactic structure of these words (I & II in the diagram).

2) the focus of the information unit showing the terminal transition of the unit (end focus) either final (no more to come) or non-final (more to come), and the highlighted point of communicative interest (expressive focus) \(^1\) whether contrastive, new, or emotive etc.

The information unit can have a number of different tonalities, and when it is decontextualized one can only suggest a set of potential meanings for this unit. The actual meaning of the phonetic output or

\(^1\) From the functional point of view (Bühler: 1934), language has three main functions: 1) cognitive or representative or descriptive 2) expressive or affective and 3) indexical or appellative, i.e. how language appeals to the decoder or decoders. (See discussion in Trubetzkoy: 1939, 14-26 on 'Phonology and phonostylistics, and Lyons: 1977, 50-56.) If we are describing language from the encoder's side we can discuss the first and the second function, but if we bring the decoder into our description then we can discuss the third function. The indexical function of language is very interesting but complicated. From my point of view, this function is less immediately relevant because it does not concern the nature of the sign alone; there are many factors which are involved on the decoder's part: his attitude, presupposed belief, inner reference (cultural & social background), emotional background etc. play important roles in the interpretation of the sign. In a discussion of conversational interaction, Laver and Hutcheson (1972, 11-15) suggested that 3 types of information are exchanged in a conversation: cognitive information, indexical information and interactive - management information. It seems to me that the term 'indexical' used here puts a lot of emphasis on the listener; it does not distinguish the expressive information encoded by the speaker (whether intentional or nonintentional) from the appellative information decoded by the listener. Halliday (1973) used the term 'interpersonal' which covers both types of information I discussed above. However, since I am going to discuss focus mainly from the speaker's side I will use the term 'expressive focus' here. This will be discussed in detail in 4.4.
tonality can be determined only when the context of situation is specified. However, the listener's interpretation of the actual meaning depends on many other factors such as the attitude of the listener towards the speaker, the presupposed belief of the listener etc. which is beyond the scope of this thesis to describe.

Tonality differences of a set of identical syllables which are influenced by the underlying phonological and syntactical structure of the information units are linguistically in contrast, i.e. they form different sentence meanings (see examples (A) & (B)). On the other hand, tonality differences which are influenced by the underlying pragmatic structure of the information unit in terms of focus of information are pragmatically in contrast, i.e. they do not form differences in sentence meaning but they indicate the points of communicative interest which are important in the interpretation of the sentence in terms of attitude and emotions of the speaker. We can say that tonalities have two functions, the referential (or representative) function and the expressive function and like any other kinds of sign they have the indexical (or appellative) function when we bring listeners into our description.
4.4 Tonicity Contrasts: The Tonic

In the last section I have discussed the notion of tonality in terms of the structure of a tone group (i.e. the delimitation of a tone group, and the distribution of the foot in a tone group), and the meaning possibilities of the information unit with different tone group distribution (i.e. tonality contrasts). Besides tonality, there are two other systems that interplay with the system of tonality to give the overall pitch contour or the intonation of an information unit. They are the system of tonicity and the system of tune. ¹

I have defined a tone group as the pitch contour of an information unit which has one prominent point of information interest realized with the occurrence of a prominent stressed syllable (PSS) or the tonic syllable. We can see clearly that the systems of tonality and tonicity are closely related and we cannot completely separate one from the other. We can only put one in the background or in the foreground while discussing the other.

The subjective prominence which is realized as a 'phonetic emphasis'² is known under different names: 'emphasis' (Coleman: 1914), 'maximum of prominence' (Palmer: 1922), 'tonic prominence' as distinguished from 'tonic' (Halliday: 1963, 1967, 1970). This highlighted point of communication interest or 'Focus' has been a major interest in present day linguistics under different names according to which aspects of

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¹ Since Thai has the system of lexical pitch called 'tone', I have decided to call the system of contrastive pitch contours described in Chapter 3, the system of 'tune' instead of Halliday's system of tone in his description of British intonation.

² In English this phonetic emphasis is usually realized with a maximum pitch height, maximum pitch range, and maximum intensity. However, there are many other prosodic features that speakers use to mark emphasis: variation in the length of the syllable, or the rhythm and speed of speaking etc. In Thai, length is the most crucial cue and when the emphasis is intensified (see emphatic/neutral or non-emphatic in chapter 3), pitch height, pitch range, and degree of loudness increase markedly. (See also discussion in Crystal: 1969, 1975.)
linguistics one is working on. Van Dijk in his study of the semantics and the pragmatics of discourse, discusses the structure of information in terms of 'topic' and 'comment'. He states:

"At the level of sentence structures another notion of TOPIC has been used in recent linguistics, often in combination with the notions of COMMENT and FOCUS. In that research a sentence may be assigned, besides its usual syntactic and semantic structures, a binary TOPIC-COMMENT structure. The definition of such structures is specified both in semantic and pragmatic terms of information and information distribution in sentences and their canonical or transformed syntactic and morpho-phonological expression. The intuitive idea behind the assignment of such structures in a grammar is that in a sentence we may distinguish between what is being said (asserted, asked, promised..) and what is being said 'about' it, a distinction closely parallel to the classical SUBJECT-PREDICATE distinction in philosophy and logic." (1980,114).

Grammarians use the notions Subject-Topic to refer to the binary Topic-Comment used in the discourse analysis at the level of sentence structure. (See Chafe;1976, especially pp 43-53, where he discussed the notions subject/topic as compared to the notions topic/comment.) Van Dijk (1980,116) argues that the notions topic/comment should have a semantic status since they cannot coincide with or be identical to particular syntactic categories. (I believe he means subject/predicate or subject/topic of the grammarians.) I quite agree with Van Dijk, since in conversational speech there are deletions of grammatical units all the time. Especially in Thai, we can have subjectless sentences and one-word utterances are very common. The notions of givenness - newness, contrastiveness, definiteness should not apply only to

1 See Joos (1961) on his discussion on 'extraction' and 'ellipsis' in intimate style.
2 In Thai conversational speech, parts of speech which are known or given from the context of situation are usually deleted. Another point is that Thai is a language in which the choice of pronominal in social context is very critical so that sometimes speakers just avoid using any pronominal at all. (See discussion in Chapter 1.3.3, and on sentence constituents of initiating and non-initiating sentences, see Panupong; 1970, 10-35.)
specific syntactic categories.¹

Studies on parts of information or parts of sentences which are important from the pragmatic points of view have shown that there are many ways that the decoder (writer, speaker) can focalize the important point of the sentence. The notion of 'psychological subject' in terms of the sentence structure (Hornby: 1972, Chafe: 1976) where the focalized subject is moved to the left is well accepted. The emphasis may be given to any point of the information by the use of irregular lexis.² This important point in an information unit is usually reported to be phonetically prominent as well.³

Phonetically speaking, phoneticians refer to the phonetic realization of the subjective prominence or the focalized information point with different terms such as 'nucleus', 'sentence stress', 'tonic'. The phonetic description of an information unit is usually in terms of a tone group. The structure of a tone group described by linguists always consists of one tonic or nucleus which is compulsory, and the optional pre-tonic or head which precedes the tonic, and the optional post-tonic or tail. (See Palmer: 1922, Kingdon: 1958, Halliday: 1967.)

What actually is a tonic? Brown, Currie and Kenworthy (1980) have raised the problem that it is difficult to recognize the tonic in terms of phonetic cues alone, one needs other linguistic cues to be able to

2 See example given in Chapter 4.3 / chant/phophan/ran/ ja1/ mon/ chvt1/ chom/ khot/ khum/ (I met your beautiful wife.), where /chvt1/ chom/ an irregular lexis is used to put the emphasis on the modifier.
tell where the tonic is. Undoubtedly, this problem is the problem of
definition and level of analysis. I would like to propose here the
distinction between the subjective prominence which from now on I will
refer to as 'Focus' and the phonological prominence which I will refer
as 'Tonic' or the 'Tonic word' and the phonetic realization of the
tonic in form of 'Tonic syllable' or 'Prominent stressed syllable or
PSS'.

The subjective prominence or the focus need not be uttered.
In written form one can find the focus of any information unit
providing that the context of discourse (in terms of its pragmatic
structure) is given. The sentence structure, punctuation marks or the
use of particular lexical items or grammatical items also help the
reader to find out where the foci of information in a discourse are.
In spoken form one always finds that the focus of an information unit
is realized with a 'phonetic prominence' in form of the tonic syllable
of the tonic (to be precise- the tonic word). The tonic, then, is the
word or the smallest independent information unit which is focalized
within an information chunk and is realized with a phonetic prominence.
The tonic may indicate the most important point of communicative
interest or merely indicates a terminal transition of an information
unit. There are information units with multiple foci of information
which are represented with a single tonic to show terminal transition
of the information unit. For example, in the situation where there
are some noises outside the house, A is in the house, B is in the
/ma]1/kat1/mo]1w]/ (The dog is biting the cat.). The word which is
the tonic is /mo]1w/ (cat), but in terms of information structure,
the three words are equally important, they are all new information.
The tonic here does not represent the most important point of the
information unit but indicates the terminal transition of the whole
information unit. In this case we can say that the tonic indicates or
functions as 'End Focus'. I have proposed in Chapter 4.3 two kinds
of focus of an information unit: 1) End Focus and 2) Expressive Focus
which I would like to discuss in detail here.

The Tonic: End Focus and Expressive Focus

In continuous speech speakers need to divide whatever message
they want to convey into smaller units due to the limitation or capac-
ity of human perception and production. Lindberg (1979), in his
discussion on the mechanism for string simplification in 'speech
sentences', or the division of units of actual spoken language as
opposed to grammatical sentences, states:

"... since psychological processes are equally involved in speech
production, it seems that string length is a crucial factor not only for
the hearer, in terms of acceptability, but also for the speaker, in terms
of production capacity. This can be inferred from studies of spoken
language. The strings of symbols in speech sentences are on the whole
shorter than those of sentences. ... String simplification is a frequent
phenomenon in ordinary spoken language, and it seems reasonable to
assume that the use of this mechanism implies psychological simplifi-
cation, in perception as well as in production." (1979,55-56.)

The description of 'intonation units' or 'tone groups' in
phonetic terms as related to the syntax and semantics of the tone
groups (i.e. the postulation of tone group as the representation of
the syntactical unit or of the information unit) in Chapter 4.1 and

1 Kuno (1976) discussed the notion of 'speaker's empathy' where in
a sentence, the syntactic structure reveals from whose side the
speaker is describing things. The sentence /maːrkatˈm/, from this notion, is stated from the dog's side, i.e. the speaker's
empathy is placed on the subject. One might argue that /maː/ (dog)
is more important here.
2 This is equivalent to the notion of 'information units' which I use
in this thesis.
4.3 supports this view. We can see clearly from the phonetic evidence that in spoken prose speakers divide the whole discourse which consists of one grammatical phrase and three sentences into twenty five tone groups, or to use Lindberg's term, twenty five speech sentences. The number of syllables in the tone group from this study ranges from two to twelve syllables, and each tone group has one tonic syllable indicating the end of the information unit. I have used the tonic syllable as a phonetic cue in postulating tone groups or spoken information units.

From the analysis of spoken prose in Thai we can see that in this style of speech which is of assertive nature, speakers put the phonetic prominence onto the last word which is semantically and syntactically coherent with other words to form a meaningful information unit. Using this phonetic prominence as a phonetic device to postulate speech units called tone groups, we found that speakers divide the whole discourse into successive tone groups, each representing an information unit, in a well planned systematic manner. The tonic or the word with the phonetic prominence in this style of speech indicates that one assertion.

1 Lindberg did not discuss string simplification in terms of tone groups but 'the length of speech sentences', but I found his discussion is on the same line as my discussion on the division of the whole discourse into smaller information units realized as tone groups.
2 Laver(1970:68) claims that a tone group lasts, on average, for about eight to seven syllables.
3 It is beyond the scope of this thesis to discuss the notion of 'assertion', however, I found that the description of speech in terms of illocutionary acts and their structure (Searle :1965, 1969, 1979) gives a very clear picture for the interpretation of the meaning of utterances. For Searle, in assertion, firstly there is a proposition and the speaker has an evidence for the truth of this proposition, secondly he believes in the proposition. Although it is not obvious to both the speaker and the listener(Searle uses 'hearer') that the listener knows the proposition. In spoken prose, undoubtedly, there is a set of propositions and the speaker believes in the truth of them and states or asserts them.
4 Laver(1970:69) suggested that evidence in error-free continuous speech helped to support the notion that tone group is the usual unit of neurolinguistics pre-preparation.
is coming to a terminal transition (whether final or non-final). This phonological tonic indicates **End Focus**. I have stated before that **Tonic** and **Focus** are two different notions. Focus is the subjective highlighted point of communicative interest whereas tonic is the word which is realized with the phonetic prominence and is considered the phonological prominence. Information units which are of assertive nature, non-contrastive, non-corrective, non-emphatic, non-emotional etc. (whether with single focus /\(\text{man}^m \text{pen}^m /\text{ma}^r\)/ - It is a dog., or with multiple foci, as the above example, /\(\text{mar}^r/\text{kat}^l /\text{ma}^w^m\)/ - The dog is biting the cat.) usually have one phonological prominence indicating terminal transition realized as a tonic syllable of the tonic. In these cases the tonic is usually the **rightmost word** of the information unit. Enkvist(1960) used the term 'information focus' for this kind of focus and designated the notion 'unmarked' to it. I am not very satisfied with the term 'information focus' here, since every spoken information unit whether assertive or non-assertive, emotional or non-emotional etc. contains cognitive or representative information (see Lyons ;1977, 50-56). The term 'End Focus' or 'Unmarked Focus' seems to be more appropriate for the focus functioning as the indicator of terminal transition discussed above. All the tone groups in the spoken paragraph of both speakers discussed in 4.1 and 4.2 above, have unmarked end focus realized with a tonic syllable of the tonic or the tonic word occurring at the end of the tone group. Tonic which represents end focus is usually but not always accompanied by a pause (see Chapter 4.1 and 4.3). Tonic in Thai is phonetically quite prominent, especially in terms of duration of the tonic syllable (see Luangthongkum's one syllable foot before a pause (1978,146), and 4.1 in this Chapter). Butcher (1981) in his study of aspects of the speech pause reports:
"The vowels and consonants immediately preceding breaks were found to be lengthened by between 70% and 100%. The degree of lengthening was not correlated with the duration of the following breaks. There is no evidence that segmental lengthening was consistently absent before unheard breaks, but there was some indication that above average lengthening could contribute to the perception of a pause where no break was present." (1981, 202-203, my underlining.)

This report is quite interesting, since the past literature reveals that in postulating units of intonation or tone groups phoneticians have always used tonic as the most prominent cue in dividing continuous speech into smaller groups (see discussion in 4.2). Pauses have always been brought into postulation of tone groups (see Sweet:1908, Jones: 1918, Trager and Smith:1951 in terms of junctures, Brown, Currie and Kenworthy:1980, and the discussion in Chapter 1.3.1, 4.1 and 4.2). If lengthening of syllables, which is a common phonetic characteristic of the tonic syllable found in many languages, contributes to the perception of pauses as reported by Butcher (quoted above), then the tonic in some style of speech might reflect that speakers assign subjective prominence realized as the lengthening of the syllable to divide the whole information into smaller units due to his human capacity in perception and production of speech. Therefore, it is quite appropriate to call the subjective prominence which the speaker puts onto a word to indicate a terminal transition, End Focus.

Every information unit contains cognitive information and besides this cognitive information there is, from the speaker's part, the expressive information. This is the information about his attitudes, and emotion towards things which he intentionally or unintentionally conveys to his listener or listeners. I have briefly discussed in section 4.3 that there are many linguistic mechanisms that speakers can use to convey the subjective or psychological prominence which

1 Butcher used the term 'break' here to refer to a break or silence in acoustic signal.
helps to express their attitudes and mood towards things. These mechanisms which I propose are in terms of syntactical structure, choice of lexical items and phonological prominence or tonic. I would like to discuss this notion of the subjective prominence used to convey the speaker's expressive information in detail here. And I will refer to this type of subjective prominence as 'Expressive Focus'.

Expressive focus can be realized in different forms: marked syntactical structure, marked lexical item, or marked tonicity. Let me exemplify this point by some examples.

(A) The speaker notices that the listener is looking at her new dress, she says:

\[\text{ enrol \( \} \text{ kran, proio, ni, f} \}\]

(Dang made this dress.)

In this situation we can say that /kra, proio, (dress) is given or known, /'dza, (Dang) is new. The syntactical structure of the sentence is SVO. Dang is the grammatical, logical, and psychological subject (see Chafe: 1976). Judging from the context of situation or the pragmatic structure, the subjective prominence is on /'dza, whereas the phonetic prominence falls on the unaccented monosyllabic grammatical word /ni, f/ (this), indicating end focus.

(B) In the same situation as given in (A), the speaker says:

\[\text{ enrol \( \} \text{ kran, proio, ni, f} /\text{dza, tat,}\]

(This dress, Dang made it.)

In this situation we can say that although the word /kra, proio, (dress) is given or known, the speaker has put the subjective prominence on it by shifting this grammatical and logical object to the front.
The word 'dress' has become the psychological subject realized by the marked syntactical structure OSV. The phonetic prominence falls on the last word of the information unit /'tatl/ (cut), indicating end focus.

(C) In the same situation as given in (A) the speaker says:

(Dang made this dress.)

The word /ca:w f/ is a lexical prefix found in a lot of compound N with the morphological structure 'lexical prefix + N Comp N(+animate)', for example /ca:w f/ + /thuk h/ (distress) complainant, /ca:w f/ + /sap h/ (property) proprietor etc. /ca:w f/ used here is considered lexically marked since /kra:y pro:i y/ (dress) is not animate. The speaker has put the subjective prominence on the word dress by marking it with a marked lexical prefix. The phonetic prominence still falls on the last word of the information unit /ni:f/ (this), which is phonologically unaccented, indicating end focus.

(A), (B), and (C) all have the last word of the information unit as the tonic indicating end focus. The expressive focus is realized through the context of discourse - in (A); the marked syntactical structure - in (B), and the marked lexical item - in (C).

Another linguistic cue which speakers usually use to mark expressive focus is the phonetic one. Speakers may put phonetic prominence onto the primary accented syllable of the word or the unaccented monosyllabic word which they want to highlight. The word with phonetic prominence or the tonic word becomes the tonic of the tone group. If the focalized word does not occur at the end of the information unit, the unit or the tone group is considered to have 'marked tonicity' i.e. the PSS or the tonic syllable does not indicate tone group boundary.
Tone groups with marked tonicity are quite rare in formal speech such as reading, news announcing, lecturing etc. Emphasis in these styles of speech is always realized in terms of 'marked tonality'. On the contrary tone groups with marked tonicity are found very common in conversational speech. Marked tonicity in Thai is usually (but not always) accompanied by a marked tune. However, one can find tone groups whose expressive focus is represented by (a) marked tonicity, (b) marked tune, or (c) both marked tonicity and marked tune. The first representation is quite rare in Thai, whereas the second and the third representations are very common. However, I would like to reserve the discussion on the system of tunes and marked tune for the next section. In this section I will only discuss the representation of expressive focus by marked tonicity. The following examples will help to exemplify my discussion.

(D) X told Y something. Y did not believe in it until he found out by himself that X was right. When he met X, he told X about it.

Y : ถูกกล่าวมาแล้ว
//ดังนั้น/ แล้ว ฉันไม่เชื่อ

(Dang is back.)

x$ n1 ulFVfl, urra7 ON P/ i

(Well, I have told you.) .. (You didn’t believe me.)

The first tone group by X has a marked tonicity. The expressive focus is represented by the tonic word /chan/ (I). In this case the expressive focus indicates 'emphasis'. Expressive focus has been referred to in different ways in the literature. Quirk (1972) called it 'contrastive focus' as opposed to 'end focus'. Enkvist (1980) distinguished two postulates: 'unmarked focus' and 'marked focus'.
Unmarked focus which he named 'information focus' is similar to the unmarked or end focus discussed above. Marked focus was designated to many kinds of focus e.g. corrective focus, contrastive focus, emphatic focus etc. Chafe (1976) discussed the concept of focus in terms of referents of nouns i.e. the notion of newness, contrastiveness, definiteness, subject and topic and how they are expressed in languages. These concepts are related to the concept of 'emphasis' or 'expressive focus' given here. Chafe stated that given information is always pronounced with lower pitch and weaker stress than new information, and is subject to pronominalization\(^2\), unless it is contrastive (1976,31). And contrastiveness is expressed by the placement of higher pitch and stronger stress on the focus of contrast, or sometime is realized with a steep fall (1976, 35-36).

Contrastive focus is reported sometimes to be accompanied by emotional commitment. Speakers may put extra phonetic force to express newness, contrastiveness, definiteness if they want to show that they are emotionally involved (see discussion on Tune 4 in Chapter 3). But it is not necessary that these referents must be realized with phonetic prominence (see previous discussion on end focus). These information points may be marked with paralinguistic cues or linguistic cues such as syntactical or lexical structure. However, in conversational speech speakers tend to use phonetic prominence to clarify their points of view and express their attitudes or emotion towards the matters being spoken, and the distribution of tonic for this function of speech is usually marked as discussed above.

We may conclude here that an utterance is considered to have

---

1 Most of the examples Chafe gave are from English, but he also gave examples from Dakota, Mandarin, Caddo, Seneca.

2 Pronominalization is the process where a pronoun is used instead of a noun.
unmarked tonicity in two cases: 1) the primary accent of the rightmost content word in an information unit is realized as a tonic syllable or a PSS, 2) the rightmost unaccented monosyllabic function word which is semantically and syntactically unified to form the information unit is realized as a PSS. The primary accent of any words and any monosyllabic unaccented grammatical words may potentially be realized as the tonic syllable. However, if these units do not occur as the last or the rightmost word in the information unit, then the utterance is considered to have marked tonicity.¹

We may represent the functions of the phonological tonic by the following schema:

**TONIC FUNCTIONS**

Every tone group has at least one tonic, the tonic has many functions:

- **COGNITIVE or REFERENTIAL FUNCTION**
  1) Delimiting an information unit.
  2) Bringing out the focus or the most prominent point or points of an information.

- **EXPRESSION FUNCTION**
  3) Expressing the attitudes or the emotion of the speaker.

The postulation of 'focus' or information prominence as opposed to the 'tonic' or the tonic word which is phonological prominence realized as the tonic syllable or the prominent stressed syllable, which I propose here, may help to clarify the theoretical problem of the term 'tonic' and how to recognize it.

We can see that any minimum information unit or word can become a tonic word in an information unit composed of a string of words.

¹ Examples of marked tonicity in decontextualized utterances have been given in Chapter 2 (see discussion on page 82 and Fig 2.1).
Tonicity is due to the pragmatic structure of the discourse. However, only one syllable in a word can be realized as tonic syllable. This is determined by the underlying phonological accent of the words in that information unit. The potential distribution of tonic syllable can be described in terms of the syntactical structure and the phonological structure of the words unified to form an information unit.

The following examples illustrate the potential tonicity of 59 sentences. This theoretical distribution of the tonic is postulated from the syntactical and morpho-phonological structure of the sentence. The phonetic realization or the actual distribution of the tonic, the foot, and the tone group boundary is given, and the acoustic records of these sentences are given in Fig 4.30 and 4.31 below and in Appendix 3.

1 The examples are from Hiranburana's (1971) work on the role of accent in Thai grammar. She chose thirty five pairs of utterances for a recognition test to find whether other native Thai speakers are conscious of the 'contrastive role' of stress in Thai. In her way of description each pair of utterances is considered to be identical in their phonological representation. Her phonological representation of the lexical items does not include the representation of the phonological accents as in my description, but merely the consonant and vowel make up of the words. The utterances were mixed at random and then played back to 40 subjects who were given a questionnaire which contains the orthographic representation of the utterances with no indication of any accentual pattern in the left hand column, and the paraphrases of the meanings of the utterances in contrast were given on the right hand column. The subject was to choose which paraphrase meaning matched the utterance they heard. Using Null Hypothesis for statistical evaluation of the recognition test, the statistical result of the recognition of the 70 utterances (35 pairs) has proved that judges can recognize the underlying meanings of the utterances which have identical syllables but different stress placement (in my terms, different tonalities and different tonicities) at a statistically significant level. However, when the statistical evaluation was carried out on each individual utterance, there were nine utterances which failed to achieve even the 5% probable significant level. She represented her phonetic realization of stress in terms of degrees of stress, ranged from the strongest (1) to the weakest (4). Different degrees of stress were derived from phonological and syntactical rules applied at different levels in cyclic order. There was no clear phonetic evidence given to support her postulation on the degrees of stress. (See also review of Hiranburana's work in Chapter 2, pp 74-82.)

2 In the extreme cases such as in artificial dictative style, every potential tonic syllable becomes an actual tonic syllable.
The syntactical constructions given below are analyzed in terms of their syntactical and morpho-phonological structure. Each construction is described with two operations:

1) The analysis of the component words in terms of grammatical constituents in a speech sentence (#S#)

2) The analysis of the component words in terms of their phonological accents.

@ represents a syllable with potential to be realized as the tonic syllable. It is:

a. the primary accented syllable of the polysyllabic words
b. the monosyllabic accented content word
c. the monosyllabic unaccented function word.

0 represents a syllable which has no potential to be realized as the tonic syllable. It is the secondary and the tertiary accented syllable of the polysyllabic words.

The actual tonic syllable found in the acoustic record is represented by the underlined potential tonic syllable (@).

Example 1  Darling. .. Turn the door knob on the right.

Example 1 is unmarked in tonality and tonicity.

1 Sometimes these syllables are realized as tonic syllables, this will be considered extremely marked. In these cases every syllable is assigned a prominent stress.

2 . is used to indicate word boundary.
Example 2  My child turned the door knob on the right.

Example 3  The door knob on the right.

Example 4  Water, you can distil (it) now.
Example 5 The distilled water is ready now.

Example 5 is unmarked in tonality and tonicity.

Example 6 Water, you can boil it now.

Example 6 is marked in tonality but unmarked in tonicity.

Example 7 The boiled water is ready now.

Example 7 is unmarked in tonality and tonicity.
(Darling ... Turn the door knob on the right.)

((My) child turn the door knob on the right.)

(The door knob on the right.)

(child turn door on right)

(deer knob on right)
Example 8  (She) treated someone until (he) recovered.

Example 8 is unmarked in tonality and tonicity.

Example 9  (She) treated the poor man (until he) recovered.

Example 9 is unmarked in tonality and tonicity.

Example 10  The chicken (in) that house lay eggs abundantly.

Example 10 is unmarked in tonality but marked in tonicity.
Example 11  Domesticated chickens lay eggs abundantly.

Example 11 is unmarked in tonality but marked in tonicity.

Example 12  She put on a coat and wrapped (herself) up beautifully (or so that she looked beautiful).

Example 12 is unmarked in tonality and tonicity.

Example 13  She put on a beautiful coat.

Example 13 is unmarked in tonality and tonicity.
Example 14 Auntie Khaaw is very good.

```
na:\iration mark
'kha:wr. \ration mark
'di:m . \ration mark
'caq\ration mark
```

Example 14 is unmarked in tonality and tonicity.

Example 15 Auntie has a very fair complexion.

```
'na:\ration mark
'kha:wr. \ration mark
'di:m \ration mark
caq\ration mark
```

Example 15 is unmarked in tonality but marked in tonicity.

Example 16 Keep it in front of Lang, O.K. ?

```
\ration mark
'waj\ration mark
na:\ration mark
'lan\ration mark
na:\ration mark
```

Example 16 is unmarked in tonality but marked in tonicity.
Example 17  Keep it until the dry season, O.K.?

\[
\text{\textit{\text{?aw}m 'waj'h. na:f 'lm:q'h. na}\mathring{h}}
\]
keep (it until) dry season

Final Part.

Example 17 is unmarked in tonality but marked in tonicity.

Example 18  (He is) a criminal; (you) must imprison (him), O.K.?

\[
\text{\textit{phu:f 'ra:j'h. t\textcircled{p}f. 'khaq'r. na}\mathring{h}}
\]
criminal (you) must imprison O.K.?

Example 18 is marked in tonicity and tonality.

Example 19  (He is) a dangerous criminal. You know?

\[
\text{\textit{phu:f 'ra:j'h t\textcircled{p}gh 'khaq'r. na}\mathring{h}}
\]
(he is) dangerous criminal

Final Part.

Example 19 is unmarked in tonality but marked in tonicity.
Example 20 As for Duang, (his) facial expression is not good.

\[
\begin{array}{c}
\text{Duang} \\
\text{facial expression} \\
\text{not good}
\end{array}
\]

Example 20 is marked in tonality but unmarked in tonicity.

Example 21 The facial expression is not good.

\[
\begin{array}{c}
\text{facial expression} \\
\text{not good}
\end{array}
\]

Example 21 is unmarked in tonality and tonicity.

Example 22 My belongings are in the cupboard.

\[
\begin{array}{c}
\text{things} \\
\text{my} \\
\text{be} \\
\text{in} \\
\text{cupboard}
\end{array}
\]

Example 22 is unmarked in tonality and tonicity.
Example 23  Mine are in the cupboard

Example 24  (It) became a town a long time ago

Example 25  (It) became a colony a long time ago.
Example 26 For supporting whose feet?

```
/\ ^  O  /  O  /  O  /  O  /  O  /  O  \ 
  sam'rapl. 'ro:gm. 'tha:w'h. 'khraj'm.
  for supporting foot who

Prep N(Gerund) PP
# S #
```

Example 26 is unmarked in tonality and tonicity.

Example 27 For whose shoes.

```
/\ ^  O  /  o  /  O  /  O  /  O  \ 
  sam'rapl. 'ro:gm. 'tha:w'h. 'khraj'm.
  for shoes who

Prep Comp N PP
# S #
```

Example 27 is unmarked in tonality and tonicity.

Example 28 The elephant destroyed the house

```
/\ ^  e  /  e  /  e  /  e  /  e  \ 
  'cha:kh. 'phaq'm. 'ba:nh. 'ni:h.
  elephant destroy house this

N Vt N Dem Adj

NP VP
# S #
```

Example 28 is marked in tonality but unmarked in tonicity.
Example 29 The female elephant of this house.

Example 29 is unmarked in tonality and tonicity.

Example 30 The fish all ran away.

Example 30 is unmarked in tonality and tonicity.

Example 31 The eels all ran away.

Example 31 is unmarked in tonality and tonicity.
Example 32  He always drives the car very fast.

```
// \ / \ / \ / \ / \ / \ //
khaw r. 'khap l. 'rot h. 'rew '. 'sa? l. 'my: r.
he drive car fast always
```

Example 32 is unmarked in tonality and tonicity.

Example 33  He always drives a sports car.

```
// \ / \ / \ / \ / \ / \ //
khaw r. 'khap l. rot h 'rew m. sa? l 'my: r.
he drive sports car always
```

Example 33 is unmarked in tonality and tonicity.

Example 34  The people are miserably poor.

```
/ \ / \ / \ / \
'khon m. 'con m. ca? l 'jam: f.
people poor miserably
```

Example 34 is unmarked in tonality and tonicity.
Example 35  The poor will suffer.

Example 35 is unmarked in tonality and tonicity.

Example 36  It is likely to be hot (since) there is no breeze.

Example 36 is unmarked in tonality and tonicity.

Example 37  There is no breeze in the summer.

Example 37 is unmarked in tonality and tonicity.
Example 38: My husband's mother. (Mother of my 'you'.)

Example 38 is marked in tonicity but unmarked in tonality.

Example 39: My dear 'woman' (wife, daughter, niece etc.)

Example 39 is unmarked in tonality and tonicity.

Example 40: For blinding whose eyes.

Example 40 is marked in tonicity but unmarked in tonality.

1 /khun^m/ is a pronoun (you+respect), in this sentence it is used as a term of address referring to someone respected either the husband, or the master of the house.

2 This Comp N /mm: 'khun^m/ is used to refer to a woman or a girl who is dear to the speaker either the wife, the daughter, the niece etc.
Example 41 For whose window screen.

```
/\ 0 / 0 / 0 / 0 / 0 /
  sam'rap bani 'ta'm 'khraj for window screen who
  Prep Comp N Quest. Word
```

Example 41 is unmarked in tonality and tonicity.

Example 42 (As to the) things (that were) left, (please) return (them to me).

```
// 0 / 0 / 0 / 0 / 0 / 0 //
  'khaoq 'khaq 'kharn m na'h kha'h thing left return please
  N Adj Vt N Final Part.
```

Example 42 is marked in tonality and tonicity.

Example 43 (They are) leftovers.

```
// 0 0 / 0 0 / 0 //
  'khaoq 'khaq 'kharn m na'h kha'h leftover Final Part.
  Comp N
    NP
```

Example 43 is marked in tonicity but unmarked in tonality.
Example 44 (She is my) niece's child.

Example 44 is marked in tonicity but unmarked in tonality.

Example 45 (They are my) descendants.

Example 45 is marked in tonicity but unmarked in tonality.

Example 46 The car hit the people (and they) died (from) the pain.

Example 46 is unmarked in tonality and tonicity.
Example 47  The car hit the patient (and he) died.

Example 48  Master should take (it).

Example 49  The broker will take (it).

Example 47 is unmarked in tonality and tonicity.

Example 48 is unmarked in tonality and tonicity.

Example 49 is unmarked in tonality but marked in tonicity.
Example 50 (About) the paper, have you finished typing (it) yet?

Example 50 is marked in tonality but unmarked in tonicity.

Example 51 Have you finished with the newspaper yet?

Example 51 is unmarked in tonality and tonicity, however, it is syntactically marked (OSV).

Example 52 (There is) water left on the grass.

Example 52 is unmarked in tonality and tonicity.
Example 53 The dew is on the grass.

```
Example 53 is unmarked in tonality and tonicity.
```

Example 54 The clock woke me up.

```
Example 54 is unmarked in tonality and tonicity.
```

Example 55 My alarm clock.

```
Example 55 is unmarked in tonality and tonicity.
```
Example 56  Darling. . . The jar is filled with water.

```
'ai:k' / 'na:x. 'tem. 'tum. 
child water fill jar
```

Example 56 is unmarked in tonality and tonicity.

Example 57  The jar is full of mosquito larvae.

```
'lu:k' / 'na:x. 'tem. 'tum. 
mosquito larvae fill jar
```

Example 57 is unmarked in tonality and tonicity.

Example 58  Have you seen Oot?

```
'h'en. 'ta:x. '?u:t. 
(you) see Oot Quest Part.
```

Example 58 is unmarked in tonality and tonicity.
Example 59  Do you see the eyes of the camel.

\[
\begin{array}{c}
\text{you} \\
\text{see} \\
\text{eye} \\
\text{of} \\
\text{camel}
\end{array}
\]

Example 59 is marked in tonicity but unmarked in tonality.

From the analysis of the potential distribution of the tonic in an information unit of the 59 constructed utterances, we can see that there are only certain syllables in the information unit which can be realized as the tonic syllables or the PSS's. If the focus falls on any point of information or any word in the group, that potential syllable of the word will become the actual tonic syllable of the tone group. The word becomes the tonic word or the tonic. In most cases (52/59) the tone group boundaries correspond to the clause or the sentence boundaries. There are only few cases (7/59) where tonality is marked i.e. there is more than one tone group within a grammatical clause or phrase. Most of the tone groups have unmarked tonicity, i.e. the tonic is the rightmost word in the tone group (44/59). There are not many cases where tonicity is marked (15/59). Actually I had expected that contrastiveness between each pair of utterances would have been realized in terms of marked tonicity. However, the phonetic realizations of these contrastive utterances have shown that in most cases different tonalities in terms of different foot distribution are sufficient, so that the speaker did not have to use the system of marked tonicity to disambiguate the pairs of utterances.
The number of cases of marked tonicity is fewer than expected. This might be due to the method of elicitation which is a neutral reading style. I have observed that in conversational speech the system of marked tonicity is often used to convey the expressive meaning either to express contrastiveness, definiteness, correction or emphasis on new information etc. Examples of marked tonicity in conversational speech are given below.

Example 60 The speaker was very irritated that her husband was very fussy about the food. Whatever he wanted to eat, she had to get it cooked for him immediately. She told her friend:

"You know? He wanted to eat it so much that I've got to go and get it cooked for him immediately. Believe it?"

There are 3 out of 4 tone groups which are marked in tonicity.

Example 61 The speaker was trying to encourage his daughter to do something that she did not want to do. He said:

"You must do it. It's not difficult at all darling."

The first tone group is marked in tonicity. The second sentence is divided into two tone groups. The tonality is marked, the tonicity is unmarked.

Example 62 This example is a dialogue between the mother and the child. The child was really spoiled by his grandparents who were away at that moment.

Child: "Who is going to spank me? Even grandad and grandmum never did."

Mother: "(Though they were away), I will spank you. If you are naughty,
I will ... and don't you cry."

Child : /khraj^m ca^l/ti:^m/nu:^r/ //khun^m/tai^m khun^m/jai^m ja^m maj^f/ khv:^j^m/ti:^ nu:^r sak^l/thi:^m/

Mother : /ma^f ca^l/ti:^m/ ... //tais^f nu:^r/son^m ma^f ca^l/ti:^m/ //lm^wh ja^l/ro^h na^h /

The child was asserting what he thought. His two utterances are unmarked in tonality and tonicity but they became a challenge from the context of culture, where children do not ask questions in these situations.

The mother was annoyed and expressed it with utterances with marked tonicity. The second tone group is given information, and is unmarked in tonicity and tonality.

4.5 The Tunal System: Tune Contrasts

The system of tune has been discussed at length in Chapter 3. I have concluded from the study of the tonal behaviour of one-word utterances that there are 4 contrastive tunes in Thai:

Tune 1 and Tune 1+ or the Falling Tune
Tune 2 and Tune 2+ or the Rising Tune
Tune 3 and Tune 3+ or the lowering Tune
Tune 4 or the Raising Tune.

Tune 1 and Tune 3 can be grouped to form 'The Fall Class'. Tune 2 forms 'The Rise Class'. And Tune 4 forms 'The Convolution Class'. Each tune and its member has a strong influence on the pitch configuration of the tone of the one-word utterances. In this section we will look at longer utterances and utterances in connected speech, to see how the tunal system interplays with the systems of tonality, tonicity and lexical tone to produce the pitch contour of the tone group.
Tune Contrasts and the Overall Pitch Contour of the Tone Group.

The constructed information unit "Klang likes to travel by...." is put in 4 different contexts of situation, to be uttered with 4 contrastive tunes.

1) "Klang likes to travel by .... Sang told me."

\[1\] klaŋ\textsuperscript{m}/chɔi\textsuperscript{f} d\textsuperscript{m}/thaiŋ\textsuperscript{m} thaŋ\textsuperscript{m}/ ...

2) "Klang likes to travel by ....? Who said so?"

\[2\] klaŋ\textsuperscript{m}/chɔi\textsuperscript{f} d\textsuperscript{m}/thaiŋ\textsuperscript{m} thaŋ\textsuperscript{m}/ ...

3) "Klang likes to travel by .... I told you many times already." (The speaker is bored.)

\[3\] klaŋ\textsuperscript{m}/chɔi\textsuperscript{f} d\textsuperscript{m}/thaiŋ\textsuperscript{m} thaŋ\textsuperscript{m}/ ...

4) "Klang likes to travel by .... I have told you and you didn't believe me.

\[4\] klaŋ\textsuperscript{m}/chɔi\textsuperscript{f} d\textsuperscript{m}/thaiŋ\textsuperscript{m} thaŋ\textsuperscript{m}/ ...

The tonality and tonicity of each utterance in the set are the same only the tune is altered. There are five minimal sets. Each set has the tonic word representing a contrastive lexical tone. The five words are: /'khlaŋ\textsuperscript{m}/(canal), /'fai\textsuperscript{h}/(sky), /'pa\textsuperscript{l}/(jungle), /khaw\textsuperscript{f}/(hill), and /'khraŋ\textsuperscript{f}/(carriage).

Fig 4.5.1 - 4.5.10 given below are the acoustic records illustrating the overall pitch contour of the utterance. I have used spectrographic analysis for this purpose. The 500 Hz calibration line can be used as a reference line to observe the pitch configuration of the whole utterance.
Sentence 1  Klang likes to travel by canal. (Mid tone tonic)
Sentence 1  Klang likes to travel by canal.  (Mid tone tonic)

Tune 3

#3 klaŋ / chɔːp / ʤɪn / thaiŋ / thaiŋ / khaŋ

Tune 4

#4 klaŋ / chɔːp / ʤɪn / thaiŋ / thaiŋ / khaŋ

Fig. 4.5.2
Sentence 2  Klang likes to travel by air. (High tone tonic)

Tune 3

Hz

1000
500

0

/3 klaŋ / chɔːp / dən / thain / thain / faːn

Tune 4

Hz

1000
500

0

/4 klaŋ / chɔːp / dən / thain / thain / faːn

Fig. 4.5.4
Sentence 1: Klang likes to travel through jungle. (Low tone tonic)

Tune 1

/1 kľaŋ/ /chɔ:p/ /dʒʌŋɡl/ /θɛŋ/ /θɛŋ/ /

Tune 2

/2 kľaŋ/ /chɔ:p/ /dʒʌŋɡl/ /θɛŋ/ /θɛŋ/ /

Fig. 4.5.5
Sentence 3  Klang likes to travel through jungle. (Low tone tonic)

Tune 3

Tune 4

Fig. 4.5.6
Sentence 4  Klang likes to travel by carriage. (Falling tone tonic)
Sentence 4: Klang likes to travel by carriage. (Falling tone tonic)

Tune 3

Tune 4

Fig. 4.5.8
Sentence 5  Klang likes to travel through mountain. (Rising tone tonic)

Tune 1

// 1 k l a n g  / chop / drin / thain / thain / khaw //

Tune 2

// 2 k l a n g  / chop / drin / thain / thain / khaw //

Fig 4.5.9
Sentence 5  Klang likes to travel through mountain. (Rising tone tonic)

Tune 3

```
3 klahŋ / chop / din / thahŋ thahŋ / khaw
```

Tune 4

```
4 klahŋ / chop / din / thahŋ thahŋ / khaw
```

Fig. 4.5.10
The utterances consist of five words. Besides the tonic word, every word except the second one has a mid tone. The stressed mid tone at the beginning of the utterance (in the word /'kla:ın/), and the stressed mid tone before the tonic (in the word /dY:ın 'tha:ın/) are best used to observe the pitch configuration of the utterances.

With Tune 1 and Tune 3, there is a marked lowering of pitch or downdrift towards the tonic word. This downdrift has been observed by many linguists. With Tune 2 and Tune 4, there is no downdrift. The auditory pitch and the acoustic fundamental frequency of the pretonic syllables in utterances with Tune 1 and Tune 3 are markedly lower than those in utterances with Tune 2 and Tune 4.

Comparing the five sets of sentences, we can see that the pretonic syllables of the sentences have the same behaviour if the sentences have the same tune superimposed on them. The different lexical tones of the tonic words do not have any influence on the overall pitch contours of the utterances.

We can conclude that:

1) The tunal system determines the pitch configuration of the whole utterance. Utterances with Tune 1 and Tune 3 have low pretonics, whereas utterances with Tune 2 and Tune 4 have high pretonics.

2) The tone system operates at the word level. It does not have any influence on the overall pitch configuration of the utterance as a whole.

1 Henderson (1949) illustrated the downdrift in the sentence /'phaın'kY:ın'paj/ (It's too expensive.) and /'cajın 'troın kanı thi:ın 'di:ınaw/ (We think the same.). And Noss (1964) illustrated this in the sentence /chaın'najı kamı laqı 'qomı 'pların najı khurı/ (The farmer is catching fish in the ditch.). See also Chapter 1.3.
In order to compare the pitch configuration of the sentences which are superimposed by the marked tunes\(^1\) i.e. Tunes 2, 2+, 3, and 4, I have chosen the sentence /'phz\textsuperscript{m} 'qmn\textsuperscript{m} 'paj\textsuperscript{m}/ (It's too expensive.) which consists of three stressed mid tones and put it in different contexts as follow:

(a) "It's too expensive?", he asked with surprise. (Tune 2)

(b) She did not agree with him on the matter. So he emphasized, "It's too expensive!" (Tune 4)

(c) "It's too expensive, but I like it. May I buy it?" (Tune 2+)

(d) "He has told you many times. If you asked him again, I'm sure he would still say that it's too expensive." (Tune 3, expressing boredom.)

I used the PGR\(^2\) to extract the f\(\phi\) of the four utterances above. The f\(\phi\) of these utterances are illustrated on the same diagram for comparison. (See Fig 4.5.11. below.) Downdrift can be clearly observed in the utterance with Tune 3 (d). Tune 2, 2+, and Tune 4 have high pretonics and the pitch contours are relatively high throughout the utterances. Tune 2 has the highest pitch among the three tunes. Tune 2+ has a longer duration than Tune 2. And Tune 4 has a marked fall. This last example of the contrastive tunes explicitly illustrates that the system of tune has a strong influence on the pitch configuration of the whole utterance.

From my observation, sentences with different sentence particles do have different pitch contours from the beginning of the sentences. However, it is beyond the scope of this thesis to look at this aspect of intonation in Thai. I doubt whether it is appropriate to call the

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1 Since the grammatical structure in Thai does not reveal whether the sentence is a question, we can consider every tune except tune 1 of the statement to be marked. The sentence "It's too expensive," used here is the sentence which Henderson (1949) used to illustrate her observation on downdrift.

2 The pitch extraction computer program, see detail in Chapter 3, p 160.
final particles 'intonation carriers', since it is not only the particles that carry the intonation but every word in the whole utterance. However, the behaviour of the tonic words in utterances is quite similar to the behaviour of the particles as studied by Henderson (1949) and Chuenkongchoo (1956).¹

Examples of conversational dialogues are given in Appendix 4 (pp 169-175, Vol II). The systems of tonality, tonicity, and tune are clearly illustrated in the text.

¹ See detail in Chapter 1.3.1.
Chapter V

Stylized Intonation in Thai

'Stylized intonation' has been an interest among writers on intonation. It has been referred to under different terms, for example, calling or vocative intonation or spoken chant (Pike: 1945, 71-72), call contour (Abe: 1961), vocative chant (Liberman: 1975, Leben: 1976). The term stylized used here is adopted from Ladd (1978) whose concept of this type of intonation is explicitly laid out. According to Ladd stylized intonation is not restricted only to 'stylized' or stereotyped forms of speech, for example, calling, chanting, recitation etc, but it is also found in non-stylized forms of speech, for example, normal conversational speech, reading pronunciation, etc. Stylized intonation has definite characteristics of pitch, to quote Ladd:

"Level pitch is the distinctive feature of stylized intonation." (1978, 525.)

Some of his examples are given below.

<table>
<thead>
<tr>
<th>Stylized</th>
<th>Non-Stylized</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Thank... you... Thank you...</td>
<td></td>
</tr>
<tr>
<td>2) John... ny... John n y</td>
<td></td>
</tr>
<tr>
<td>3) Ra... 2 pe... R a p e</td>
<td></td>
</tr>
</tbody>
</table>

The definite characteristic of pitch found in stylized intonation has been reported by scholars who investigated stylized forms of speech.

1 See discussion, especially as related to English stylized intonation in Ladd (1978), and in Chinese in Chao (1956).
2 This call, as Ladd explains, sounds comical or unappropriate since the speaker is in a volatile situation and yet calls for help with intonation which implies circumstances surrounding the utterance are routine (1978, 522).
to be levelled or suspended. If there is a configuration, there will be a sequence of two level pitches either stepping up (rising) or down (falling). I would like to designate the term 'pitch levelling' to this phonetic process. Whenever the speaker uses this phonetic process to level or suspend the pitch configuration either in stylized or non-stylized forms of speech, there are some definite semantic elements to be signaled to the listener. Ladd puts it clearly that stylized intonation has definite semantic function, he states:

"What is signaled by this intonation is the implication that the message is in some sense predictable, stylized, part of a stereotyped exchange or announcement." (1978, 520.)

In this chapter, I will deal with the phonetic description of stylized intonation in stylized forms of speech, which from now on will be referred to as 'stylized proper', and then go on to the description of stylized intonation in normal or non-stylized forms of speech. The semantic functions of stylized intonation will be discussed along with these descriptions.

5.1 Stylized Intonation in Stylized Proper

Stylized proper which is described here will cover normal calling and calling of street vendors, chanting by buddhist monks, traditional Thai verse reading, and recitation of school children.

Calling

There are two kinds of calling being discussed here:

(a) professional calling, and

(b) normal calling

1 Actually, stylized proper in Thai has been investigated at length in terms of speech melody and song melody (List, 1961). List's interest is quite different from mine here. It is on the modification of tones in singing. He based his analysis on a number of tapes and records recorded by Haufman and others during the years 1953-1959.
Professional callings are callings by those people whose occupations need callings to get others' attention, for example, street vendors, bus conductors, tennis or badminton umpires etc. Fig 5.1 illustrates callings of street vendors. In Thailand, street vendors are found at every corner of the streets in towns, they carry their goods in baskets or in trolleys, everything from food and drink to clogs. The examples given are:

- /’?’ot? ‘li:aq’h. khrap’h.’?’ot? ‘li:aq’h/
  (Iced Black Coffee... Iced Black Coffee...)

- / kha1w f ’ni:av’h. ma?h ’mu:aq’f.’na:m’h ka?l ’thi:h.’thu:h ’ri:an’h. ’ma1m.’lmw’h. ca2f /
  (Glutenous rice with mango, durian with coconut cream ... is here.)

- / kaj1 ’ja:n’f.’ma1m.’lmw’h.khraph/
  (Barbecued chicken is here.)

Pitch levelling and suspension of duration are notable in the stylized form as compared to the normal reading style given to compare.

Fig 5.2 illustrates callings of bus conductors. The example given are:

- /’phra?q’h kha?l ‘noi:7’h/ (Prakanong - a name of a junction.)

- /’pa:j f/ (Stop. (Literally, the word means ‘bus stop’.)

- /’pa:j m/ (Go.)

The levelling of pitch, suspension of duration and higher degree of loudness are very prominent both auditorily and acoustically.

The two words /’pa:j f/ and /’pa:j m/ which are used by the bus conductors to call out to the driver and the commuters to know whether to stop or to go, are very confusing for foreigners. The phonemic length distinction disappears in this style of speech and the mid tone in /’pa:j m/ is realized as a high stepping wide fall (stylized and emphatic) which is very similar to the realization of the stylized
STYLED INTONATION
CALLING OF STREET VENDORS

"to liang khrap to liang/

{Iced black coffee... Iced black coffee.

(Barbecued chicken is here... Barbecued chicken.)

"kaj ja: f sa:m lx:h khrap kaj ja: f

Glutinous rice with mango... durian with coconut cream... is here...
STYLIZED INTONATION
CALLING OF BUS CONDUCTORS

"phra\text{\textregistered} h  kha\text{\textregistered}  \text{\textregistered} no:\text{\textregistered} f

/\text{\textregistered} \text{\textregistered} p:\text{\textregistered} j /

STYLIZED INTONATION
NORMAL CALLING

/\text{\textregistered} \text{\textregistered} t\text{\textregistered} m: /
/tho:\text{\textregistered} ra\text{\textregistered}  \text{\textregistered} sap /

/\text{\textregistered} \text{\textregistered} n:\text{\textregistered} /
/tha:\text{\textregistered} \text{\textregistered} \text{\textregistered} la:\text{\textregistered} t\text{\textregistered} h\text{\textregistered} a:\text{\textregistered} n\text{\textregistered} \text{\textregistered} k\text{\textregistered} \text{\textregistered} w\text{\textregistered} \text{\textregistered} lz:\text{\textregistered} \text{\textregistered} lu:\text{\textregistered} k /

"Darling... It's time for dinner already..."
falling tone. However, there is a phonetic cue which the Thais use to
distinguish the two words in this style of speech i.e. the duration
of the first and the second segment of the diphthongs. /'paːj^e/ (Stop.)
is phonetically [paːi ̰ ̰ ̰ ] and /'paj^m/ (Go.) is phonetically
[paːi ̰ ̰ ̰ ].

Normal callings are used in everyday life to call people in the
distance. Two examples are given here:
- /'tom^e . 'thoː^m ɾaːh ɾ'sap^l/ (Tae, telephone.)
- /'nur^h 'thng^e . 'weː^m . 'laː^m . 'tham^m . 'khaː^f . 'lm^h/ (Darling.... It's time for dinner.)

Pitch levelling, suspension of duration and higher degree of
loudness are prominent in these two calls. Is distance necessary for
this kind of call? The notions of distance, proximity, eye contact,
real or metaphorical (imagined) distance between the speaker and the
listener are discussed at length in Ladd (1978, 518-519). He suggested
that calling at a distance and warning are applications of stylized
intonation conveying a more general meaning i.e. a flavour of everyday
domestic life, routine, an implication that the message is in some
sense predictable. Callings in emergencies and callings to people
whom we are not expecting to see etc. do not have this intonation.
It is interesting to note that if the calls are accompanied by loudness
we can assume that there is a distance between the speaker and the
listener. If there is no loudness, the message becomes a warning.
(You know what is going to happen, don't you?).

1 Warnings will be dealt with in terms of stylized intonation in
non-stylized forms of speech in 5.2.
Chanting

Chanting by Buddhist monks in Thailand is in Pali and Sanskrit. The distribution of static tones in chanting words is high as compared to the distribution of dynamic tones. Falling tone is not found in chanting words. The distinction between the pitch level of the high, the mid, and the low tone which is prominent in non-stylized intonation disappears in this style of speech.

Fig 5.3 illustrates the chant used at the beginning of any religious ceremony. The chant is a praise to the Lord Buddha:

/na?h 'mo:m. 'tat1 'sa?l. 'pha?h kha?h wa?h 'to:m. '+'a? 1 ra?h ha?l 'to:m. 'samR 'ma:m. 'samR 'phutH. 'thath sa?l./

We can see clearly that the high, the mid, and the low tone have the same pitch height. The rise in the syllable /'samR 'ma:m/ and /'samR 'phutH/ is perceptually a mid narrow stepping rise. The stepping can be well observed from the acoustic evidence. The duration of the syllables are quite equal but the syllable before a pause is relatively very long.

Traditional Verse Reading

I have brought in the description of Thai verse into my discussion on the favoured accentual pattern i.e. the double accent pattern in Chapter II (pp 97-102). In this section the Kaap (Kaap Jaanii Sip-et) will be used as the example of the traditional verse reading.

1 The tonal assignment to Pali and Sanskrit words is another interesting subject. There are only 4 phonemic tones i.e. high, mid, low, and rise in words borrowed from Pali and Sanskrit. The fall is not found.
2 The chant is performed by Mr. Phon Nuangmaa a former Buddhist monk who was in the monkhood for five years.
3 This behaviour is quite different from other Thai 'stylized proper'. It might be due to the fact that these chanting words are borrowed from Pali and Sanskrit which are non-tonal.
4 Luangthongkum (1978) suggested that the rhythm in chanting is syllable-timed.
A stanza of Kaap has 4 lines or 4 'Wak'. Two Wak or two lines make a Baat. A complete Kaap should consist of at least two stanzas or four Baat. The first two Wak complete the primary Baat and the second two Wak complete the secondary Baat. The first Wak of every Baat consists of five syllables, and the second Wak of every Baat has six. There are eleven (/ˈsip/ 'ʔet') syllables in each line, and the name of the Kaap specifying this.

The structure of a complete Kaap in terms of Wak, Baat, the number of syllables in each Wak, the inner rhyming and the outer rhyming is given below:

The structure of a complete Kaap in terms of Wak, Baat, the number of syllables in each Wak, the inner rhyming and the outer rhyming is given below:

\[
\begin{array}{cccccccc}
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\end{array}
\]

Fig 5.4 below illustrates the second line of this Kaap. I have chosen this line because there are syllables with all the 5 phonemic tones to be compared.

Comparing the normal reading style and the traditional reading style, we can clearly see that the traditional verse reading or the
stylized proper illustrates pitch levelling and the tension of the duration of the syllables which are the prominent characteristics of this intonation. The three static tones still keep their distinctive pitch level of high, mid, and low. The two dynamic tones become narrow stepping fall and narrow stepping rise. There are two intensity peaks in the syllable with these stepping up or stepping down pitch contours. The final semi-vowel or the final nasal of the syllable is prolonged to carry the change of the pitch up or down in a syllable.

Recitation

Recitation by school children can be considered a kind of stylized proper. The recitation of the Thai alphabet, and the recitation of the multiplication table are heard in elementary schools and are always used as a background noise for a natural setting of schools in dramas.

List (1961) investigated the recitation of the Thai alphabet, and the recitation of the multiplication table. He asked a few Thai students to listen to the recitation and write down the text in transliteration or in phonetic symbols, and indicate beneath every syllable the tone used. He described his examples in terms of musical notes (1961, 265-268). He reported his study of the recitation of the alphabet as quoted:

"Only three pitches are used. High is represented by C#, as in syllable 21 ('char') ; low by A, as in syllable 2 ('kah') ; and the mid tone by B, as in syllable 7 ('khao'). The falling tone is represented by the pattern C#-A, as in syllable 23 ('so') ; and the rising tone by the inversion of this pattern, as in syllable 3 ('khao')." (1961, 266; my parentheses.)

He also reported that there was some disagreement among his informants in the assignments of tones to the syllable /ra'h/ in '/khom ra'h khaq/' (bell) and the syllable /ka'l/ in '/cho m ka'l chy m/
This might be due to the fact that these two syllables are the unaccented linker syllables which are usually realized as unstressed syllables with 'neutral tone' (see discussion in 4.2) in normal reading style. In stylized forms of speech every syllable seems to be stressed and the speaker may assign a high level or a mid level pitch to the linker syllable with high phonemic tone, and may assign a low level or a mid level pitch to the linker syllable with low phonemic tone. From his report the three static tones in this style of speech hold on a particular note either A, B, or C# throughout the syllables in syllables with the low, mid, and high tone respectively. There is no report of a fall in the mid and low tone, or a rise in the high tone as in normal reading style. Levelling is undoubtedly operated here.

In the study of the recitation of the multiplication table, List reported that the rising tone was replaced by the high tone; and the falling tone, by the low tone. He stated:

"According to the informants, in rapid conversation or recitation the high register tone is commonly substituted for the rising contour tone since the latter is the most difficult of the five tones to produce. There seems to be similar substitution of the low register tone for the falling contour tone although this substitution does not seem to occur with equal frequency. Meaning is apparently grasped by context." (1961, 267.)

I have two points to argue here. I have clearly illustrated the tonal behaviour of the five phonemic tones in connected speech in 4.2. From my study the rise always has its rise either stressed or unstressed, but the fall may lose its final wide fall when it is unstressed. In the recitation of the multiplication table, every syllable is stressed and the last syllable before a pause is the prominent stressed syllable. The report that the rising contour tone
became the high register tone or the falling contour tone became the low register tone is undoubtedly a particular phonetic process in which the pitch configuration of the tones is levelled. The dynamic rise tone may be realized as [―] or [― —] and the phonemic fall tone may be realized as [― ] or [― —]. Since the pitch range is narrow in this style of speech, the distinctions between the static tones are quite difficult to detect by foreigners. However, when two distinct static tones are in succession, we can easily perceive the difference of pitch height. The acoustic records also reveal that the pitch distinction is still maintained but the differences are not as much as in the normal reading style.

Fig 5.5 illustrates the acoustic record of the recitation of the multiplication table of 'two'. The text, which is auditorily described, is given below.

Two times one is two. /'səŋˈrənət½səŋˈrə/
Two times two is four. /ˈsəŋˈsəŋˈsiːl/
Two times three is six. /ˈsəŋˈsəːmˈhɒkˈl/
Two times four is eight. /ˈsəŋˈsiːlˈpæstˈl/
Two times five is ten. /ˈsəŋˈhæːˈsɪpl/
Two times six is twelve. /ˈsəŋˈhɒkˈsɪplˈsəŋˈrə/
Two times seven is fourteen. /ˈsəŋˈsɛtˈsɪplˈsɪːl/
Two times eight is sixteen. /ˈsəŋˈpæstˈsɪplˈhɒkˈl/
Two times nine is eighteen. /ˈsəŋˈkærˈsɪplˈpæstˈl/
Two times ten is twenty. /ˈsəŋˈsɪplˈpenˈmˌʃiːˈsɪplˈ/
Two times eleven is twenty-two. /ˈsəŋˈsɪplˌˌetˈpenˈmˌʃiːˈsɪplˈsəŋˈrə/
Two times twelve is twenty-four. /ˈsəŋˈsɪplˈsəŋˈpennˌʃiːˈsɪplˈsɪːl/
NON-STYLIZED INTONATION

Reading of the Multiplication Table

STYLIZED INTONATION

Recitation of the Multiplication Table

"Two times ten equals twenty.

Two times eleven equals twenty-two.

Two times twelve equals twenty-four.

FIG 5.5
In List's analysis he reported that the low and the mid had the same musical note. He stated:

"Having accepted the substitution of the high and low register tones for the rising and falling contour tones as a characteristic of Thai recitation, and possibly speech, we find only two syllable sequences in this excerpt which do not exhibit coordination of speech melody and song melody. These are syllable 33-4 (/'sipɬ'penm/) and 39-40 (/'?etɬ'penm/). In these a change of tone from low to mid does not produce a corresponding of musical pitch. Adding these to syllable 48 (/'jiːf/), in which the reciters themselves are inconsistent in the use of song pitches, we have five syllables out of the total of fifty showing lack of coordination. This excerpt therefore exhibits a 90% coordination of speech melody and song melody.‖ (1961,268-269 ; my addition.)

If we look at the distribution of the phonemic tones in the multiplication table, there are 50 syllables altogether, 18 are the rise tones, 5 are the fall, 24 are the low, and only 3 are the mid. There is no high tone in this recitation. The two static tones form about 50% of the whole number of syllables (27/50) and the low tone has a large distribution (24/50), the mid tone distribution is very low (3/50). I found List's argument here is illogical and the use of the percentage of the syllables which exhibit coordination of speech melody and song melody is quite misleading. Actually most of the 'speech melody', to use List's term, does not coordinate with the 'song melody' at all. All the rise tones(18/50) are realized as mid level which is similar to the realization of the 3 mid tones in this recitation. The low tones which form the largest number of syllables in this recitation (24/50) are realized as lower mid level. The fall tones in my analysis are realized as a narrow suspended stepping fall, falling from the higher mid to mid. There is only one fall tone (1/5) which is realized as a low level. Undoubtedly pitch perturbation in this style of speech is through the phonetic 'levelling' process which is the characteristic of stylized intonation.
We can conclude that in stylized forms of speech which are superimposed by stylized intonation, there are the following common phonetic characteristics:

1) The pitch configuration of the tones is levelized. The three static tones which have a narrow fall or rise in normal speech become level. The dynamic tones which have a wide continuous or delayed fall or rise become a stepping narrow fall or rise.

2) The pitch range of stylized intonation is narrower than normal intonation. The pitch height of the three static tones is very close to each other. The dynamic tones have a narrower pitch range.

3) In some extreme cases, such as in chanting, professional callings, and recitation where the meaning of the words is unimportant, the dynamic tones are realized with level pitch.

4) The extension of the syllable duration is very prominent.

5) The degree of loudness is higher than normal speech, especially in callings.

It is interesting to note that the intensity seems to be levelled as well. Intensity traces in the acoustic records reveal a steady intensity level throughout syllables with static tones, and a break of intensity into two peaks in dynamic tones. This might be an interesting evidence to those who are interested to describe intonation in the articulatory aspect, and should be investigated in further research.

5.2 Stylized Intonation in Non-Stylized Forms of Speech

I have observed that it is very often that the Thai speakers, in conversational speech, use stylized intonation to express their attitudes and emotion towards things or people being discussed.
The stylized intonation in conversational speech has the same characteristics as the stylized intonation in stylized proper which has just been described in 5.1 above.

This intonation is used in the situations where the speaker wants to convey to the listener or listeners that the message is routine, known, boring, tiresome, tedious etc. Ladd (1978) proposed that the core meaning of stylized intonation is in terms of 'stereotype' or 'predictability'. The examples given below and the acoustic records in Fig 5.6 to 5.9 illustrate the use of stylized intonation in conversational speech.

(A) The speaker was asked who was in the committee. He said, "Well, it's the same people. You know? Suwat, Nantaa, Wattanaa, Sompong. The same old faces." In this situation the speaker used stylized intonation to express that the message about the people in the committee was routine, known, and predictable.

1 The asterisk put in front of the number of tune (*1 or *2) is used to indicate that the tune is stylized.
STYLIZED INTONATION IN CONVERSATIONAL SPEECH

They are: Suwat, Nantaw, Wathanaw, Soppong, etcetera.

THE COMMITTEE IS THE SAME OLD SET.

NON-STYLIZED INTONATION TO BE COMPARED

THE COMMITTEE? They are: Suwat, Nantaw, Wathanaw, Soppong, etcetera.

FIG 5.6
is not.

// 2 kam\textsuperscript{m} ma\textsuperscript{h}/ka\textsubscript{m}/\textsubscript{r}\textsuperscript{i}/ (The committee ?)

// 1 ko\textsubscript{f}/mi\textsubscript{m} su\textsuperscript{1}/wa\textsuperscript{h}/ // 1 nan\textsuperscript{m}/tha\textsubscript{m}/ // 1 wa\textsuperscript{h}tha\textsuperscript{h}/na\textsuperscript{m}/

// 1 som\textsuperscript{r}/po\textsubscript{i}/ (They are Suwat, Nantaa, Wattanaa, Sompong.)

We can observe that pitch levelling is in operation in the first example. The contour of the phonemic tones though being stylized is distinct from each other. Stylized intonation in non-stylized forms of speech is quite different from stylized intonation in stylized proper in that the pitch of each phonemic tone is kept distinct.

(B) The speaker is a housewife. She was complaining that she did not know what to cook for the family. The utterances were expressed with boredom. She said, "I really get fed up. Just boil the things or make the soup, nothing very imaginative."

// *2 bm\textsuperscript{1} ca\textsubscript{m}/ (I get fed up..)

// *1 maj\textsubscript{f}/ru\textsuperscript{h} ka\textsubscript{m}/a\textsuperscript{1}/ca\textsubscript{m}/ (..don't know what to cook.)

// *1 tom\textsubscript{f}/tom\textsubscript{f} km\textsubscript{m}/km\textsubscript{m} paj\textsubscript{m}/ta\textsubscript{m}/ru\textsubscript{i}/ (Just boil the thing, make the soup. no imagination.)

The complaint was expressed with boredom, the speaker did not have any intention to solve the problem. Cooking was tiresome for her, and what she was doing was just routine.

(C) The speaker and the listener were watching the news on television. There were wars everywhere. She felt that life was meaningless for those children whose parents were killed. She did not think that things would improve. The situation would go on like this and she could do nothing.

// *1 na\textsubscript{f}/tho\textsuperscript{h}/ca\textsubscript{m}/ (This is really disheartening.)

// *4 ph\textsubscript{f} ko\textsubscript{f}/ta\textsubscript{i}/ (The father is dead.)

// *4 mm\textsubscript{f} ko\textsubscript{f}/ta\textsubscript{i}/ (The mother is dead.)
B

(I get fed up) I don't know what to cook. Just boil the thing, make the soup, nothing very imaginative.

C

This is really distressing. The father is dead. The mother is dead. Life doesn't mean a thing.

FIG 5.7
The utterances were expressed with a tone of resignation, tiredness, with no prospect of improvement. The characteristics of stylized intonation in terms of pitch levelling, suspension of syllable duration, intensity levelling are clearly observed. See Fig 5.7.

(D) The speaker was annoyed that her friend kept changing his mind whether he was going to the conference with her or not. What he had done was known and predictable.

(I don't know.)

(What he wants.)

(At one moment he would say 'yes'.)

(At another moment he would say 'no'.)

(That crazy man.)

The utterances were expressed with the tone of tiredness. She was fed up with his indecision which was known among others. Pitch levelling can be clearly observed in the acoustic records. (See Fig 5.8.) Especially in the two successive falling tone syllables /wa: f/ and /maj f/ in the 4th tone group.

(E) The speaker arrived home and she saw her little one was playing with water and he was making a mess all over the floor.

(Look !)

(You brought the water here.)

(it is all a mess.)

(Stop, stop, stop.)... The child didn't stop.
FIG 5.8

IF...D

'I don't know what he wants."

(At one moment he said yes, at another moment he said no. That crazy man.)
There are three tone groups with one mid tone word in this example. It is most interesting that the pitch configuration of the utterances reveals very clearly the system of intonation superimposed on it. The three one-word utterances are // 4 du₄ m// (Look!), // *1 pho₁ m//, and // *2 jag₄ m//. The acoustic records in Fig 5.9 clearly illustrate pitch configuration of these words which have the same inherent lexical tone but have different intonations superimposed on them. The first one-word utterance // 4 du₄ m// (Look!) was uttered with emphatic tune, the behaviour of Tune 4 is very clearly illustrated. The second one-word utterance // *1 pho₁ m// (Enough.) was uttered with stylized Tune 1, expressing a command with a warning tone. The third one-word utterance // *2 jag₄ m// was uttered with stylized Tune 2, expressing a question with a warning tone. Warning is stylized in the sense that the speaker expresses that the listener knows what is going to happen if he or she does not do as directed.

We can clearly see that the three systems of pitch fluctuation: 1) tone, 2) tune, and 3) stylized tune or pitch levelling interplay to produce the pitch contour of the utterances. We can conclude that the system of tones is primary to the meaning of the word or words in an information unit. The system of tunes adds to these information units the attitudinal and emotional meanings, and this system does not contaminate the first system as described in Chapter III and IV.
STYLIZED INTONATION IN CONVERSATIONAL SPEECH

"Look!" (You brought the water here. It is all messed up. Stop! Stop! Stop!) (Enough!)

(Not yet?) "In a minute, someone is going to be spanked."
The stylized system corresponds to the systems of tones and tunes and adds some more meaning to the utterances.

The function of intonation in a language is, undoubtedly, expressive. It adds to the cognitive meaning of the words in the utterance, the attitude and the emotion of the speaker. If speech is not just informative but is also communicative, in order to understand the nature of speech we need to probe into the systems of sounds which are used for the expressive and interpersonal functions of speech more deeply. The system of intonation, pause, tone of voice need to be thoroughly described for a better understanding of this aspect of speech.

The description of the system of Thai intonation in terms of its structure, its phonetic characteristics, and its meanings which I put forward in this study may provide some answers to the questions in this aspect of phonetic linguistics. I also hope very much that the study will contribute many stimulating questions to further exploratory research into this highly sophisticated use of pitch in languages.
BIBLIOGRAPHY
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There are some abbreviations used in this bibliography:

Proc = Proceedings
ICL = International Congress of Linguists
ICPS = International Congress of Phonetic Sciences

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ADDENDA

Added Bibliography


