STRESS, TONE AND INTONATION IN SOUTH VIETNAMESE: Submitted by Aurélie Tran Huong Mai.

The thesis constitutes a detailed study of some suprasegmental phenomena in South Vietnamese. It consists of two main parts:

Part I is a brief general phonology of South Vietnamese which constitutes background information for some of the phenomena discussed in Part II.

Part II, the main part of the thesis, deals in three chapters with the features of Stress, Tone, and Intonation in the language, with a fourth chapter giving a summary of the findings presented in the three chapters.

The investigation yielding these results was based primarily on an auditory and aided auditory approach, with instrumental acoustic studies supplementing and complementing this approach.

The Stress phenomena in South Vietnamese were found to be largely etic and predictable. A number of new results have been arrived at in connection with the tonal features of the language and the significant intonational features established in detail. Numerous illustrative charts and graphs have been included with the thesis.
STRESS, TONES AND INTONATION
IN SOUTH VIETNAMESE

by

Aurélie Tran Huong Mai

A thesis presented to The Australian National University for the Degree of Doctor of Philosophy.

March 1969
A great many studies have been made dealing with the phenomenon of stress, tone and the intonational characteristics of diverse languages. However, until now, no detailed investigation of the suprasegmental structure of Vietnamese has been undertaken. This study is an attempt to fill this gap.

In concerns itself primarily with the system of stress, tone and intonation of Vietnamese.

The dialect of Vietnamese used in it, is the one spoken in the capital city, Hanoi. Some materials were gathered specifically for the investigation of stress and intonation.

Because of the complexity of the suprasegmental systems of any language, whether tonal or not, is a highly involved task - the pieces of equipment we used to assist in the investigation.

DECLARATION

Except where otherwise acknowledged in the text, this thesis represents the original research of the author.

Aurélie Tran Huong Mai
A great many studies have been made dealing with the phenomena of Stress, Tones and the Intonational characteristics of diverse languages. However, until now, no detailed investigation of the suprasegmental phenomena of Vietnamese has been undertaken. This study is an attempt to fill this gap.

It concerns itself primarily with the systems of the Stress, Tones and Intonation of Vietnamese.

The dialect of Vietnamese analysed in it, is the one spoken around the Saigon area, referred to, here, as South Vietnamese.

The data used for the investigation were primarily taken from conversations; some materials were prepared specifically for the investigation of Stress and Tone variations.

Because of the complexity of the subject matter the analysis of the suprasegmental systems of any language, whether tonal or not, is a highly involved task - various pieces of equipment were used to assist in the investigation.
The instruments utilised for the analysis of Vietnamese suprasegmentals are described in the text. It should be noted however, that the results presented in this study should not be considered as results based solely on data obtained through mechanical means. They are in fact based on the author's auditory impressions as well as on data resulting from instrumental measurements. In other words, the equipment was not used as the basic means of analysis, but as a tool for obtaining objective materials for analysis.

As this is the first extensive and detailed study of Vietnamese Stress, Tones and Tone perturbations and Intonation, there will undoubtedly be many gaps in the description of several aspects of the subject matter. It is hoped that more studies will be made in this area of Vietnamese phonology and that faults which may appear in this presentation will be rectified through them.

The Text is organised in the following manner:

It consists of two Parts:
Part I deals with the phonological system of Vietnamese, excluding the systems of Stress, Tones and Intonation. It is divided into two chapters:

Chapter 1 presents the Unit Phonemes and Phonetic Variants of the language.

Chapter 2 discusses the Phonemic Arrangements i.e. distribution of vowels and consonants in the syllable.

Part II presents the main part of the study i.e. the analysis of the Stress, Tones and the Intonation system in Vietnamese. It consists of three chapters:

Chapter 1 gives the description of the degrees of Stress present in Vietnamese and the various Stress Patterns.

Chapter 2 analyses the Tones and Tone Variants.

Chapter 3 presents the Intonation contours.
I would like to express my thanks to The Australian National University for the four year scholarship grant without which this study would not have been possible.

It is impossible here, to express deeply enough, my gratitude and indebtedness to my supervisor, Dr S. A. Wurm.

It is he who aroused my interest in the area of acoustic phonetics and particularly in the instrumental investigation of sounds. I wish to express my sincere gratitude for his constant guidance and encouragement during the entire course of this study. I wish to thank him also, for his tireless persistence in reading the many drafts at various stages of this work, for his penetrating criticisms and for the many stylistic corrections he made which were necessary for the improvement of this text. I would like to extend my thanks to my former teachers at Georgetown University, Professor Robert Lado, Professor Frederick Bosco, Professor Robert Di Pietro, Professor Richard Harrell, for having introduced me to the many important aspects of Descriptive Linguistics.
To my colleagues and friends who have helped me to a great or small extent, towards completing this study, I express my sincere thanks. I wish to thank particularly Nguyen Dang Liem, Darrell Tryon and Karl Franklin for having critically read various parts of this manuscript and for having made many stylistic corrections.

To my parents I am eternally indebted for their uninterrupted moral support during my study in Australia.

A.T.H.M.
# TABLE OF CONTENTS

Preface \hspace{1cm} iii

**PART I. PHONOLOGY**

0. Introduction \hspace{1cm} 1
  0.1. Scope \hspace{1cm} 1
  0.2. Dialect used in the analysis \hspace{1cm} 2
  0.3. Abbreviations and symbols \hspace{1cm} 3

CHAPTER 1. UNIT PHONEMES.

1.0. Phoneme inventory \hspace{1cm} 6
  1.1. Consonant phonemes : phonetic variants \hspace{1cm} 12
    1.1.0. The syllable \hspace{1cm} 12
    1.1.1. General remarks \hspace{1cm} 12
    1.1.2. Phonetic variants of consonants in detail \hspace{1cm} 13
  1.2. Vowel phonemes : phonetic variants \hspace{1cm} 19
    1.2.1. General remarks \hspace{1cm} 19
    1.2.2. Phonetic variants of vowels in detail \hspace{1cm} 20
    1.2.3. Additional characteristics of vowels (length, pharyngealization) \hspace{1cm} 25
  1.3. Tone phonemes and phonetic tone variants \hspace{1cm} 26
    1.3.1. General remarks \hspace{1cm} 26
    1.3.2. Tones and tone variants \hspace{1cm} 26
    1.3.3. Additional characteristics of tones (pharyngealization, tenseness and laxness) \hspace{1cm} 28
CHAPTER 2. PHONEMIC ARRANGEMENTS.

2.1. Distribution of consonants and vowels in the syllable

2.1.0. Syllable structure

2.1.1. Distribution of vowels in the syllable

2.1.2. Distribution of initial consonants in the syllable

2.1.3. Distribution of simple vowel nuclei and final consonants

2.1.4. Distribution of complex vowel nuclei and final consonants

2.2. Distribution of tones in the syllable

2.3. Additional remarks on the syllable

2.4. Notes on Vietnamese orthography

2.4.1. The Vietnamese alphabet

2.4.2. Consonant sounds and spelling symbols

2.4.3. Vowels

2.4.4. Tones

CHARTS.

Chart I. Consonant phonemes
Chart II. Vowel phonemes
Chart III Tones
Chart IV Vowel sounds
Chart V. Complex vowel nuclei
Chart VI. Initial consonants
PART II. STRESS, TONES AND INTONATION

0. Introduction 53
0.1. Scope 53
0.1.1. Definition of stress 55
0.1.2. Definition of pitch 58
0.2. Procedures 60
0.2.1. Theoretical approach 60
0.2.1.1. Auditory and acoustic approach 60
0.2.1.2. Simple to complex approach 61
0.2.2. Experimental procedures 63
0.2.2.1. Materials, informants, and recording procedures 63
0.2.2.2. Apparatus 71
0.2.2.2.1. The sound stretcher or MLR 38 Tempo regulator 71
0.2.2.2.2. The Trans Pitch Meter and intensity meter 72
0.2.2.2.3. The brush oscillograph 75
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2.2.3. Illustrative graphs</td>
<td>76</td>
</tr>
<tr>
<td>0.2.2.4. Measuring of the fundamental frequency and intensity tracings</td>
<td>78</td>
</tr>
<tr>
<td>0.2.2.5. Interpretation of the fundamental frequency and intensity tracings</td>
<td>80</td>
</tr>
<tr>
<td>0.2.2.5.1. Interpretation of fundamental frequency tracings, and pitch</td>
<td>80</td>
</tr>
<tr>
<td>0.2.2.5.2. Interpretation of intensity tracings and stress</td>
<td>82</td>
</tr>
<tr>
<td>0.2.2.5.2.1. Basic intensity</td>
<td>83</td>
</tr>
<tr>
<td>0.2.2.5.2.2. Results of the interpretation of the basic intensity tracings</td>
<td>87</td>
</tr>
<tr>
<td>0.2.2.5.2.2.1. Vowels</td>
<td>87</td>
</tr>
<tr>
<td>0.2.2.5.2.2.2. Influence of consonants and tones</td>
<td>89</td>
</tr>
<tr>
<td>0.2.2.5.2.2.3. Basic intensity and stress</td>
<td>94</td>
</tr>
<tr>
<td>0.2.2.5.2.2.4. Overall intensity</td>
<td>96</td>
</tr>
<tr>
<td>CHAPTER I. STRESS</td>
<td></td>
</tr>
<tr>
<td>1.0 Introduction</td>
<td>97</td>
</tr>
<tr>
<td>1.1. General features pertaining to stress in Vietnamese</td>
<td>99</td>
</tr>
<tr>
<td>1.1.1. Pauses</td>
<td>99</td>
</tr>
<tr>
<td>1.1.2. Degrees of stress</td>
<td>103</td>
</tr>
<tr>
<td>1.1.3. Rhythm</td>
<td>109</td>
</tr>
<tr>
<td>1.1.4. Overall intensity patterns</td>
<td>111</td>
</tr>
<tr>
<td>1.2. Specific occurrences of stress in Vietnamese</td>
<td>112</td>
</tr>
</tbody>
</table>
1.2.1. Stress patterns in non-interrogative sentences

1.2.1.1. Stress in isolated syllables

1.2.1.2. Stress in two-syllable utterances

1.2.1.3. Stress in three-syllable utterances

1.2.1.4. Stress in longer utterances

1.2.2. Basic stress patterns in interrogative sentences

1.2.3. Modifications in the basic stress patterns

1.2.3.0. Introduction

1.2.3.1. Modifications caused by the occurrence of the extra-weak stress

1.2.3.2. Modifications caused by the occurrence of the emphatic stress

1.2.4. Overall intensity patterns

1.2.4.0. Introduction

1.2.4.1. The decreasing overall intensity

1.2.4.2. The sustained overall intensity

1.2.4.3. Diminishing sustained overall intensity
**CHAPTER II. TONES AND TONE VARIANTS**

2.0. Introduction

2.0.1. Investigation of significant pitch units and pitch fluctuations

2.0.2. Problems involved in the investigation of pitch phenomena

2.0.3. Instruments used in the analysis of tone variants in Vietnamese

2.0.4. Basic pitch contours

2.0.5. Order of presentation

2.1. Tones

2.1.0. Significant pitch units

2.1.0.1. Traditional description

2.1.0.2. Basic pitch contours of the tones

2.2. Tone variants or allotones

2.2.1. Tones in isolation: metatone

2.2.1.0. Introduction

2.2.1.1. Tone patterns conditioned by the segmental shape of the syllables

2.2.1.2. Tone patterns conditioned by the position of the metatone in the citation forms

2.2.2. Tones in pairs

2.2.2.0. Introduction

2.2.2.1. Tone conditioned by another tone occurring in juxtaposition in the pause group
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.2.1.1</td>
<td>Tone variants in non-identical tone pairs</td>
<td>173</td>
</tr>
<tr>
<td>2.2.2.1.2</td>
<td>Tone variants in identical tone pairs</td>
<td>175</td>
</tr>
<tr>
<td>2.2.2.2</td>
<td>Tone variants conditioned by stress and the position of the syllable in the utterance</td>
<td>175</td>
</tr>
<tr>
<td>2.2.2.2.1</td>
<td>Tone patterns in utterance final position</td>
<td>176</td>
</tr>
<tr>
<td>2.2.2.2.1a</td>
<td>With syllables carrying strong stress</td>
<td>176</td>
</tr>
<tr>
<td>2.2.2.2.1b</td>
<td>With syllables carrying weak stress</td>
<td>177</td>
</tr>
<tr>
<td>2.2.2.2.2</td>
<td>Tone patterns in utterance medial position</td>
<td>178</td>
</tr>
<tr>
<td>2.2.2.2.2a</td>
<td>With syllables carrying strong stress</td>
<td>178</td>
</tr>
<tr>
<td>2.2.2.2.2b</td>
<td>With syllables carrying weak stress</td>
<td>179</td>
</tr>
<tr>
<td>2.2.2.3</td>
<td>Summary</td>
<td>179</td>
</tr>
<tr>
<td>2.2.3</td>
<td>Tone variants in three syllable utterances</td>
<td>181</td>
</tr>
<tr>
<td>2.2.3.0</td>
<td>Introduction</td>
<td>181</td>
</tr>
<tr>
<td>2.2.3.1</td>
<td>The high rising tone</td>
<td>182</td>
</tr>
<tr>
<td>2.2.3.2</td>
<td>Tone patterns of syllables carrying a reduced or weakened weak stress [^-]</td>
<td>183</td>
</tr>
<tr>
<td>2.2.3.3</td>
<td>Tone patterns conditioned by the emphatic stress [']</td>
<td>185</td>
</tr>
<tr>
<td>2.2.3.4</td>
<td>Tone in juxtaposition in three syllable utterances</td>
<td>186</td>
</tr>
<tr>
<td>2.2.3.4.1</td>
<td>Tone variants of tones occurring in juxtaposition in non-identical tone groups</td>
<td>186</td>
</tr>
</tbody>
</table>
2.2.3.4.2. Tone variants of tones occurring in juxtaposition in identical tone groups

2.2.3.5. Tone patterns conditioned by stress and the position of the syllable in the utterance

2.2.3.5.1. Tone patterns in utterance final position

2.2.3.5.2. Tone patterns in utterance medial position

2.2.4. Tone variants in utterances of more than three syllables

2.2.4.0. Introduction

2.2.4.1. Tone patterns conditioned by the extra weak stress [ ° ]

2.2.4.2. Tone patterns conditioned by the emphatic stress [ " ]

2.2.4.3. Summary
CHAPTER III. INTONATION

3.0. Introduction 207

3.0.1. General characteristics of intonation 207

3.0.2. Types of intonation contour 209

3.0.3. Problems involved in the investigation of intonation 210

3.0.4. The approach: auditory and acoustic study 211

3.0.5. Order of presentation 215

3.1. Non-emotional intonation contour 215

3.1.0. Introduction 215

3.1.1. Falling intonation contour 217

3.1.1.0. General characteristics 217

3.1.1.1. Characteristics of the tones in the contour 218

3.1.1.2. Graphic representation of the contour 219

3.1.1.3. Occurrence of the falling contour 220

3.1.1.4. Illustrative examples 221

3.1.2. Sustained intonation contour 221

3.1.2.0. General characteristics 221

3.1.2.1. Characteristics of the tones in the contour 222

3.1.2.2. Graphic representation of the contour 223

3.1.2.3. Occurrence 223
3.1.2.4. Illustrative examples
3.1.2.5. Additional remarks on the non-emotional intonation contours
3.1.3. Rising intonation contour
3.1.3.0. General characteristics
3.1.3.1. Characteristics of the tones in the contour
3.1.3.2. Graphic representation
3.1.3.3. Occurrence
3.1.3.4. Additional remarks: modifications of the rising intonation contour
3.1.3.4a. Modification 1: rising-falling + sustained co-occurring intensity
3.1.3.4b. Modification 2: rising-falling + decreasing co-occurring intensity
3.1.3.5. Pertinent remarks on the intonation contours of calls
3.2. Emotional intonation contours
3.2.0. Introduction
3.2.0.1. General characteristics of emotional contours
3.2.0.2. Types of emotional contours
3.2.0.3. Remarks on the investigation of emotional contours
3.2.1. Rising contour + sustained co-occurring intensity
3.2.1.0. Characteristic tendencies of the contour
3.2.1.1. Characteristics of the tones .................................................. 244
3.2.1.2. Occurrence ......................................................................... 244
3.2.1.3. Illustrative Examples ......................................................... 244
3.2.2. Rising-falling contour + sustained co-occurring intensity ...... 249
3.2.2.0. Characteristic tendencies of the contour ......................... 249
3.2.2.1. Characteristics of the tones ................................................ 249
3.2.2.2. Occurrence ......................................................................... 250
3.2.2.3. Graphic representation of the contour ............................. 250
3.2.3. Additional remarks ................................................................. 254
3.2.4. Summary .............................................................................. 256
4. GENERAL SUMMARY FOR PART II.............................................. 258
4.1. Stress ...................................................................................... 258
4.2. Tones and tone variants ............................................................ 262
4.3. Intonation contours ................................................................. 266
4.3.1. Non-emotional intonation contours ....................................... 266
4.3.2. Emotional intonation contours ............................................. 269

TONES CHARTS

Tone Chart A - Tones in isolation .................................................. 171
Tone Chart B - Tones in pairs ........................................................ 180
Tone Chart C - Tones in three-syllable utterances and in longer utterances .................................................. 206
Tone Chart D - Basic intonation contours and emotional contours (last tone) ................................................. 257
ILLUSTRATIVE GRAPHS

All the graphs or oscillographic charts - Numbers 1 to 148 - are presented at the end of the text, i.e., following the Bibliography.
0. INTRODUCTION

0.1. Scope

The first part of this study presents a brief analysis of the segmental phonological system of Vietnamese - Saigon Dialect.

This chapter however, is not intended to be a complete and detailed description of the phonetic features of Vietnamese, but is intended to serve only as background information to the main part of the thesis which concerns the supra-segmental features of Stress, Tone variations and Intonation.

A more detailed phonological study was purposely avoided in order not to distract from the major part of the work.\footnote{For a more detailed analysis of Vietnamese phonology see: L.C. Thompson 'Saigon Phonemics', Language 35, 1959, pp.445-76.} However, some important points of stress and tone influences which were clearly discernible in segmental phonology are noted in the text.
It was felt appropriate to include such a cursory analysis of Vietnamese phonology, because of the obvious inter-connections between the supra-segmental features of the language and its segmental features. For example:

a) the allophonic variants of certain vowel phonemes are attributable to the presence of a certain degree of stress of that syllable,
b) the phonetic qualities of certain vowels have a direct bearing on the absolute intensity level of that vowel - (see part II, Stress)
c) the pitch contours of the tones are often influenced by the presence or absence before them of certain consonants. (see part II, Tone variations)

0.2. **Dialect used in the analysis**

The phonological description presented in this study is that of South-Vietnamese, the dialect which is spoken in Saigon specifically. The principal informants were the writer, members of her family, friends and servants of the family.¹ All the informants are native speakers of Vietnamese and have lived mainly in Saigon, most of the

¹A more detailed history of the informants used during the research project is presented later on in the text. (See Introduction to Part II).
the informants have attained a relatively high degree of education.

Certain anomalies have been noticed between the writer's speech and that of other Saigonese speakers. The differences will be noted in the analysis. The differences in the speech of the writer and some members of her family and other speakers of Vietnamese is probably due to the constant social contact between these informants and speakers of the other dialects of Vietnamese - specially Hanoi and Dalat speakers.

0.3. Abbreviations and Symbols

0.3.1. The following abbreviations are used in the Phonological analysis (Part I, Part II):

Dec  Decreasing (Intensity)
Int  Intensity
Sus  Sustained (Intensity)
SV   Semivowel
Vd   Voiced
Vls  Voicless

0.3.2. The Phonetic transcription used is mainly the one supplied by the International Phonetic Association (IPA).
The symbols listed here are those which may cause the reader some difficulty in interpretation, those which are not used by the IPA, and those which are used with a different meaning from the one given by the IPA.

0.3.2.1. Symbols used for Consonant and Vowel sounds:

- [tʰ] aspirated voiceless dental stop
- [ɾ] apico-alveolar trill
- [ɾ] apico-alveolar flap
- [ˀ] the cedilla under [t], [s] and [ɾ], e.g.,
- [ɾ̃], [ʂ̃], [ʐ̃] symbolises the retroflex point of articulation
- [\)] unreleased consonant
- [\_] fortis
- [ ] lenis
- [a] higher-low front unrounded vowel
- [a] low front unrounded vowel
- [œ] high back unrounded vowel
- [œ] mid-back unrounded vowel
- [œ] low back unrounded vowel
- [œ] lower tongue height
- [œ] raised tongue height
- [œ] retracted tongue position
- [œ] fronted tongue position
- [œ] non syllabic vowels
- [œ] in free variation with
0.3.2.2. Symbols for tones.

The symbols used to indicate Vietnamese tones are identical with those used in standard Vietnamese orthography - three tones are marked above the syllable peak:

- \[^{\text{[]}}\] high rising tone
- \[^{\text{[?]}}\] mid rising tone
- \[^{\text{['}]}\] low level tone

One tone is marked below the syllable peak:

- \[^{\text{[.]}\}\] low rising tone

The High Level tone is unmarked.

0.3.2.3. Symbols for Stress.

- \[^{\text{[']}}\] strong stress
- \[^{\text{[^{\text{^}]}\}]}\] weak stress
- \[^{\text{[^{\text{^}]}\}]}\] reduced weak stress
- \[^{\text{[^{\text{^}]}\}]}\] extra weak stress
- \[^{\text{["]}\}\] emphatic stress

0.3.2.3. Symbols used for Pause and intonation contours:

- \[^{\text{[|]}\}]}\] Non final Pause - Sustained Intonation
- \[^{\text{[||]}\}]}\] Final Pause - Rising Intonation
- \[^{\text{[#]}\}]}\] Final Pause - Falling Intonation
- \[^{\text{[!]}\}]}\] Final Pause - Rising-Falling Intonation.
CHAPTER I : UNIT PHONEMES

1.0. Phoneme Inventory

1.0.1. The phonemes of South Vietnamese include

17 consonants
11 vowels
4 semivowels
5 tones

The Non-syllabic consonant phonemes and semivowels comprise:

3 bilabials
1 labio-dental
6 apico dentals
3 apico-alveolar retroflex
3 lamino-prepalatals
4 dorso-velars
1 glottal

The consonant phonemes classified according to their manner of articulation comprise:

7 stops of which 4 are fortis stops
3 are lenis stops
4 fricatives
4 nasals
1 lateral
1 retroflex voiced continuant
4 semivowels
The vowel phonemes are:

- 5 front unrounded
- 3 back unrounded
- 3 back rounded

Examples of consonants and semivowels are:

a) **Syllable initial Position**:

**Labials:**

- /b-/ ba 'three'
- /m-/ ma 'phantom'
- /w-/ wa 'to cross'
- /f-/ fa 'to mix'

**Apico-alveolar**

- /t-/ ta 'we'
- /d-/ da name of a tree
- /t'-/ t'a 'to forgive'
- /s-/ sa 'far'
- /n-/ na 'custard apple'
- /l-/ la 'to shout'

**Apico-alveolar retroflex**

- /t/- ta 'to investigate'
- /s/- sa 'to fall'
- /r/- ra 'to go out'
Lamino-prepalatals:
/c-/ ca 'father'
/p-/ ña 'direction'
/j-/ ja 'skin'

Dorso-velars:
/k-/ ka 'to sing'
/x-/ xa 'better'
/ŋ-/ ña 'Russia'
/g-/ ña 'station'

Glottal:
/h-/ ha 'breath'

Syllable final position
Six consonants, and four semivowels occur in syllable final position:¹
/-b/ tib 'to receive (a guest)'
/-t/ tit 'end'
/-k/ ták 'to slap'
/-m/ tim 'heart'
/-n/ tin 'to believe'
/-ŋ/ tɑŋ 'to melt'

¹The distribution of vowels and final consonants being very limited, only sub-minimal pairs can be found.
b) The vowel phonemes occur either with or without a consonant preceding them.

Examples of vowels without a preceding consonant:

- /i/  im  'quite, silence'
- /e/  em  'soft, calm'
- /æ/  æm  'little brother or sister'
- /a/  aŋ  'to eat'
- /ə/  ãm  'little pagoda'
- /u/  ŭŋ  'willing'
- /y/  yŋ  'gratitude'
- /ʌ/  õm  'sound'
- /o/  ōm  'noisy'
- /ɔ/  ōŋ  'to embrace'
- /ɔ/  ōŋ  'stew'

Examples with a preceding consonant:

- /-i/  t'iŋ  'school examination'
- /-e/  t'eŋ  'desolate'
/-ɛ/ \(t^\varepsilon\) 'a kind of gas'
/-a/ \(t^\alpha\) 'jade'
/-o/ \(t^\omega\) 'to forgive'
/-u/ \(t^\upsilon\) 'letter'
/-y/ \(t^\gamma\) 'letter, poem'
/-w/ \(t^\lambda\) 'true'
/-u/ \(t^\upsilon\) 'to confiscate'

All syllables must bear one of the five tones.

Examples:

/-ɛ/ 'to shout'
/-a/ 'to be'
/-u/ 'leaf'
/-y/ 'pure (water)'
/-w/ 'strange'

The Consonant and Vowel Phonemes are represented in the Phonetic Charts which follow on pages 10 and 11.

For the Tone phonemes see Chart 3, page 11.

---


1.0.2. South-Vietnamese has also five distinctive tone phonemes, which have traditionally been described as:¹ ²

- high level // (unmarked)
- low level ///</
- high rising ///</
- mid rising ///</
- low rising ///</

All syllables must bear one of the five tones;

Examples:

/lo/ 'to shout'
/lá/ 'to be'
/lá/ 'leaf'
/lá/ 'pure (water)'
/lá/ 'strange'

The Consonant and Vowel Phonemes are represented in the Phonetic charts which follow on pages 10 and 11.

For the tone phonemes see Chart 3, page 11.

¹ Thompson, L.C. 'Saigon Phonemics' Language 35. 1959, pp.445-76.
## Chart I

<table>
<thead>
<tr>
<th>Types</th>
<th>Points of Articulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bilabial</td>
</tr>
<tr>
<td><em>fortis</em> <em>vls</em></td>
<td></td>
</tr>
<tr>
<td><em>vd</em></td>
<td>b</td>
</tr>
<tr>
<td><em>lenis</em> <em>vls</em></td>
<td></td>
</tr>
<tr>
<td><em>aspirated</em> <em>vls</em></td>
<td></td>
</tr>
<tr>
<td><em>Fricatives</em></td>
<td>f</td>
</tr>
<tr>
<td><em>Nasals</em></td>
<td>m</td>
</tr>
<tr>
<td><em>Laterals</em></td>
<td></td>
</tr>
<tr>
<td><em>Semi-Vowels</em></td>
<td>w</td>
</tr>
</tbody>
</table>
**CHART II**

**VOWEL PHONEMES**

<table>
<thead>
<tr>
<th></th>
<th>Front unrounded</th>
<th>Back unrounded</th>
<th>Back rounded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td>i</td>
<td>u</td>
<td>u</td>
</tr>
<tr>
<td><strong>Mid</strong></td>
<td>e</td>
<td>y</td>
<td>o</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td>a, a</td>
<td>^</td>
<td>_</td>
</tr>
</tbody>
</table>

**CHART III**

**TONE PHONEMES**

<table>
<thead>
<tr>
<th>Pitch level</th>
<th>CONTOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>//</td>
</tr>
<tr>
<td>High</td>
<td>—</td>
</tr>
<tr>
<td>Mid</td>
<td>—</td>
</tr>
<tr>
<td>Low</td>
<td>—</td>
</tr>
</tbody>
</table>

1 This tone chart is the one presented by R. Jones and Thong in *Introduction to Spoken Vietnamese.*
1.1. Consonant Phonemes - Phonetic Variants.

1.1.0. The syllable

Since all the descriptive and distributional statements which follow will be made in terms of the syllable, the definition of what constitutes a syllable in Vietnamese is given here:

"A syllable is the sequence of sounds which accompany each chest pulse.\(^1\) It is the smallest unit of speech which can occur in isolation."

Each syllable must contain the following elements:

1. a vowel
2. a tone
3. additional features of stress and intonation.

1.1.1. General Remarks

1.1.1.1. Occurrence of [ʔ]

Syllables which begin with a stop are frequently preceded by a non-phonemic glottal catch [ʔ]. The glottal catch always occurs in slow speech, it may or may not occur in rapid speech.\(^2\)

---

\(^1\) Thompson, L.C. *Vietnamese Grammar*, University of Washington Press, Seattle 1965, p.44.

\(^2\) The glottal also occurs after vowels in syllables with zero codas and before vowels in syllables with zero onsets.
1.1.1.2. In syllable initial position, the voiced stops /b/ /d/ can also be imploded. However, implosive [ɓ] and [ɗ] usually occur in slow deliberate speech, and in short utterances - i.e., one to two syllables.

1.1.1.3. Consonants which occur in syllable final position are always unreleased.

1.1.1.4. Simultaneous double closure

In syllable final position, after /Aw, uw, ow/ the voiceless velar stop /k/ and the velar nasal /ŋ/ have a simultaneous lip closure symbolised thus:

\[
\begin{array}{c}
\text{[} \text{ } \text{\textbf{k}} \text{] } \\
\text{[} \text{ } \text{\textbf{ŋ}} \text{] }
\end{array}
\]

1.1.2. Phonetic Variants of Consonants in detail.

The phonetic shapes of the non-syllabic phonemes are now described in detail.

Labials:

/b/ voiced unaspirated bilabial stop

[ɓ-] ~ [ɠ-] ~ [ɠ-] in syllable initial position

[ɠɓaŋ] [ɠɓaŋ] /ɓaŋ/ 'bench'

[-p] in final position

[t('p)] /t('b/ 'low, small'

/f/ Fortis voiceless labio-dental fricative occurs
in syllable initial position only, has one allophone: [f-]

[fʊ] /fʊ/ 'downtown'

/m/ voiced bilabial nasal

[m] in syllable initial position

[mɛn] /mɛn/ 'blanket'

[m] in final position

[ti'm] /tim/ 'heart'

/w/ labio-velar semivowel

[o] non-syllabic off-glide toward [o] after /ɛ a/

[hʊ] /hʊ/ 'pig'

[u] non-syllabic off-glide toward [u] after /i, ə, ʌ, ʊ, ɔ/

[hʊʍ] /hʊw/ 'deer'

[hʌw] /hʌw/ 'to'

[u] non-syllabic on-glide toward [u] before a vowel

[tuʌ] /twʌ/ 'week'

[wʌ] /wʌ/ 'captain, chief'

Apico-alveolars:

/t/ fortis unaspirated voiceless alveolar stop

[t̚] ~ [t̚] dental in syllable initial position

[ʔt̚.k] /ták/ 'to slap'
[t] alveolar when /t/ follows in the next syllable
[tʰ tʰa] /tʰ tʰa/ 'a cup of tea'
[t] unreleased in syllable final position
[ʔtʰ] /tʰ/ 'cup'

/tʰ/ lenis aspirated voiceless alveolar stop occurs only in initial position, has one allophone: [tʰ]
[tʰ oʰj] /tʰ oʰj/ 'stop it'

/d/ lenis unaspirated voiced alveolar stop
[ŋ] ~ [ʔŋ] ~ [ʔd̪] in initial position
[ʔd̪aŋ] [ʔd̪aŋ] /d̪aŋ/ 'to knit'

/s/ fortis voiceless alveolar stop, has one allophone
[s̪-]
[s̪a] /s̪a/ 'far'

/n/ voiced alveolar nasal
[n] in initial position
[n̪aŋ] /n̪aŋ/ 'it's sunny
[n] with the tongue slightly retracted in final position when /t/ follows immediately in the next syllable
[ʔb̪aŋ t̪aŋ] 'rice paper' (cake, to spread)
[n̪] in final position
[an] /an/ 'elder brother'
/l/ voiced lateral continuant has one allophone [l-]  
\[\text{li\textipa{[l]}}\] /li\textipa{l}/ 'a glass' (drinking)

Alveolar retroflex

/\textipa{t}/ fortis unaspirated voiceless retroflex stop has one allophone [\textipa{t}-]  
\[\text{\textipa{t\textipa{n}}}\] /\textipa{t\textipa{n}}/ 'page' (book)

/\textipa{s}/ fortis voiceless retroflex fricative has one allophone [\textipa{s}-]  
\[\text{\textipa{s\textipa{\mu}}}\] /\textipa{s\textipa{\mu}}/ 'number'

/r/ voiced retroflex continuant

There are four variants which occur in free variation in syllable initial position.\(^1\)

[\textipa{r}] retroflex continuant

[\textipa{r\textipa{\tm}}] flap

[\textipa{\textipa{\textipa{r\textipa{\tm}}}]} trill

[\textipa{\textipa{\textipa{z}}}] voiced retroflex fricative

Palatals:

/c/ fortis unaspirated fronto-palatal stop occurs only in syllable initial position  
[\textipa{\textipa{c\textipa{\tm}}}] lightly affricated palatal stop in free variation with [\textipa{c}]

\(^1\)All four variants do not usually occur in the same speaker. The most frequent variants present in Saigon speech are: [\textipa{r}] ~ [\textipa{z}]
[ča] ~ [ca] /ca/ 'father'

/ŋ/ voiced palatal nasal has one allophone /ŋ/
[ŋː] /ŋː/ 'house'

/j/ voiced palatal semivowel
[iː], non syllabic off-glide towards [i] with the tongue slightly fronted after all vowels in vowel glides
[iː] /iː/ 'to go'
[taː], /taː/ 'hand'
[iː] non syllabic on-glide towards [i] before all vowels
[ɪw] /ɪː/ 'time', 'hour'

Velars

/k/ fortis unaspirated voiceless velar stop
[k] in syllable initial position
[kʊː], /kʊː/ 'wood'
[k], in final position after /æ a ə w ʌ ɔ /
[tak], 'to switch off'
[k], unreleased, and with simultaneous lip closure after /ʌw, uw, ow/
[çuk] /çuk/ 'to wish'
/g/ velar semi-vowel

[ᵢw] non-syllabic off-glide towards [w] with the
tongue slightly pointed after [w] and [γ]

[twᵢw] /twg/ 'fourth'

[g] ~ [g] lenis unaspirated voiced velar stop
in free variation with preglottalized lenis voiced
velar stop.

[ga] ~ [g] /ga/ 'station'

/γ/ lenis voiced velar fricative before all other
vowels:

[γε] /ge/ 'large'

[γi] /gi/ 'to sign'

/x/ fortis voiceless velar fricative has one
allophone1,2 [x-]

[xᵢ?] /x/ 'difficult'

---

1In my speech the /x/ phoneme has two variants:
[x] which occurs in fast speech
[kx] voiceless velar stop followed by the
velar fricative; this variant occurs in
slow speech, and isolated syllables.
Most members of my family have the same allophonic variants
for this phoneme.

2In fast, and very colloquial speech, the /x/ in the
word /xawə/ 'negative and interrogative marker' is
/hawə/. The initial /x/ is replaced by an initial /h/.
/ŋ/ voiced velar nasal
[ŋ] in syllable initial position
[ŋɔʔ] /ŋɔ/ 'to look at'
[ŋ], in syllable final position after
/ɛ a a w y a ɔ/
[ŋɔŋ], /ŋɔ/ 'hat'
[ŋ] unreleased and with simultaneous lip closure after /ʌw, uw, ow/
[ŋʌʊŋ] /ŋʌŋ/ 'inside'

Glottals:
/h/ glottal semivowel
[ŋ] non-syllabic centralizing off-glise after the high vowels /i, w, u/
[ŋwɔ] /ŋw/ 'to like'
[h] voiceless glottal fricative anticipating the following vowel in syllable initial position
[ŋ3iɔ] /ŋ3j/ 'to ask'

1.2. Vowel Phonemes - Phonetic Variants

1.2.1. General remarks:
Occurrence of [ʔ]
In syllables with zero onsets, a glottal stop [ʔ] often precedes the vowel - (see examples following).

Syllables with zero codas which occur in isolation, or before a pause (i.e., silence) are often followed by a glottal stop when the syllables carry one of the three rising tones, //'/ '/°'/ './'.
1.2.2. Phonetic Variants of Vowels in detail

Front vowels:

All front vowels have slightly centralized allophones depending on their environments -

/i/  high front unrounded vowel
   [iː]  central before /t, n/
   [ɪːt]  /ɪt/  'little, few'
   [iː]  before /m, p/
   [ɪːm]  /ɪm/  'silence'
   [i]  before /w, j, h/
   [i医务人员]  /i医务人员/  'to love'

/e/  high mid front unrounded
   [æː]  before /t, n/
   [æːˈt]  /æːt/  'frog'
   [æ]  before /p, m, j/
   [æm]  /æm/  'calm'

/ɛ/  low mid front unrounded vowel
   [ɛː]  before /k, ŋ/
   [ˈdɛːŋ]  /dɛŋ/  'black'
   [ɛ]  before /p, m, w/ and in syllable final position
   [xɛ医务人员]  /x医务人员/  'talented'
/a/  higher low front unrounded vowel

[a̞] before /t, n/
[a̞t̚] /át/ 'ace'
[a] before /k, ə/
[aŋ] /aŋ/ 'to eat'

/ə/  low front unrounded vowel
[ε] low central unrounded vowel before /w, j/
[tεi] 'hand'
[œ] before /k, ə/
[œk̚] /œk/ 'cruel'
[a] before /p, m/ and in syllable final position
[t‘am̚] /t‘am/ 'to envy'

Back unrounded vowels:

/w/  high back unrounded vowel
[ʊ̞] before /j/
[tʊ̞i] /tʊj/ 'fresh'
[ʊ̞] before /w/
[mʊ̞u] /mʊw/ 'conspiracy'
[ʊ] before /k, ə, g, h/
[ʊ̞] /ʊh/ 'to like'
/y/  mid back unrounded vowel
[\y^v] before /j/
[\y^v i] /\y j/ 'particle for calls'
[\y^v] before /k, \eta/
[\y^v =k\j] /\y k/ 'chilli pepper'
[\y^v] before /p, m/
[k\y^v m\j] /k\y m/
[\y] before /g/
[t\y^v u^v] /t\y^v g/ 'letter'

/\^/  low back unrounded vowel
[\^v] before /j/
[t\^v i] /t\^j/ 'French'
[\^v] before /k, \eta/
[t\^v =k\j] /t\^k/ 'all'
[\^v] before /p, m, w/
[k\^m\j] /k\^m/ 'dumb'

Back rounded vowels:

/u/  high back rounded vowel
[u^v] before /k, \eta/
[l\u^v =k\j] /l\u k/ 'moment'
[u^v] before /j, h/
[t\u^v =i] /t\u j/ 'pocket'
[u] before /p, m, w/
[t(uw)] /t(uw/) 'enemy'

/o/
mid back rounded vowel

[ɔ:] before /p, m, w/

[o'm] /om/ 'to embrace'
[ɔ] before /k, ʊ, j/
[tok] /tok/ 'good, nice'

/ɔ/
low back rounded vowel

[ɔ:] in syllable final position and before /j/

[kɔj] /kɔj/ 'to look at'
[ɔ] before /k, ʊ/

[ɔk] /ɔk/ 'back of head'

[ə] central unrounded vowel in syllables which carry the extra weak stress.

The phonetic variants of the vowel phonemes are presented in the following chart:
### CHART IV  VOWEL SOUNDS

<table>
<thead>
<tr>
<th></th>
<th>Front Rounded</th>
<th>Back Unrounded</th>
<th>Back Rounded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td>i</td>
<td>w</td>
<td>u</td>
</tr>
<tr>
<td><strong>Mid</strong></td>
<td>e</td>
<td>y</td>
<td>o</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td>a</td>
<td>a</td>
<td>o</td>
</tr>
</tbody>
</table>

The vowel /i/ and /y/ are phonetically longer than the other vowels in all environments, /e/ = [ɛ]/, /a/ = [ɑ]/.

All other vowels occur with allophonically varying length depending on the stress and the structure of the syllable in which they occur (see length of syllables 2.2.3).  

The high back unrounded vowel /i/ is often rounded with a pharyngeal constriction, particularly when the syllable in which it occurs carries one of the three

```
'' high rising
/"/ mid rising
/,'/ low rising
```

The degree of pharyngeal constriction varies from speaker to speaker.

Excited speech tends to produce pharyngealized sounds more frequently than ordinary speech.
1.2.3. Additional characteristics of vowels.

a) Length.

Vowel length is not phonemic in Vietnamese. However, the vowel phonemes /a/ and /ʌ/ are phonetically shorter than other vowels in all environments. The vowels /a/ and /γ/ are phonetically longer than the other vowels in all environments, /a/ /γ/ = [a'] [γ'].

All other vowels occur with allophonically varying length depending on the stress and the structure of the syllable in which they occur (see length of syllables 2.3.).

b) Pharyngealization.

The high back unrounded vowel /w/ is often produced with a pharyngeal constriction, particularly when the syllable in which it occurs carries one of the three rising tones, i.e.,

'/ /' high rising
'~/ /' mid rising
'~/ /' low rising

The degree of pharyngeal constriction varies from speaker to speaker.

Excited speech tends to produce pharyngealized sounds more frequently than ordinary speech.
1.3. Tone Phonemes and Phonetic Tone variants.

1.3.1. General remarks.

Occurrence of [?].

The syllables which end in a vowel, and have Rising Tones, i.e.,

- High rising /'/
- Mid rising /~/
- Low rising /./ often end with a glottal stop.

1.3.2. Tones and Tone variants.

The detailed analysis of Tones and Tone variants is presented in Part II.2, thus need not be dealt with at present.

The five Tone phonemes can be briefly described thus:

Vietnamese tones consist of

a. three pitch levels - High
- Mid
- Low.

b. three pitch contours - level rising
- falling-rising.

The five tones are:

Level Tones
/HL/  High-level tone
Starts mid high and stays level.
/kâ/  'glass' (drinking)

/\/  Low level tone
Starts mid low and stays level
/kà/  'tomato'

Rising Tone
/\/  High-rising
Starts mid-high and rises sharply to high
/kâ/  'fish'

Falling rising Tones
/~/  Mid-rising
Starts mid-high, falls to mid-low and rises to high
/kâ/  'all, also'

/./  Low-rising
Starts mid-high, falls to mid-low and rises again to mid-high
/kâ/  'to rub against'

The five tones as described above are represented graphically as follows:
1.3.3. Additional characteristics of tones.

a) Pharyngealization.

As mentioned previously (see 1.2.3.) syllables carrying the rising tones /'/ /~/ /./ tend to be produced with a pharyngeal constriction.

/~/ The mid rising tone has the highest degree of constriction of the three tones.

However, the frequency of occurrence of pharyngealized sounds varies greatly from speaker to speaker. Pharyngealized sounds occur more frequently with excited speech or emphatic speech than with ordinary speech.

b) Tense and Lax Tones.

In later chapters, I sometimes refer to tones as being 'tense' or 'lax'. Rising tones are relatively 'tense' while level tones are relatively 'lax'. This reference
is made not only in connection with the relatively greater degree of muscular tension involved in the production of rising tones, but also in connection with the more frequent pharyngealization of syllables carrying rising tones. Syllables carrying level tones are rarely pharyngealized.

In the chapter on Tones,¹ I am also mentioning the fact that the High-level tone /HL/ is relatively 'tense' while the Low-level tone /'l/ is 'lax'. This reference is made after observations of laboratory data, and is connected with the acoustic rather than articulatory properties of the sounds involved.

The oscillographic tracings of syllables carrying the High-level tone compared with tracings of syllables carrying the Low-level tones show that the High-level tone has not only

a) a greater frequency range than the Low-level tone — (the frequency tracings give a "wavy line" for the High-level tone, and a relatively straight line for the Low-level tone),

but also

b) a basic intensity level which is always higher than the intensity level of the Low-level tone.²

¹See Tones Part II, chapter 2.
²See Stress Part II, Chapter 1, Section 1.0.9., "Basic Intensity" and Oscillographic charts.
CHAPTER 2: PHONEMIC ARRANGEMENTS

2.1. Distribution of consonants and vowels in the syllable.

2.1.0. Syllable Structure.

The definition of what constitutes a syllable in Vietnamese has been given previously in section 1.1.0.

The essential and necessary elements which constitute a syllable are:

1. a vowel which is the nucleus of the syllable.
2. a tone.

The nucleus is the peak of a syllable. The syllable nucleus, hence referred to as vowel nucleus can be:

a) simple, i.e., it is composed of one vowel
b) complex, i.e., it is a sequence composed of a vowel and a semivowel.

The vowel nucleus may or may not be preceded by an onset of one or two consonants and may or may not be followed by a coda.

The canonical shape of the syllable is:

(C) (C) V (C) + tone

where

V represents either

- a simple vowel nucleus
or
- a complex vowel nucleus
CC - In the case of an onset of the two consonants in the syllable, the second phoneme is always one of the following semivowels = /w/ or /j/.
- C the only consonants which occur as codas are /b, t, k/ /m, n, η/.

Possible shapes of the syllable are:

1. with simple syllable peaks
   - V /ε/ 'to fear, to be afraid of'
   - CV /ɾə/ 'to go out'
   - CCV /twa/ 'to rub lightly'
   - VC /ɨt/ 'little'
   - CVC /t'an/ 'slender, graceful'
   - CCVC /dwəŋ/ 'a passage from'...

2. with complex syllable peaks
   - VC /wŋ/ 'wet'
   - CVC /təwŋ/ 'inside'
   - CCVC /twŋ/ 'small boat, barge'

2.1.1. Distribution of vowels in the syllable.
   a) General remarks on their occurrence.
   In syllables with zero codas, i.e., open syllables, only vowels /ε, a, ə/ occur. Vowels /i, e, u, o/ are always followed by their homorganic semivowel /j/ /w/ phonetically [i] [u].
Vowels /w, y/ are always followed by the semivowel /g/ phonetically [w].

The higher low unrounded front vowels /a/ /a/ never occur in open syllables.

b) Vowel Nuclei.

A single vowel constitutes a simple vowel nucleus. The combination of a vowel and a semivowel forms a complex vowel nucleus.

Complex vowel nuclei are shown in the following chart:

**CHART V. Complex Vowel Nuclei**

<table>
<thead>
<tr>
<th>Vowels</th>
<th>Semivowels</th>
<th>Vowels, which occur in absolute final position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-w</td>
<td>-j</td>
</tr>
<tr>
<td>/l/</td>
<td>iw</td>
<td>ij</td>
</tr>
<tr>
<td>/e/</td>
<td>-</td>
<td>ej</td>
</tr>
<tr>
<td>/ɛ/</td>
<td>εw</td>
<td>-</td>
</tr>
<tr>
<td>/ə/</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>/ɑ/</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>/ɒ/</td>
<td>aw</td>
<td>aj</td>
</tr>
<tr>
<td>/u/</td>
<td>uw</td>
<td>uj</td>
</tr>
<tr>
<td>/o/</td>
<td>ow</td>
<td>oj</td>
</tr>
<tr>
<td>/ɔ/</td>
<td>-</td>
<td>ɔj</td>
</tr>
</tbody>
</table>
/-w/ occurs after all vowels except /ɛ, a, ɤ, ɔ/
/-j/ occurs after all vowels except /ɛ, a/
/-g/ occurs only after /w, ɣ/
/-h/ occurs only after the high vowels /i, ɯ, u/

Examples:

/iw/ 'to love'
/aw/ 'pond'
/tɛw/ 'to follow'
/saw/ 'caterpillar'
/dow/ 'to bet'
/dij/ 'to go'
/taj/ 'hand'
/twj/ 'fresh'
/oχg/ 'market'
/ʂũh/ 'milk'
/ɭũh/ 'rice-plant'

2.1.2. Distribution of Initial Consonants in the Syllable.

All consonants can occur as onsets of syllables. In onsets of two consonants, the second element must be one of the two semivowels /w/ or /j/. Initial Consonants are shown in the following chart.
2.1.2.1. Initial Consonant Clusters with /w/.

All consonants can occur in initial clusters with /w/ except:
- the labials /b, f, m, w/
- the retroflex continuant /ɾ/
- the glottal voiceless fricative /h/.

The cluster /kw-/ is disappearing in present day speech.

With most speakers a simple semivowel onset /w-/ replaces /kw-/.
The cluster is maintained in oratory speech. Except for consonant clusters /ŋw-/ and /gw-/, most consonant clusters with /-w/ are replaced by single consonants in fast speech. For example:

/tw-/ is pronounced /t-/  
/sw-/ is pronounced /s-/ and so on.

The cluster /gw-/ occurs in only one word:

/gwá/ 'window'.

In initial clusters with /w-/, only the front and back unrounded vowels occur as syllable peaks of that syllable, i.e., the back rounded vowels /u, o, ɔ/ never occur after /w-/.

2.1.2.1. Initial Consonant Clusters with /j/.

There is only one cluster with /j/ which is /bj-/.

As with /kw-/, /bj-/ is frequently replaced by the simple semivowel /j-/. In careful and oratory speech, the cluster is usually maintained.

Examples:

/twa/ 'wagon'
/t′wej/ 'to rent'
2.1.3. Distribution of Simple Vowel Nuclei and Final Consonants.

The distribution of simple vowel nuclei and final consonants is shown in Chart VII following:

<table>
<thead>
<tr>
<th>Phoneme</th>
<th>Transcription</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>dw-</td>
<td>/dwəŋ/</td>
<td>'group'</td>
</tr>
<tr>
<td>sw-</td>
<td>/swəŋ/</td>
<td>'spring'</td>
</tr>
<tr>
<td>lw-</td>
<td>/lwə/</td>
<td>'brilliant'</td>
</tr>
<tr>
<td>tw-</td>
<td>/twəj/</td>
<td>'corrupted'</td>
</tr>
<tr>
<td>šw-</td>
<td>/šwək/</td>
<td>'to control, verify'</td>
</tr>
<tr>
<td>cw-</td>
<td>/cwə/</td>
<td>'vase in porcelain'</td>
</tr>
<tr>
<td>nəw-</td>
<td>/nəwə/</td>
<td>'pollen'</td>
</tr>
<tr>
<td>jw-</td>
<td>/jwə/</td>
<td>'to menace'</td>
</tr>
<tr>
<td>kw-</td>
<td>/kwəɡ/</td>
<td>'to blame'</td>
</tr>
<tr>
<td>gw-</td>
<td>/gwə/</td>
<td>'widow'</td>
</tr>
<tr>
<td>xw-</td>
<td>/xwəŋ/</td>
<td>'to carry'</td>
</tr>
<tr>
<td>ηw-</td>
<td>/ηwəhə/</td>
<td>'whole'</td>
</tr>
<tr>
<td>bj-</td>
<td>/bjə/</td>
<td>'and, old'</td>
</tr>
</tbody>
</table>

The alveolar consonants /t, n/ do not occur after /e, o/ nor after the back vowels /a, ɑ, ɔ, ɔː, ɔ̃/.

Vowels /ə/ occur only after /t, s, ʃ/.

The velar consonants /k, ɡ/ do not occur after /t, ʃ/.

They can occur after all other vowels, i.e., /k, ɡ, ʃ, ʒ/.
CHART VII. Simple vowel nuclei and final consonants

<table>
<thead>
<tr>
<th>Vowels</th>
<th>Final Consonants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-b</td>
</tr>
<tr>
<td>/i/</td>
<td>ib</td>
</tr>
<tr>
<td>/e/</td>
<td>eb</td>
</tr>
<tr>
<td>/ɛ/</td>
<td>ɛb</td>
</tr>
<tr>
<td>/a/</td>
<td>-</td>
</tr>
<tr>
<td>/ɑ/</td>
<td>ab</td>
</tr>
<tr>
<td>/u/</td>
<td>-</td>
</tr>
<tr>
<td>/γ/</td>
<td>-</td>
</tr>
<tr>
<td>/ʌ/</td>
<td>ʌb</td>
</tr>
<tr>
<td>/u/</td>
<td>ub</td>
</tr>
<tr>
<td>/o/</td>
<td>ob</td>
</tr>
<tr>
<td>/ɔ/</td>
<td>-</td>
</tr>
</tbody>
</table>

The alveolar consonants /t, n/ do not occur after /ɛ, a/ nor after the back vowels /u, y, ʌ, ə, o, ɔ/.
/t, n/ occur only after /i, e, a/.

The velar consonants /k, ɳ/ do not occur after /i, e/.
They can occur after all other vowels, i.e., /ɛ, a, ə, γ/.
Only the velar consonants /k, ŋ/ occur after the high back unrounded vowel /w/.

Examples:

| /it/     | 'little'    |
| /im/     | 'quiet'     |
| /in/     | 'to paint'  |
| /tem/    | 'more, in addition' |
| /ten/    | 'name'      |
| /tem/    | 'stamps' (postage) |
| /tät/    | 'cup'       |
| /tam/    | 'eight'     |
| /cuk/    | 'grade, position' |
| /kym/    | 'rice'      |
| /yyn/    | 'slippery'  |
| /şıp/    | 'will' (immediate future) |
| /cuŋ/    | 'together'  |
| /şm/     | 'thin'      |
| /xon/    | 'smart, intelligent' |
| /kəŋ/    | 'still'     |
2.1.4. Distribution of Complex Vowel Nuclei and Final Consonants. ¹

CHART VIII. Complex Vowel Nuclei and Final Consonants

<table>
<thead>
<tr>
<th>Vowels</th>
<th>Final Consonants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-b</td>
</tr>
<tr>
<td>/əw/</td>
<td>-</td>
</tr>
<tr>
<td>/i]/</td>
<td>-</td>
</tr>
<tr>
<td>/wh/</td>
<td>-</td>
</tr>
<tr>
<td>/uh/</td>
<td>-</td>
</tr>
</tbody>
</table>

¹Alternative analysis for the distribution of consonants and vowel nuclei in the syllable: L.C. Thompson gives the following description: "every syllable has at least a vowel and a tone, accompanied by a relative stress and intonation. In some syllables the vowel is followed by a semivowel, a consonant, a semivowel and a consonant, or a second vowel and a consonant. The vowel and whatever follows it is the nucleus of the syllable."... Initial consonants are all consonants and initial consonant clusters. The nucleus can be composed of one element - a vowel, two elements - vowel and consonant or semivowel, three elements - a cluster of two vowels or diphthong followed by a final consonant or semivowel.

For further details see L.C. Thompson 'Saigon Phonemics' Language op. cit.
In syllables containing a complex vowel nucleus, only the sequences /Aw, ih, wh, uh/ may be followed by a final consonant.

Only the velar final consonants /-k-ŋ/ occur after a complex vowel nucleus.

2.2. Distribution of tones in the syllable.

Each syllable must bear one of the five tones. Only two tones, the high rising tone and the low rising tone /'/ occur in syllables ending with a stop.

Examples:

/dáb/ 'to cover'
/dáb/ 'to strike'
/sát/ 'book'
/sát/ 'clean'
/tinh/ 'to regret'
/tinh/ 'party'

2.3. Additional remarks on the syllable.

Length:

Syllables which contain the vowels /i, u, w, a, A/ and which end with a stop are much shorter than other syllables.
They are approximately:

1/2 the duration of syllables with /a, ɣ/ + final stop.

2/3 the duration of /e, æ, ə, o, ɔ/ + final stop.

Syllables which end in a nasal or semivowel are longer than those ending in a stop.

Syllables with the extra weak stress [°] are shorter than syllables with other types of stress (for further detail see 'Stress', Part II, Chapter I.)

2.4. Notes on Vietnamese Orthography.

In the chapters which follow, all examples and illustrations are written in the traditional Vietnamese Orthography or 'Quốc Ngữ' /kwʌk nɔŋ/. The following tables present the South-Vietnamese sounds, and the conventional spelling for each of the sounds, to serve as a reference for the reader.¹

2.4.1. The Vietnamese alphabet consists of 29 letters which are:

a ā á â b c d đ e ê e ə g h i ñ k l m n ñ ñ o ɔ p q r s ñ t u ư ụ v x y.

¹For further reference on the Writing System of Vietnamese See: L. Cadière 'La question du Quốc-Ngữ' Textes et documents relatifs à la réforme du Quốc-ngữ - Revue Indochinoise May and July 1904.


2.4.2. Vietnamese consonant sounds and the spelling corresponding to each, are listed in the table in the following order:

Column 1. Spelling symbols

2. Corresponding sounds with the International Phonetic Alphabet (IPA) symbols, or with the phonetic symbols used in this text.

3. Position of the sound in the syllable.

4. Examples.

<table>
<thead>
<tr>
<th>Spelling Symbol</th>
<th>Phonetic Symbol</th>
<th>Position</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>b</td>
<td>[b ʔ b b]</td>
<td>initial only</td>
<td>ba 'father'</td>
</tr>
<tr>
<td>c</td>
<td>[k]</td>
<td>initial except before i, e, ê, y</td>
<td>cam 'orange'</td>
</tr>
<tr>
<td></td>
<td>[k, ]</td>
<td>final after u, o, ō</td>
<td>cử 'narcissus'</td>
</tr>
<tr>
<td></td>
<td>[k, ]</td>
<td>final after all other vowels</td>
<td>cô 'Miss'</td>
</tr>
<tr>
<td>ch</td>
<td>[c]</td>
<td>initial</td>
<td>chú 'yet'</td>
</tr>
<tr>
<td></td>
<td>[t, ]</td>
<td>final</td>
<td>sách 'book'</td>
</tr>
<tr>
<td>d</td>
<td>[j]</td>
<td>initial only</td>
<td>da 'skin'</td>
</tr>
<tr>
<td>d</td>
<td>[d ʔ d ]</td>
<td>initial only</td>
<td>đí 'go'</td>
</tr>
<tr>
<td>g</td>
<td>[ʔ g]</td>
<td>initial except i e ê</td>
<td>gôi 'pillow'</td>
</tr>
<tr>
<td>Spelling Symbol</td>
<td>Phonetic Symbol</td>
<td>Position</td>
<td>Examples</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>gh</td>
<td>[γ]</td>
<td>initial before i, e, ê</td>
<td>ghê 'chair'</td>
</tr>
<tr>
<td>gi</td>
<td>[j]</td>
<td>initial followed by a vowel or nothing</td>
<td>gio 'hour'</td>
</tr>
<tr>
<td>h</td>
<td>[h]</td>
<td>before all vowels except before the sequences -oe, -oa, -uê, -uyen where it is silent - i.e. hoa = [wa]</td>
<td>hai 'two'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>k</td>
<td>[k]</td>
<td>initial before i, e, ê, y</td>
<td>kIFY 'careful'</td>
</tr>
<tr>
<td>kh</td>
<td>[x]</td>
<td>initial only</td>
<td>Không 'no'</td>
</tr>
<tr>
<td>l</td>
<td>[l]</td>
<td>initial only</td>
<td>la 'to shout'</td>
</tr>
<tr>
<td>m</td>
<td>[m]</td>
<td>initial</td>
<td>MIELNG 'mouth'</td>
</tr>
<tr>
<td></td>
<td>[m' ]</td>
<td>final</td>
<td>Têm 'eight'</td>
</tr>
<tr>
<td>n</td>
<td>[n]</td>
<td>initial</td>
<td>NANG 'sunny'</td>
</tr>
<tr>
<td>n</td>
<td>[n']</td>
<td>final after i, ê</td>
<td>Tin 'to believe'</td>
</tr>
<tr>
<td></td>
<td>[ŋ']</td>
<td>final after other vowels and diphthongs</td>
<td>TIEN 'money'</td>
</tr>
</tbody>
</table>

12. [w] is used instead of [u] in these examples and all other examples which follow in this section (i.e. 2, 4).
<table>
<thead>
<tr>
<th>Spelling Symbol</th>
<th>Phonetic Symbol</th>
<th>Position</th>
<th>Examples</th>
</tr>
</thead>
</table>
| ngh             | [ŋ]             | before i, e, ê | nghe 'to hear'
|                 |                 |          | nghĩ 'to rest' |
| ng              | [ŋ]             | initial before other vowels | ngũ 'to sleep'
|                 |                 |          | Nga 'Russia' |
| ng              | [ŋ]             | final after u, o, ō | Trọng 'in' |
|                 | [ŋ]             | final after other vowels | Trọng 'in'
|                 |                 |          | hàng 'merchandise' |
| nh              | [ɲ]             | initial | Nhỏ 'small' |
|                 | [ɲ]             | final | Mạnh 'strong, healthy' |
| p               | [p]             | final only | Cop 'tiger'
|                 | [p]             |          | Thiệp 'invitation card' |
| ph              | [f]             | initial only | Phố 'town' |
| qu              | [kw, w]         | initial only | Quá 'much'
|                 |                 |          | Quen 'to know' |
| r               | [r, ŋ]          | initial only | Ra 'to go out'
|                 |                 |          | Rồi 'already' |
| s               | [s]             | initial only | Só 'number' |
| t               | [t]             | initial only | Tim 'heart' |
| th              | [tʰ]            | initial only | Tháng 'month' |
| tr              | [tʰ]            | initial only | Thì 'then'
|                 |                 |          | Trọng 'in'
|                 |                 |          | Trên 'above' |
### Spelling Phonetic Position Examples

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Phonetic Symbol</th>
<th>Position</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>v</td>
<td>[j, bj]</td>
<td>initial only</td>
<td>va 'and'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>voi 'elephant'</td>
</tr>
<tr>
<td>x</td>
<td>[s]</td>
<td>initial only</td>
<td>xa 'far'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>xe 'car'</td>
</tr>
</tbody>
</table>

#### 2.4.3. Vowels.

The table below shows the pronunciation of the various vowel symbols.

The single vowel symbol is presented first with its pronunciation, then the combinations of the vowel with other vowels, semivowels and consonants are covered.

The symbol sequences shown occur initially in the syllable, or directly after one of the initial consonants listed in 2.4.1., unless otherwise indicated.

<table>
<thead>
<tr>
<th>Spelling Symbol</th>
<th>Phonetic Symbol</th>
<th>Remarks</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>ay</td>
<td>[ʌi]</td>
<td></td>
<td>cavy 'tree'</td>
</tr>
<tr>
<td>e</td>
<td>[ɛ]</td>
<td></td>
<td>xe 'car'</td>
</tr>
<tr>
<td>eo</td>
<td>[ɛu]</td>
<td></td>
<td>dep 'beautiful'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>dem 'to bring'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>theo 'to follow'</td>
</tr>
<tr>
<td>Spelling Symbol</td>
<td>Phonetic Symbol</td>
<td>Remarks</td>
<td>Examples</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>ê</td>
<td>[e]</td>
<td>except before u, t, n.</td>
<td>quê 'rural'</td>
</tr>
<tr>
<td>ê-</td>
<td>[ê&gt;]</td>
<td>before t, n</td>
<td>bếp 'cook'</td>
</tr>
<tr>
<td>êu</td>
<td>[i&gt;u]</td>
<td></td>
<td>tet 'New Year'</td>
</tr>
</tbody>
</table>

see also -ê, uê-, uyê-, yê-

| i   | [ii]       | except before t, n | di 'to go' |
| i-  | [i:]       | before t, n         | kim 'needle' |

| ich  | [it,]     |                         | thít 'meat' |
| inh  | [in,]     |                         | thích 'to like' |
| a, a- | [a]       | is pronounced [a]      | la 'to shout' |
|      |           | before all final consonants except sequences -ch, -nh | hát 'to sing' |

<p>| ach | [át,]     |                         | bàn 'table' |
| anh | [an,]     |                         | sách 'book' |
| ai} | [ai]      |                         | mai 'tomorrow' |
| ay  |           |                         | máy 'machine' |
| ao} | [au]      |                         | ao 'pond' |
| au} |           |                         | dau 'ill' |</p>
<table>
<thead>
<tr>
<th>Spelling Symbol</th>
<th>Phonetic Symbol</th>
<th>Remarks</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>see also ia, ua, uya, uạ</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>â-</td>
<td>[a&gt;]</td>
<td>does not occur without final consonants</td>
<td>nang 'sun'</td>
</tr>
<tr>
<td>â-</td>
<td>[Λ]</td>
<td>does not occur without final consonants</td>
<td>tắc 'switch off'</td>
</tr>
<tr>
<td>âu</td>
<td>[Λu]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ia</td>
<td>[ieɔ]</td>
<td>occurs only between consonants</td>
<td></td>
</tr>
<tr>
<td>-iê-</td>
<td>[ieɔ]</td>
<td>occurs only between consonants</td>
<td></td>
</tr>
<tr>
<td>-iêu</td>
<td>[iu]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>see also a1, ñ1, s1, ui, uôi, uị, uç</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o, o-</td>
<td>[ɔ]</td>
<td>is pronounced finally and before all final consonants except -ẹn-ẹng</td>
<td>nọ 'he'</td>
</tr>
<tr>
<td>âc</td>
<td>[Λukɔ]</td>
<td></td>
<td>ngon 'tasty'</td>
</tr>
<tr>
<td>och</td>
<td></td>
<td></td>
<td>ngọt 'sweet'</td>
</tr>
<tr>
<td>see also sun, switch off'</td>
<td></td>
<td>Soc 'squirrel'</td>
<td></td>
</tr>
<tr>
<td>to cover'</td>
<td></td>
<td>Hoć 'to study'</td>
<td></td>
</tr>
<tr>
<td>Spelling Symbol</td>
<td>Phonetic Symbol</td>
<td>Remarks</td>
<td>Examples</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>ong}</td>
<td>[Λυη]</td>
<td></td>
<td>ong 'bee'</td>
</tr>
<tr>
<td>ông</td>
<td>[Λυη]</td>
<td></td>
<td>ông 'gentleman'</td>
</tr>
<tr>
<td>oa, oa-</td>
<td>[wa]</td>
<td></td>
<td>hoa 'flower'</td>
</tr>
<tr>
<td>oe</td>
<td>[wɛ]</td>
<td></td>
<td>khoe 'healthy'</td>
</tr>
<tr>
<td>see also ao, eo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ô</td>
<td>[ou]</td>
<td>except before -c, -ng</td>
<td>cô 'miss'</td>
</tr>
<tr>
<td>ô-</td>
<td>[o]</td>
<td></td>
<td>tôt 'nice, kind'</td>
</tr>
<tr>
<td>ôi</td>
<td></td>
<td></td>
<td>cọp 'tiger'</td>
</tr>
<tr>
<td>ôc}</td>
<td>[Λυη]</td>
<td></td>
<td>thọi 'stop it'</td>
</tr>
<tr>
<td>õc}</td>
<td>[Λυη]</td>
<td></td>
<td>đọc 'poisonous'</td>
</tr>
<tr>
<td>ông}</td>
<td>[Λυη]</td>
<td></td>
<td>đọng 'crowded'</td>
</tr>
<tr>
<td>õng</td>
<td>[Λυη]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>σ</td>
<td>[vυw]</td>
<td></td>
<td>σ 'to stay'</td>
</tr>
<tr>
<td>σ-</td>
<td>[v]</td>
<td></td>
<td>họn 'more than'</td>
</tr>
<tr>
<td>σi</td>
<td>[vι]</td>
<td></td>
<td>ôt 'chilli pepper'</td>
</tr>
<tr>
<td>See also uσ, uσ-</td>
<td></td>
<td></td>
<td>tôi 'to arrive'</td>
</tr>
<tr>
<td>u</td>
<td>[vυw]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>final and before all consonants except -p</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chúc 'a little'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spelling Symbol</td>
<td>Phonetic Symbol</td>
<td>Remarks</td>
<td>Examples</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>u-</td>
<td>[u]</td>
<td>before -p</td>
<td>chūp 'to photograph'</td>
</tr>
<tr>
<td>ua</td>
<td>[we]</td>
<td></td>
<td>chūa 'acid'</td>
</tr>
<tr>
<td>-uê</td>
<td>[we₁]</td>
<td>with no final consonants</td>
<td>thuê 'to rent'</td>
</tr>
<tr>
<td>uê-</td>
<td>[we]</td>
<td>with final consonant</td>
<td>quệt 'to stir' (batter)</td>
</tr>
<tr>
<td>-ui</td>
<td>[ui]</td>
<td></td>
<td>'to iron'</td>
</tr>
<tr>
<td>uô</td>
<td>[ue]</td>
<td></td>
<td>thươc 'medicine'</td>
</tr>
<tr>
<td>uôi</td>
<td>[ui₁]</td>
<td></td>
<td>tuôi 'age'</td>
</tr>
<tr>
<td>uy</td>
<td>[wi₁]</td>
<td></td>
<td>tuy 'in spite of'</td>
</tr>
<tr>
<td>uya</td>
<td>[wi₇]</td>
<td></td>
<td>khuya 'late at night'</td>
</tr>
<tr>
<td>uyê-</td>
<td></td>
<td></td>
<td>tuyệt 'snow'</td>
</tr>
<tr>
<td>uơ</td>
<td>[wycz]</td>
<td></td>
<td>thươc 'epoch'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>before consonants</td>
<td>tu 'fourth'</td>
</tr>
<tr>
<td></td>
<td>đùng 'don't'</td>
</tr>
<tr>
<td></td>
<td>chưa 'not yet'</td>
</tr>
<tr>
<td></td>
<td>tuội 'fresh'</td>
</tr>
<tr>
<td></td>
<td>uốt 'wet'</td>
</tr>
<tr>
<td></td>
<td>người 'person'</td>
</tr>
<tr>
<td>Spelling Symbol</td>
<td>Phonetic Symbol</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>uơ</td>
<td>[uu̯]</td>
</tr>
<tr>
<td>uu</td>
<td>[wuu̯]</td>
</tr>
<tr>
<td>y</td>
<td>[iɪ̯]</td>
</tr>
<tr>
<td>y-&quot;</td>
<td>[i]</td>
</tr>
<tr>
<td>yê</td>
<td>[iə̯]</td>
</tr>
<tr>
<td>yên</td>
<td>[ieŋ̯]</td>
</tr>
<tr>
<td>yều</td>
<td>[iu̯]</td>
</tr>
</tbody>
</table>

See also ay, ây, uy.

2.4.4. Tones.

Standard Vietnamese orthography makes six distinctions for tones.
One tone - the high level tone is unmarked;

four tones - are represented by diacritics written over a vowel of the syllable:

/â/ /â/ /ã/ /á/

one tone - is written with a dot under a vowel of the syllable -

/ã/

The following table represents the tone in South-Vietnamese (Saigon) speech - the tones are written with the vowel a.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>a (unmarked)</td>
<td>Ngang</td>
<td>high level tone</td>
<td>ba 'father'</td>
</tr>
<tr>
<td>à</td>
<td>huyền</td>
<td>low level tone</td>
<td>bà 'lady'</td>
</tr>
<tr>
<td>á</td>
<td>sắc</td>
<td>high rising tone</td>
<td>lá 'leaf'</td>
</tr>
</tbody>
</table>
Symbol | Name | Description
---|---|---
á | hối | mid-rising
da | 'all'
ã | ngã | tone 13
da | 'already'
(tense marker)
ã | năng | low rising
tone 14

13. The two tones /'a/ and /a/~/ are distinctive in Hanoi speech but not in Saigon speech. In Hanoi speech
/'a/ starts low, drops, and rises sharply
/a/~/ starts high, rises sharply with an accompanying glottal stop.

14. The presentation of the above tables relating to the Vietnamese Orthography are borrowed from Thompson's Vietnamese Grammar, pp. 4-15.
PART II. STRESS, TONES AND INTONATION

0. INTRODUCTION

0.1. Scope

The main object of this study is an investigation of the prosodic features of stress, tone (= tonemes) and intonation of South Vietnamese.

By prosodic features, I refer to features which include stress, pitch, pauses, quantity and which co-occur with a syllable or a whole sentence. Prosodic features do not change the meaning of an utterance but convey additional concomitant information through their conventional acceptance by the speaking group. Phonemically relevant variations in pitch, stress and quantity are termed prosodic phonemes, or prosodic prosodemes as opposed to segmental phonemes.¹

This study is specifically directed towards the investigation of the prosodemes of stress, tone (i.e., lexical prosodemes), intonation (i.e., syntactic

prosodemes), and tone variations (i.e., variations of the lexical prosodemes in the syntactic setting).

The initial approach to the investigation of these prosodemes was purely auditory (results of the auditory approach are presented later in the study, see 0.2.2.1.). However, as the investigation progressed, acoustic analyses were made with the help of various types of acoustic equipment. The results given here are based both on the auditory and the acoustic study. Certain results however (such as some stress phenomena and certain tone variations) were arrived at solely by the acoustic analysis.

Before proceeding further with the discussion, a clarification is needed as to what is generally meant by "stress", "tones", and "intonation", what these terms refer to in this study, and in what terms the underlying phenomena are described in the pages that follow.

\[1\] For further clarifications of these terms see G. Hammerström, *Linguistische Einheiten im Rahmen der modernen Sprachwissenschaft*, Springer-Verlag, 1966.
0.1.1. Definition of Stress

In linguistic literature it is often left unclear what exactly is meant by stress.¹ For instance, in a sequence of syllables a stressed syllable is often described in the literature as being a syllable which is louder than its neighbouring one. Different degrees of stress are therefore often understood to be different degrees of loudness.

This definition of stress is misleading since stress can mean different things from different points of view.² In the three aspects in which a speech sound can be described, the articulatory, the auditory, and the acoustic aspects, stress can mean successively:

¹For example, Daniel Jones in his Outline of Phonetics, p.228, defines stress as "the degree or force of utterance;" he therefore emphasises the articulatory description. Bloch and Trager in Outline of Linguistic Analysis, Linguistic Society of America, Baltimore, Maryland, 1942, p.228, define stress in terms of loudness, but also note the articulatory description of Professor Jones. Bloomfield, in Language, Holt, New York, 1933, equates stress with perceived loudness on the auditory level which on the acoustic, is directly equivalent to the intensity of the sound, i.e., greater amplitude of the sound waves.

²Philip Lieberman, in his Intonation, Perception and Language, MIT, Research Monograph No.38, 1967, p.181, points out: "it is clear that the perceived loudness of a speech sound involves the acoustic correlates of amplitude, duration, and fundamental frequency."
Different force of articulation
Different degrees of loudness, and
Variations in the physical amplitude of the sound.

Since stress can refer to several aspects of a speech sound, one must clearly choose one variable under which stress can be effectively described.

One reason for not approaching stress from the articulatory point of view in this study is that one would be obliged to take into account the speaker's subjective interpretations.¹ These can be of help but cannot be considered as a reliable source of scientific materials. Objective measurements of stress can be made on the articulatory level, but the relevant instruments are relatively new and results obtained with them are not comparable for accuracy with those which can be obtained experimentally on the acoustic level.

In this study, stress, although at first approached on the auditory level, has not been described in great detail on that level for an important reason:

¹Lehiste and G. Peterson in their article Vowel Amplitude and Phonemic Stress in American English, Journal of the Acoustical Society of America, Vol.31, 1959, pp.428-35, comment that a listener will interpret sounds produced with equal effort as being in some respects similar in regard to stress.
The purpose of the research involved has not only been to investigate stress patterns of Vietnamese, but also to look for correlations between stress, and the pitch realizations of the tones and the intonation in the language. Since the perceived loudness of a sound as such does not normally affect its pitch, this constitutes one reason for not approaching it exclusively on the auditory level. It has to be kept in mind that the perceived loudness of a sound depends on several aspects of the sound: length, quality (timbre), and pitch of the sound.¹

Stress is in consequence, more effectively investigated on the acoustic level. However, the investigation of stress on the acoustic level cannot well be performed without the help of laboratory equipment designed for this purpose. The instruments used in this

¹Fry, D. in the Report on his research on 'The Perception of Stress', Journal of the Acoustical Society of America, Vol. 27, pp. 765-8, 1955, makes the following comment on English stress: "English speakers, in perceiving differences in stress in syllables rely on (a) differences of sound quality, (b) differences in length of the syllables, (c) differences in likeness of the syllable (d) differences in pitch, (e) differences in the motor-images that the listener has stored in his brain.

P. Haddingkoch, in an acoustic analysis directed at isolating acoustic correlates of stressed syllables that have prominence in English and Swedish, show that increases in amplitude, fundamental frequency, and duration, all influence the perception of stressed syllables.

project are described in the latter part of the study. In this study, therefore, stress is described in terms of the physical intensity of the sound. At the same time Ladefoged's remarks following the presentation of E.F. Jørgensen's paper on 'Acoustic Phonetics and Linguistics' seem appropriate at this point: "unfortunately, the analysis of recorded sounds by means of acoustic instruments does not reveal any acoustic features which are in a one to one relationship with a perceived stress. It is important to establish the acoustic correlates of linguistic features which are auditorially determined, since it is much easier to make an acoustic than an articulatory investigation of an utterance."

0.1.2. Definition of Pitch

The tones and intonation of a language are usually described in terms of pitch levels and pitch contours. "Pitch" generally refers to the "perceived pitch" of a sound. The perceived pitch of a sound has as its physical correlate the fundamental frequencies of the sound.

However, it has been demonstrated by Lieberman in his published results of scientific experiments in this matter\(^1\) that the phonemic "pitch levels" analysed for English, such as, for example, in the study undertaken by Trager and Smith,\(^2\) have "no direct acoustic basis, i.e., the pitch level 1 is sometimes equivalent to two or more different fundamental frequencies, and the pitch levels 2 and 1 or 2 and 3 are sometimes equivalent to the same fundamental frequencies.

Although, as mentioned previously, the initial approach to the present investigation of stress, tones and intonation was done on the auditory level, the results described are based not only on the auditory study but also on measurements made of the acoustic signals.

For stress, the physical intensity of the sounds was measured. For tones and intonation, the fundamental frequencies of the sound and of the entire pause group, i.e., the intonation sequence, were measured.


"Pitch" does in consequence, not only refer to perceived pitch, but corresponds directly to the fundamental frequencies of the sounds. In other words, variations in pitch, and pitch height and pitch contour are equivalent to variations in the fundamental frequencies of the sounds.

0.2. Procedures

0.2.1. Theoretical Approach

0.2.1.1. Auditory and Acoustic Approach

I would like to emphasise once again that the initial and major approach to this study of the prosodic features of South Vietnamese was performed on the auditory level. As results of the auditory investigations, factors such as the pitch height and pitch contour of the tones in isolation and the pitch contours of the intonational sequences were noted, and two degrees of perceived stress were also observed.

Because of the complexity of the subject matter, for example the problem of perceiving stress, and the problem of pitch memory, an acoustic investigation was performed in order to have more objective scientific results.
The acoustic study which was made with various instruments provided such objective scientific results. Measurements of the acoustic signals were made and checked against the results from the auditory analyses. When they differed, i.e., when the results from the auditory study and the acoustic study were at variance with each other, with the latter usually showing greater complexity, the acoustic measurements were taken as the more reliable source of information. Thus it can be said that the results are based not only on the auditory studies but also on the acoustic measurements.

0.2.1.2. Simple to Complex Approach

The approach which was followed in this investigation was the simple to complex approach. By this is meant that the study proceeded from the analysis of one-word utterances to two-, three-, four-word utterances and so on. Although this method might be objected to as a more artificial approach, it has been used by many noted linguists, such as Pike, Jones, Chao,¹ and reputable

scholars at the Australian National University, who investigated New Guinea languages. Moreover, the study of prosodic phenomena, particularly those of tone languages, is so complex that the reverse approach - complex to simple - would be prohibitively time consuming. Furthermore, the approach of simple to complex permits us to observe more easily the prosodic phenomena in short utterances in which only a limited number of disturbing factors is possible, and can be easily recognised and referred to. This can serve as a reference basis for the description of more complex phenomena appearing in longer utterances.

Sledd, in a review of Trager, Smith, 'Outline of English Structure' \(^1\) comments that "anyone who has attempted to analyse or teach English patterns of pitch and stress knows that competent observers may vigorously disagree, and that a single observer may disagree with himself so often as to make secure confidence in his own judgement painfully difficult."

Sledd's comments accurately highlight the complexity of such an investigation. In view of this, the results of this study can only be taken as tentative results.

0.2.2. Experimental Procedures

0.2.2.1. Materials, Informants, and Recording Procedures

The materials which were studied consisted of two types: (a) prepared materials; (b) recorded free conversations.

The prepared materials included utterances of one, two, three, and four syllables of varying syllable structures and tone combinations.

These materials were recorded by a South Vietnamese speaker—Miss Nguyen Thi Ngoc—who was a house help in the Vietnamese Embassy in Canberra.

Each utterance was recorded three times in succession in order to obtain a full picture showing possible co-occurrence of pitch and loudness variations with initial, medial, and final position in a sequence of utterances. The four syllable utterances were repeated only twice.

These materials were then subjected to intensive auditory study first using ordinary high-fidelity tape
recorders, and then with the help of a sound stretcher. The relative pitch perceived for each syllable was noted on sheets of paper which were lined or gridded. In two-, three-, and four-syllable utterances the perceived stress, i.e., relative loudness, of the syllables was also noted. The most important results of the auditory study were the following:

(a) The pitch of the tone of a citation form in final position, (i.e., the last of the repeatedly pronounced individual words) and that of the tone of a word\(^1\) in final position, as well as the pitch of the tone of a citation form or word in medial position showed special characteristics - for example the pitch of the tone of citation form or word in final position tended to be relatively lower, and falling. "Final" and "medial" positions are, in this context, to be understood as positions within an intonational sequence.

The pitch of the tone of a word in medial position tended to be sustained and rising. (Note that these characteristics show marked similarities to the intonational features of final words in longer utterances

\(^1\)"Word" in this context is to be understood as one word in a two-, three- or four-syllable utterance.
i.e., in longer intonation sequences - see intonation. It may have to be mentioned that the writer is aware of the fact that the position of a word in an intonational sequence, not in an utterance as such, is determining its intonational characteristics. However, the position of a tone, i.e., a word with a tone in an intonational sequence usually coincides with its positions in an utterance, and in such instances, the term "utterance" has been used in a number of instances when referring to the positions of a tone (i.e., a word carrying a tone)).

(b) The second syllable of a pause group had a heavier stress than the first syllable in two-syllable utterances.

(c) The stresses on the third and fourth syllables in the three- and four-syllable utterances seem to vary in strength - sometimes they had heavier stress, sometimes weaker stress than the preceding syllable.

After observations had been made on the auditory level, these examples were further subjected to instrumental analyses in order to check, and elaborate on, the characteristics observed on the auditory level.

To obtain an independent check with the help of a second set of materials, the same prepared materials were
recorded once more by the author. These recordings were made under controlled and ideal conditions for instrumental investigations. The materials were recorded in a sound-proof room, and each of the utterances were recorded three times in succession. In order to minimise the influence of free non-significant fluctuations in the force of articulation which might have affected the intensity reading, the microphone was placed at a far enough distance from the source of the sound so that minor changes in the force of articulation did not produce an excessive and unrealistic change in the intensity readings produced by the highly sensitive intensity meter.

These controlled recordings were recorded on tape and were at the same time fed into the analysing devices. These instruments are described in the next section of the study.

It was interesting to observe that these check materials produced by the author under controlled conditions as described above, yielded results which were completely identical with those arrived at on the basis of the first recording of the prepared materials by the house help, and thus constituted a valuable confirmation of the first findings.
The recorded conversations consisted of conversations between the author, the members of her family, the household help, a chauffeur, and one university colleague. Most of the conversations were recorded in Canberra during meal times. The informants were all native South Vietnamese speakers and except for the maids and the chauffeur, had all received a relatively high level of education. Besides the author, the informants included her parents, her brother (16 year old), her four sisters aged 20, 17, 11, and 9, Mr. Nguyen Dang Liem, then a linguistics scholar at the Australian National University in Canberra, Mr. Luu Van Tau, the chauffeur of the Vietnamese Embassy, Miss Nguyen Thi Nguyet, the cook, and Miss Nguyen Thi Ngoc, a maid at the Embassy.

The author and her family had travelled and lived in the southern and central parts of Vietnam for some length of time; this may account for some of the idiosyncracies of their speech habits. The other informants had lived in South Vietnam, Mr. Nguyen Dang Liem had also lived overseas.

These recorded conversations were first edited. All the repetitive sentences or sentences which were unclear because of outside noises were deleted. The materials which
remained for the analyses were utterances referring to varying situations and reflecting varying emotional states and attitudes of the speakers.

These materials were also subjected to intensive auditory study. The perceived pitch of the last syllable of the pause groups was noted, as well as the stress patterns in each pause group. The unreliability of human pitch memory - at least that of the author's - proved to be a serious obstacle in the attempts to note down many details of the pitch movements in long utterances, and the materials were therefore subjected to instrumental analysis. Because of the imperfect original recording conditions, a substantial portion of these materials could not be fed directly into the analysing devices. In consequence, the author decided to re-record a portion of her original materials for this purpose. In the re-recording for instrumental investigation, the author had to recreate the special situation in which a particular utterance was spoken, then produce the same utterance keeping it as closely as possible to the original utterance, under recording procedures which were identical to the ones for the recording of the prepared
materials. A check of the, at least reasonable, general similarity of the pitch movements in the two sets of recordings was, to a somewhat limited extent, feasible through comparing oscillograph tracings produced from the two sets. While much of the tracings obtained from the original set was overlaid and blotted out by external noise interference, it could be observed that the portions which were clear showed a high degree of similarity to the corresponding portions of the tracings obtained from the controlled recordings made by the author.

The recording procedures described above can be summarised as consisting of two steps:

(a) Recording in natural surroundings and
(b) Recording under controlled conditions

The materials recorded under natural surroundings were the bases for the auditorial study, and for some of the instrumental analysis, and those recorded under controlled conditions were the main basis for the instrumental investigation.

In most cases the observations made during the acoustic study tallied with those observed on the auditory level. However, some findings - such as the absolute intensity level of a sound or the overall intensity level
of a pause group - were purely instrumental, as well as certain observations on intonational pitch, e.g., the gradual descent in pitch in an intonation sequence expressing a statement. This descent in pitch is correlated with a gradual lowering of the fundamental frequency of the sounds.

By way of summary, it may be pointed out again that the initial approach to the study was purely auditory, at first with the help of ordinary tape recorders. In this process, a number of features became evident. Others which were shown to exist when a more sophisticated auditory approach was used and acoustic results had also become available, were not noticed in an unaided auditory approach.

Subsequently, the materials were auditorily assessed in a more sophisticated manner with the help of a sound stretcher, and previously unnoticed factors which proved also acoustically demonstrable, became auditorily evident to the author in this approach. Such factors included short initial drops and rises, and pitch movements in some allotones. Other factors became evident on the basis of acoustic results only (see above).
0.2.2.2. Apparatus

In addition to the tape recorders, four special pieces of equipment were used in the study of the prosodic features of stress, tone, and intonation in Vietnamese. They were a sound stretcher or MLR 38 tempo regulator, a trans pitch meter or fundamental frequency extractor, an intensity meter, and a Brush oscillograph.

0.2.2.2.1. The Sound Stretcher or MLR 38 Tempo Regulator

The sound stretcher which was used in the auditory and study is manufactured by Telefonbau-Normalzeit/distributed by Elektromesstechnik in Germany.

The instrument is used for slowing down the materials recorded on a tape without ensuing changes in pitch. The principle of the equipment is the slowing down of the tape to the required percentage of absolute tape speed, with the simultaneous scanning of the tape surface by a multiple playback head which revolves against the direction of tape travel, thus maintaining the correct speed relation between tape surface and heads. At the same time, the revolving head picks up a succession of more or less strongly overlapping signals from the tape, which, in the playback system, are separated and added to each other in temporal
sequence, thus creating the auditory impression of a lengthening of the original recording without a change of pitch and other distortions. The MLR 38 Tempo-Regulator permits a recording to be slowed down through a continuous scale from 100% to less than 50% of the original speed. Through special techniques, it is possible to reduce the speed to 25% and even to 12% or 6% of the original tape speed.

This equipment, however, proved to be insufficient in view of the persisting requirement for pitch memory. Furthermore, the results of the preliminary study carried out with the help of this equipment were still based on subjective auditory impressions rather than on objective facts.

The instrument needed was therefore one which could translate these auditory impressions into objective visually perceptible impressions.

0.2.2.2.2. The Trans Pitch Meter and Intensity Meter

Both these pieces of equipment have been used in my work. These machines are used extensively in Europe, especially in Scandinavia, and are well known in Australia. Extensive use of them is also being made in
the Linguistics Department of Monash University, and linguists in Australia who work on phonetic problems are in general, familiar with them. For this reason, a very detailed discussion of these pieces of equipment may not be necessary. Only the following brief details will be given:\footnote{See also Fant's brief description of them in his article 'Acoustic Study of Speech', Proceedings of the Eighth Congress of International Linguists, Oslo, 1958, pp.334-9.}

The trans pitch meter:

The trans pitch meter is a fundamental frequency extracting device which operates on the filtering principle. The operator using the instrument must know how to adjust the filters of the device in order to extract the fundamental frequencies.

The sifted wave which consists of one strong component is added to a sawtooth wave which is generated by the device itself.

The greater the frequency of the sifted wave, the higher the minima of the sawtooth wave resulting from the addition, thus the fundamental is proportional to the envelope of the sawtooth wave minima, and a means of calibration for this envelope is provided. As long as the fundamental is not damped by incorrect filtering, and...
providing the recording is not too noisy, a smooth envelope of the fundamental is usually obtained.

The intensity meter:

The intensity meter used also operates on a filtering principle. One channel was used which produced a curve proportional to the intensity of the whole speech wave. These channels are provided with variable integration time - the integration time being the time over which the instrument averages the intensity. Short integration time results in a curve which shows ripples corresponding to the individual glottal pauses; longer integration time produces smoother curves.¹

The output signals of the fundamental frequency extracting device and of the intensity meter can be made directly visible and can be converted into readable form by a variety of instruments. The simplest means is to connect them through a drive unit with a medical penwriter. However, this device proved inadequate due to the comparatively slow response of the pen writers which was attributable to the inertia of the pens. Other devices

would be a Siemens Oscillomink or a Mingograph which rely on the principle of moveable ink jets instead of pens, thus reducing inertia to almost zero. These two pieces of equipment are directly balanced for use with the Frøkjaer-Jensen Trans-Pitch Meter and the Intensity Meter but were not available at the time of this investigation.

0.2.2.2.3. The Brush Oscillograph

The writing equipment used for the present work was a Brush 2300 Incandescent Light Beam Writing Oscillograph. In this equipment, galvanometers with a frequency response of 1000 cycles per second are used to reflect light beams from an incandescent light source upon light sensitive paper, with the galvanometers deflecting the beam in accordance with the signal received. The light-sensitive paper, when photolised (i.e., exposed for a few seconds to strong incandescent light), shows the traces in dark blue against a light pink background. At the same time, a timing flash grid is thrown upon the paper from the same light source which can by choice, produce 1, 10 or 100 lines per second, which is of value for time and duration measurements. An amplitude grid of
horizontal lines may also be beamed upon the paper from the same light source to assist in the reading of the rate of deflection. However, the amplitude grid was not used so as to avoid excessive complexity of the image. The traces on the light-sensitive paper remain visible for a few hours under fluorescent light, but eventually fade out if they continue to be exposed to such light.

Exposure to incandescent light and daylight causes them to disappear in a very short time. They can be developed and fixed, but the process is very complicated and has therefore not been used. As it was found that it was possible to study them for many hours without loss or fading of image when a strong 160 watt dark red light source was used, this method was adopted for the purpose of this study.

0.2.2.3. Illustrative Graphs

Illustrations from the instrumental analysis are presented with this text. The presentation of a number of graphs to illustrate the stress and tone phenomena being described has been made possible by the following methods:
After the study of the material recorded on the original photo-sensitive paper had been completed, and after an assessment had been made of the relevant stress and tone patterns of Vietnamese, 300 out of the 3,000 examples previously recorded and analysed were chosen. The graphs selected should of course be the ones which should best illustrate the phenomena described. Unfortunately, the best illustrative materials were not always the ones which could be reproduced satisfactorily because of unclear traces caused by fading, so that some substitutes had to be found.\textsuperscript{1}

These selected 300 original illustrative graphs were then sent to the visual aids unit of the Australian National University. By using special photographic techniques, the visual aids unit produced enlarged prints of the original graphs given. Some prints were not enlarged - such as graph 99 - because of their prohibitive length.

\textsuperscript{1}As the material was recorded in a stretch of six months some fluctuations in the clarity as well as in the appearance of the traces were inevitable. It is regretted that better illustrations could not be produced for the text.
These prints can be kept permanently and copies of them can be made indefinitely. Of these 300 prints only some 175 were selected to be included in the text. The selection was again not always made because the graphs were the best illustrative material available, but also because they could be reproduced more satisfactorily than the other graphs. The illustrative graphs which are presented in this text are xeroxed copies of the enlarged prints reproduced from the original traces made on photo-sensitive paper.

0.2.2.4. Measuring of the Fundamental Frequency and Intensity Tracings

The measuring of these fundamental frequencies and intensity tracings, i.e., the assessment of the graphs, was carried out under red light with the help of two grids aiding visual evaluation:

a) horizontal grid calibrated in cycles per second millimeters respectively,

b) a vertical grid which was a timing grid subdivided into units of 1/10 of a second as an aid to segmentation.
The horizontal grid for measuring the fundamental frequencies drawn on glass paper was obtained with the help of a pitch generator which produced signals of known frequencies which were checked by an electronic counter.

Graph recordings were taken of the signals with a Brush oscillograph, and the resulting graphs representing the actual known frequencies constituted the basis for the frequency grid.

For the measuring of the intensity curves, the horizontal grid, also drawn on glass paper, consisted of lines drawn two millimeters apart and numbered from 2 to 30. These numbers do not represent direct acoustic measurements. The exact acoustic values of the sound are not of premodal importance to this study. The main purpose of the measurements is to establish the relative difference between the sounds; and this grid served this purpose adequately. For example: in the question as to which of two given stresses is the stronger one, information on absolute intensity in terms of known physical units is irrelevant, because, if two stresses in a given case are compared with each other they could both be relatively weak, i.e., of low absolute intensity, though one is stronger than the other, or they can both
be very strong, i.e., of high absolute intensity, with one stronger than the other. Because this study is only concerned with the stronger-weaker relationship of the two stresses in the given case, absolute figures in terms of known units have not been included in the text. Some figures read from the reference grid are included for illustration purposes.

0.2.2.5. Interpretation of Fundamental Frequency and Intensity Tracings

0.2.2.5.1. Interpretation of Fundamental Frequency Tracings, and Pitch

The traces indicating the frequency and the changes in the frequency of the fundamental could be interpreted directly. The interpretation was comparatively easy when the tracings were fairly clear. For example, see graphs 1, 13, 21, 29, 99, and 128.

In such graphs, the bottom part of the wave pattern which indicates the changes in the fundamental frequency could be interpreted as indicating changes in pitch since the frequency of the fundamental is generally perceived as pitch on the auditory level. However, such graphs as graphs No. 3E, 24, 32, 56, 62, and 92 display relatively uneven traces. "Jumps" in the fundamental frequency bands are observed. Such "jumps" are the results of the
following factors: The saw wave which is produced by the galvanometer narrows in its altitude in direct relation to an increase of the base frequency. The bottom section of the wave pattern showing the changes in the basic frequency and its top part may however show "jumps" in the frequency representation which are of 100 or 150 frequencies each. These affect the basic lines very strongly, and are attributable to filters of the next higher filter steps being activated in the trans pitch meter.

The resulting curves had to be interpreted in the light of these factors and could not be simply read off. For example, in graph 92 which reads tôi về vài ngày a jump in the fundamental frequency tracing on the syllable về is observed. The top part of the band shows a jump of 150 cycles. The bottom line which indicates the fundamental frequency of that particular word has to be interpreted accordingly, i.e., instead of readings of a fundamental frequency of 450, 320, 420 for that word, those fundamental frequencies were interpreted as being respectively 300, 170 and 230.
0.2.2.5.2. Interpretation of Intensity Tracings, and Stress.

The traces indicating the physical intensity of these sounds required a greater amount of interpretation, in view of the fact mentioned earlier that the intensity of a sound bears no direct relation to stress as perceived on the auditory level, but results of its inherent quality of timbre in conjunction with the force of articulation.

The interpretation of stress, through such acoustic instrumental measurements, must consist essentially of the weighing of the results arrived at through intensity measurements, in the light of considerations of timbre and force of articulation. For instance, it was found that the words /bi, be, ba,/ in Vietnamese which have the same syllable pattern (CV), but with different vowels, still showed quite different intensity readings when recorded through the intensity meter with the same force of articulation and pronounced with the same tone. The differences in intensity peak were attributable to the nature of the vowels only.

In order to establish the different degrees of stress in Vietnamese, the following procedure was followed:
considering that the different sounds, because of their timber etc., display varying inherent intensity levels if articulated with the same force, it was necessary to have the basic relative intensity level of each sound established to provide a basis for comparing intensity changes in isolated syllables and in multi-syllable sequences, such as phrases and sentences.

Before proceeding any further, I would like to clarify what I mean by "basic relative intensity".

0.2.2.5.2.1. Basic Intensity

By "basic intensity of the sound" I do not refer to the term "basic" as fundamental. It is to be understood that the relative intensity readings given for a particular sound do not constitute a fundamental norm in the sense that they are basic to the language. It is fully realised that the readings taken from the recordings of the various syllables are not representative of the actual spoken language, but are only particular forms spoken in citation, and can therefore not be taken as basic, that is, fundamental.

However, they are basic in the sense that they can be taken as basic (or central) reference points. By
this is meant that the various absolute intensity levels of each sound in citation form have been arrived at under controlled and repeatable conditions and can serve as "reference points" for the study of more complex phenomena.

It was possible to study more and more complex phenomena of stress and tones in increasingly long utterances by referring to these known forms or reference points which had been arbitrarily accepted as basic to the research procedures.

The basic relative intensity of each sound was obtained by:

(a) measuring the absolute intensity peaks recorded for each sound with a grid drawn on glass paper (see 0.2.2.4.) and

(b) establishing the relative difference between them.

It is unnecessary to describe here in detail the mathematical operations involved in establishing the basic relative intensity of each sound, that is, the reference point for each sound. However, the procedure can be summarised as follows:

**STEP 1:** the intensity peaks of all the recorded words were measured with the arbitrary scale described previously in 0.2.2.4.
STEP 2: average measurements were taken of all words containing identical syllable structures and occurring in different positions in the utterances.

It was found at this point that syllables which occurred in initial and medial positions in an utterance had absolute intensity peaks which were always higher than those of syllables occurring in final positions. This remained true for the majority of the recorded material. (See graphs 1, 2, 3, 4).

STEP 3: average measurements were then made of syllables which contained different consonant onsets but were otherwise composed of identical speech sounds.

STEP 4 AND 5: average measurements were taken of syllables with identical structures but with one of its components different, i.e., with the tone differing or the consonant codas differing.

The conclusions drawn from these measurements are described in greater detail in sections 0.2.2.5.2.2.1. and 0.2.2.5.2.2.2.

It was found that a sound which occurred with a certain tone always had higher or lower intensities than with others, and that final consonants had a much greater influence on the intensity of the sounds than initial consonants. (See section 0.2.2.5.2.2.2.).
STEP 6: From these measurements, the relative differences in the intensity levels of all the vowel sounds occurring in nearly all the environments were established. Thus, for example, it was established that the relative differences between
the vowels /i/ /a/ was from 10 to 12
/i/ and /γ/ was 4 to 5
/i/ and /e/ was 6 to 8, etc.

STEP 7: The basic intensity level of a sound cannot be given one value but must have several values:
for example: the word /la/ with level tone (see graph 3A) has an average intensity peak level of
30+ in initial position
22 in medial position
and 12 in final position
la (see graph 3B): except for the different tone, it is identical in its syllable structure with the la above, but has an intensity level of
24 in initial position
14 in medial position
and 14 in final position

1It should be noted that the absolute figures given cannot all the time agree with the conclusions made, since the conclusions are made on a majority basis.
From the figures obtained on the basis of this interpretation of the intensity tracings, the basic relative intensity levels of all the sounds of Vietnamese were assessed, and following this, the different stress phenomena of the language could be investigated.

0.2.2.5.2.2. Results of the Interpretation of the Basic Intensity Tracings

In the following section, the sounds of Vietnamese are presented in their order of prominence according to their basic relative intensity levels.

0.2.2.5.2.2.1. Vowels

The Vietnamese vowel sounds are listed below, starting with the least prominent and proceeding to the most prominent vowel.

i e e ѣ a ĭ w u o ə

The position of these vowels in the vowel chart is as follows:
Although vowel /ɛ/ which is lower than /e/, could be expected to be the more prominent of the two, /ɛ/ has in fact a lower intensity because it is a lax vowel while /e/ is not, and also because it is more central than /e/.

The vowels /γ, a, a/ could be expected to be more prominent than /w/ and /u/ since they are much lower, they are in fact less prominent than /w u/ for the following reasons:

/γ/ is a lax vowel while /w u/ are more tense, whereas [a] and [a] are by nature short vowels and never occur in open syllables, while /w u/ are comparatively longer and occur in open syllables. Lower than basic...
relative intensity of /a/ or /o/ for instance, can still be stronger, in terms of absolute intensity, than stronger than basic relative intensity of /i/ or /ε/ for instance.

In terms of the present study of stress, /i/ or /ε/ would in such cases be recognized as carrying stronger stress than /a/ or /o/.

0.2.2.5.2.2.2. Influence of Consonants and Tones

The degree of intensity of the vowels in a syllable is dependent on the consonants as well as on the tone forming part of the syllable.

Generally speaking, the consonants which follow the vowel in the syllable have the greatest influence on the intensity of the vowel. The intensity of the vowels is slightly reduced by final stops /-p -t -k/. It is reduced to a greater extent by final semi-vowels such as /-y -h -w/, and to an even greater extent by final nasal consonants /-m -n -ŋ/.

The consonants which precede the vowel in the syllable have less influence on its intensity. Preceding nasal consonants lower the intensity of the vowel slightly more than do fricatives and stops.
The occurrence of a particular tone on the syllable also modifies its intensity level.

A vowel occurring with the low-level tone has a lower intensity than the same vowel occurring with the high level tone.

The tones are now listed in their order of prominence - proceeding from the least prominent to the most prominent.¹

\[ /' / \text{low level tone} \]
\[ /./ \text{low rising} \]
\[ (HL) \text{high level} \]
\[ /'/' \text{high rising} \]
\[ /'/'/' \text{mid rising} \]

Examples showing the intensity curves of the vowels in the environments mentioned above.

Vowels with identical tones and no final consonants:
(proceeding from the least prominent to the most prominent)

¹The least prominent tone is the one which reduces the basic intensity of a vowel to the greatest extent.
'note on piano, you'

'imperative final particle' (see Oscillographic graph 1).

'urn' (graph 2)

'a lot of'

'to shout, to scream' (graph 3A)

---

1 In the illustrative graphs which are presented, the upper trace indicates intensity and its variations. The lower trace indicates the frequency of the fundamental, i.e., pitch - and its variations.

a. The intensity trace consists of a single line resulting from the deflections of the galvanometer receiving the signals from the Intensity Meter.

b. The trace indicating pitch constitutes a broad band. The signals from the Trans Pitch Meter cause the galvanometer to vibrate constantly, creating the broad band image. The saw wave produced by the galvanometer narrows in its altitude in direct relation to an increase of the base frequency with the bottom part of the wave pattern indicating the changes in the basic frequency, and the top part indicating jumps in the frequency representation by 100 frequencies each which consequently affects the basic line very strongly. The resulting curve or curves have to be interpreted in the light of this and cannot be simply read off.

c. The perpendicular lines are a time grid (see description in 1.0.5.2. each successive line indicating 1/10 of a second elapsed time.

d. The numbered horizontal lines on the upper left of the graphs constitute a reference grid. It was mentioned earlier that this grid does not indicate known physical units but was used to measure the relative degrees of intensities of the sounds.

e. The numbered horizontal lines on the lower left indicate the actual fundamental frequencies. This grid was obtained with a pitch generator which produced signals of known frequencies which were checked by an electronic counter.

f. As previously stated the graphs presented are only a
Vowels with identical tones, and various final consonants. (Proceeding from the least prominent to the most prominent).

Consonants

\begin{align*}
\hat{\text{am}} & \quad \text{‘warm’} \quad (\text{see graph } 4) \\
\hat{\text{an}} & \quad \text{‘to press’} \quad (\text{see graph } 5) \\
\hat{\text{ay}} & \quad \text{‘that’} \quad (\text{see graph } 6) \\
\hat{\text{ap}} & \quad \text{‘to cover’} \quad (\text{see graph } 7)
\end{align*}

Vowels with identical initial consonants, and different tones. (From least to most prominent).

\begin{align*}
\hat{\text{dɔ’}} & \quad \text{‘things’} \quad (\text{see graph } 8A) \\
\hat{\text{dɔ}} & \quad \text{‘degree’} \quad (\text{see graph } 8B) \\
\hat{\text{dɔ}} & \quad \text{‘city’} \quad (\text{see graph } 8C) \\
\hat{\text{dɔ}} & \quad \text{‘to bet’} \quad (\text{see graph } 8D) \\
\hat{\text{dɔ’}} & \quad \text{‘to spill, to throw’} \quad (\text{see graph } 8E)
\end{align*}

Because of the reasons stated earlier, all the graphs presented here are not always the best illustrative graphs available for the phenomena described.

footnote 1 continued from previous page.

...selection from a large number of graphs. Their selection was made, not only because they are suitably illustrative of the features being described, but also because of their suitability for reproduction. (See introduction to part 2, graphs).
For example, it is stated here that syllables with tone ?\text{,} the mid-rising tone, are usually the most prominent, while syllables with tone ', are the least prominent.

Graphs - 8a,b,c,d,e - illustrate this fact relatively well.

With graphs - 3A,B,C,D,E - however, it is obvious that here it is not the syllables with tone ?, that are the most prominent but rather the ones with the high level tone (see graphs 3C and 3A).

This can be explained through the intonational and stress pattern of the language (see 0.2.2.5.2.2.4.). In recording the material, syllables with a high level tone were recorded first, followed by syllables with a high rising tone, then with a mid rising tone, the low level tone, and finally the low rising tone.

If these groups of syllables are uttered in one stretch, the overall decreasing intensity pattern will automatically co-occur with the utterance. It was not possible for me to avoid this factor in the recording of the majority of the material. My conclusions, therefore, had to take into account the particular sequence in which the material was recorded.
0.2.5.2.2.3. Basic Intensity and Stress

The basic intensity of each sound having been established, any deviations from the basic intensity are described in terms or variations of what will from here on be termed "stress".

The basic intensity level of a syllable is interpreted here as the syllable having strong stress which is symbolized as ['].

Examples:

- \( \text{di} \) has a basic intensity reading of, say, 14, on the horizontal millimeter grid (see 0.2.2.4.);
- \( \text{tôi} \) has a basic intensity of 16.

The basic relative difference between them is therefore 2. At these intensity levels both are interpreted as having strong stress.

If in a two syllable utterance, or in longer utterances the relative difference between them is still 2, both are again interpreted as having strong stress in that particular utterance. However, if in another utterance the difference between them is 1, e.g., \( \text{di} \) having 14 and \( \text{tôi} \) 15, then in that utterance \( \text{tôi} \) is interpreted as having a weaker stress than \( \text{di} \).
In this way it was possible to establish two degrees of stress in the early stages of the analysis.

As the study progressed, it was found that certain syllables had a much lower, or much higher, intensity reading than usually. For example, if it has been found that the difference in the basic relative intensity levels between the words cho and di is 4 (i.e., the word cho has a greater basic intensity than di, and the difference between them is 4), and in a given utterance, the difference between them is only 2, with cho being weaker than in its basic intensity level form, in that particular position in the utterance, then cho has a weaker stress in that particular utterance.

If however, in another utterance the difference is, say, 7, that is if cho has for instance an intensity reading of 16, but di only one of 9, then di is interpreted as having a much weaker degree of stress than the ordinary weak stress.

If the difference between them was absent, or if in some utterances di had a greater intensity level than cho and was at the same time at an intensity level which was higher than its basic intensity level as weighted for for its position in the utterance, it was concluded that
in that particular utterance \[\text{di}\] carried a degree of stress which was stronger than the strong stress.

It should be remembered that in the interpretations, not only the different structures of the syllables had to be taken into account, but also the position of the syllables in the utterances.

0.2.2.5.2.2.4. Overall Intensity

From the instrumental investigation it was also found that the physical intensity of a sound depended not only on its timbre and its syllable environment, but also on its position in the utterance.

For Vietnamese, it has been found that, if the same syllable is recorded three times in succession in order to obtain the absolute intensity peak of the syllable in utterance initial, medial and final positions, the first syllable always showed the highest intensity peak, while the last syllable always showed the lowest intensity peak. (See Oscillographic graphs 1 to 8).

From this and numerous other recordings of short and long utterances, it has been concluded that there are overall intensity patterns which co-occur with the basic intensity patterns.
The overall intensity patterns affect the intensity of each sound by modifying its basic intensity level. Thus, if the overall intensity pattern is a decreasing one, the absolute intensity level of a particular sound is always higher when the sound occurs initially than when it occurs finally in the pause group.

CHAPTER I. STRESS

1.0. Introduction

In the chapter which follows a detailed description of the stress features is presented which resulted from the auditory and instrumental investigation.

In this description, the establishment of the absolute intensities of the sounds and of the overall intensity of the pause groups have resulted from instrumental study.
only. As previously mentioned, stress is defined in terms of the physical intensity of the sound.

The establishment of the four relative degrees of stress and of the rhythm pattern of the pause group have emerged from the auditory study whose results were subsequently checked by instrumental study.

It must be emphasised at this point that the analysis of stress as presented here refers to a subphonemic, and not a phonemic, level. Nearly all the features of Vietnamese stress are predictable in terms of pauses and the rhythm pattern. The pauses and rhythm are in turn predictable in terms of the pitch contours of the tones and the length of the syllables, of the intonation, as well as of the syntactic function of the last syllable in the pause group. This chapter is organised in two parts as follows: part 1 presents the general features pertaining to stress in Vietnamese, i.e., degrees of stress, - pauses - rhythm - overall intensity, whereas part 2 presents all the specific occurrences of the stress in the pause groups. It contains four sections: section 1 presents the basic stress patterns of non-interrogative
sentences; section 2 deals with the basic stress patterns of interrogative sentences; section 3 is concerned with the modification of the basic stress patterns described earlier; section 4 presents the overall intensity patterns.

1.1. General Features Pertaining to Stress in Vietnamese

1.1.1. Pauses

There are two kinds of pauses:

1) the absolute pause or final pause.

2) the tentative pause.

1.1.1.1. The absolute pause or final pause is characterised by all of the following features:

a. an actual halt in the speaking process;

b. a lengthening of the last syllable in the utterance;

c. a special intonation contour, e.g., falling contour for declarative statements, rising contour for interrogative sentences; rising-falling contour for exclamatory and imperative sentences.¹

¹For further detail see Intonation, Part II, Chapter 3.
The absolute pause indicates the end of a statement. It is represented here in three ways:

1. [#] in conjunction with a falling intonation contour.
2. [||] with a rising intonation contour.
3. [!] with a rising-falling intonation.

Examples:

Toì ăn cöm # (see graph 77)
'I am eating (I, eat, rice)'

anh di chú́a || (graph 102)
'are you going? (older brother, go, yet)'

anh di di! (graph 61)
'you go ahead!' (older brother, go, imperative particle)

1.1.1.2. The tentative pause is in most cases, signalled by one or both of the following features:

a. a lengthening of the last syllable of the pause group;

b. a sustained intonation contour;

in some instances it is also indicated by a short halt in the speech.
In some cases none of the above features are present: only the change in the stress pattern betrays the existence of the tentative pause. However, no examples of this kind have been included in the text.

The tentative pause indicates an incomplete statement and is symbolised by \[||\].

1.1.1.3. The Pause Group

In the present analysis "pause group" indicates a sequence of syllables which are phonologically marked by one of the pauses mentioned above. The majority of the pause groups described here are syntactically determined. No attempt has been made to analyse pause groups caused by emotion or hesitation. The term "pause group" in this text can be equated with the conventional terms used by Trager-Smith and other noted linguists,\(^1\) e.g., "the phonemic clause" which in Trager-Smith's definition indicates "a minimal complete utterance which has one terminal juncture and one primary stress and one pitch phoneme". "Pause group", the term used in this text

is also related to Lieberman's "unmarked and marked breath groups". In Lieberman's terms, the "breath group" is a segmental feature which has for its scope the constituent sentence. An "unmarked breath group" indicates that the sentence is complete. A "marked breath group" indicates that it is incomplete. The unmarked breath group is manifested by a falling fundamental frequency contour, the marked breath group by a non-falling fundamental frequency contour.

In this study, the majority of the pause groups described are syntactically determined. The stress patterns within each pause group will be described according to the sentence structures, i.e., the stress patterns of non-interrogative sentences are presented first, and the stress patterns in interrogative sentences follow. The manifestations of each pause group are analysed in two parts: a) the stress pattern and its modifications by, or co-occurrence with, the overall intensity patterns, and b) the intonation pattern.


1.1.2. Degrees of Stress

There are four degrees of stress in Vietnamese.¹

- **Strong stress** [′]
- **weak stress** [˘]
- **extra weak stress** [○]
- **extra strong or emphatic stress** ["]

1.1.2.1. The Strong and Weak Stresses

Of the four stresses, the strong and weak stresses are fully predictable. They constitute the basic stress patterns of Vietnamese utterances. The weak stress has a weaker free variant [˘] which occurs on certain types of syllables.

1.1.2.2. The Extra Weak Stress [○]

The extra weak stress occurs only in utterances of more than three syllables, and falls only on certain types of syllables.

Because of this restricted occurrence, and because it is also predictable in terms of the emphatic stress (see...

¹See also the Analysis of Stress by L.C. Thompson 'Saigon Phonemics', Language 35, 1959, pp. 454-76, and A Vietnamese Grammar, op. cit.
Modifications of the Basic Stress pattern) the extra weak stress can be considered a fully predictable stress. However, because of its special influence on the pitch contours of the tones and its influence on the basic rhythm of the pause group, its occurrence is indicated in the text.

1.1.2.3. The Emphatic Stress ["].

The emphatic stress is a wilful stress, and therefore non-predictable. It can be placed on any syllable in the pause group to give it emphasis. The emphatic stress also modifies the basic stress rhythm of the pause group.

L.C. Thompson in 'Saigon Phonemics'\textsuperscript{1} considers two kinds of stress - which he describes in terms of relative loudness - as being phonemically distinctive: 1) the relative intensity of stress onsets (of which he has four) and 2) the contour of intensity of stress over the syllable.

Although in this analysis, I have also accounted for four degrees of relative stress - which I describe in terms of physical intensity and not in terms of loudness -

\textsuperscript{1}L.C. Thompson, 'Saigon Phonemics' \textit{Language} 35, pp.454-76. 1959.
I do not consider relative stress to be phonemically relevant for Vietnamese in view of the fact stated earlier in the study that — apart from the emphatic stress — the occurrence of these relative degrees of stress is predictable in terms of pauses and of the syntactic function of the last syllable of the pause group. Thompson mentions three phonemic stress contours over the syllable:

- *morendo* (rapid decrease in intensity)
- *sustinendo* (sustaining of the original intensity followed by a gradual decrease)\(^1\)
- *crescendo* (increasing intensity after the onset of stress followed by a gradual decrease).

It is difficult to argue with Thompson on this point, as he does not indicate how he has arrived at these conclusions. However, it is doubtful that the stress contours mentioned by Thompson can effectively be perceived over individual syllables unless the investigation is carried out under artificial conditions.

I am inclined to think, after having observed the intensity traces of individual words which have been

\(^1\) *ibid.* Thompson, "Saigon Phonemics" pp.454-76.
recorded, that the contours described by Thompson are a regular feature of individual tones occurring with the syllables, rather than a significant stress feature of these syllables.

In this study, I have, in addition to the relative stress and rhythm, described another aspect of stress which affects the entire pause group. I have termed this feature "the Overall Intensity Contours". These contours can be paralleled with Thompson's stress contours except that

1) I do not consider them to be phonemically distinctive, and

2) they are not a stress feature of individual syllables, but of entire pause groups.

In a later analysis, Thompson ascribes three degrees of stress to the pause group in Vietnamese.

- heavy
- weak
- and medium

He states that the majority of the syllables have medium stress. In a sequence of syllables alternating ones are slightly louder (but not in a distinctive manner), each pause group has at least one heavy stress and weak stresses are fairly frequent in rapid passages, rarer in carefully speech. All three stresses are predictable: the heavy stress accompanies syllables which have greater importance in the phrase, weak stress accompanies syllables belonging to forms which add little or no new information.\(^1\)

My analysis of stress is closer in similarity to Thompson's second analysis. However, this analysis differs from Thompson's in the following points: a) Thompson does not mention any stress which is not predictable such as the emphatic stress to which I have ascribed a phonemic status; b) he contends that there is one heavy stress in each pause group. I have concluded that there is an alternating occurrence of strong and weak stresses. My analysis shows that the emphatic

\(^1\textit{ibid.} \) Thompson, \textit{Vietnamese Grammar}, p.41.
stress which could be paralleled to Thompson's heavy stress does not occur regularly in the pause group, but depends on the speaker's intention; c) I have attempted, in my analysis, to enumerate specifically the "forms which add little or no new information to the utterance", which in Thompson's analysis generally carry weak stress.

Jones and Thong in their 'Introduction to Vietnamese'¹ state that "normally the stresses in a Vietnamese utterance are conditioned by the junctures." They regard the fundamental stress pattern of Vietnamese as consisting of the alternating occurrence of a strong and weak stress, with the last word of the phrase receiving a strong stress.

They also note certain exceptions.

My analysis shows two fundamental patterns of stress in the Vietnamese pause group, i.e., one which ends with a weak stress, and one which ends in a strong stress. For Jones and Thong, there is only one fundamental stress pattern which starts regressively with a strong stress.

1.1.3. Rhythm

The stress rhythm of Vietnamese phrases shows a retrograde pattern, i.e., it is the last syllable before the pause which determines the stress pattern of the entire group.

In a basic or regular stress pattern, the strong and weak stresses alternate in the pause group. Therefore, if the last syllable of the pause group has a strong stress, every alternate syllable preceding it in the same pause group will have a strong stress. Strong stress is symbolised by ['] and weak stress by ['].

The pattern described above can be represented in the following manner:

```
...... ◦ ◦ ◦ ◦ ◦ ◦ # 1
```

If the last syllable has a weak stress, every alternate syllable preceding it in the pause group will have weak stress. This pattern is represented as follows:

```
...... ◦ ◦ ◦ ◦ ◦ ◦ ◦ #
```

Whether the pattern begins (in terms of the retrograde pattern), with a strong or weak stress, depends on the

---

1The dots stand for additional syllables in the same pause group.
syntactic nature of the syllable which occurs immediately before the pause.

1.1.3.1. Modifications of the Basic Rhythm

1.1.3.1.1. Modifications caused by the occurrence of the extra weak stress [°]

The extra weak stress which occurs only in utterances of more than three syllables can modify the basic rhythm of the pause group by requiring the syllable following it (when counting progressively) in the same pause group, to always carry weak stress [°].

For example: the pause group represented here has a basic rhythm pattern of:

```
5 4 3 2 1  
, , , , #
```

If [°] falls on syllable 4 the rhythm pattern of the pause group is modified as follows:

```
basic rhythm  5 4 3 2 1  
, , , # 
↓  ↓
modified rhythm  , , , , #
```

The extra weak stress [°] falls only on syllables with certain grammatical functions such as prepositions, particles etc.
1.1.3.1.2. Modification caused by the occurrence of the emphatic stress ["]

The emphatic stress can alter the basic rhythm pattern of the pause group by requiring the syllable which follows it\(^1\) to always carry an extra weak stress [\(\circ\)].

For example, the following pause group has a basic rhythm of:

\[
\begin{array}{cccccc}
5 & 4 & 3 & 2 & 1 \\
\end{array}
\]

If ["] falls on syllable 5 the rhythm pattern is modified to:

\[
\begin{array}{cccccc}
5 & 4 & 3 & 2 & 1 \\
\end{array}
\]

1.1.4. Overall Intensity Patterns.

In addition to the rhythm patterns described, there are also overriding overall intensity patterns which can occur with the rhythm patterns.

\(^{1}\)i.e., When counting progressively. If the syllables are counted in accordance with the retrograde rhythm pattern, the syllable preceding the one carrying emphatic stress is affected.
Overall intensity patterns are of two types:
1. Decreasing overall intensity
2. Sustained overall intensity

The decreasing overall intensity pattern is characterized by a gradual decrease in the absolute intensity of the strongly stressed syllables in the pause group.

The sustained overall intensity is marked by an overall sustained absolute intensity of the strongly stressed syllables in the pause group.

The overall intensity patterns are also an intrinsic part of the intonation patterns. (See Intonation).

1.2. Specific Occurrences of Stress in Vietnamese
1.2.1. Stress Patterns in Non-Interrogative Sentences
1.2.1.1. Stress in Isolated Syllables

All words occurring in isolation have a strong stress.

1.2.1.2. Stress in two-syllable utterances

In two syllable utterances, the strong and weak stress alternate.

1I am using the word 'utterance' here to mean a stretch of speech occurring between two pauses - a 'two-syllable utterance' means therefore a pause group composed of two syllables.
The strength of the stress constituting the starting point of the retrograde rhythm, i.e. whether it is a strong or weak stress, depends on the grammatical structure of the utterance.

1.2.1.2a. Stress Pattern 1: ' ~ #

The pattern which starts (when counting regressively) with a weak stress, i.e.

# ' ~ #

occurs with the following types of utterances:

1. Onomatopeic words such as:
   lóc-cóc 'clicking sound of wooden sandals'
   (see graph 9)
   lắc-rắc 'sound of rain drops' (see graph 10)
   lop-dop 'sound of heavy rain drops'

2. Reduplicated words of identical sound and syllable structure.
   châm-châm 'slowly' (see graph 11)
   luôn-luôn 'always'
   dàn-dàn 'gradually'

3. A verb + a final particle.
   uống rỗi 'has already drunk' (see graph 12)
   đi mà! 'of course (I'm) going'
4. Verb phrases consisting of a Verb + a Modifier
đi được 'can go (go, to be able to)'
hay hơn 'is better (is good, more)'
dep lắm 'is very beautiful (is beautiful, very)'

1.2.1.2b. Stress Pattern 2: # 

The reverse pattern, which begins (when counting regressively) with a strong stress, i.e.
# # 

occurs with the following types of utterances:

1. Reduplicated words of non-identical syllable structure:
lỗi-thời 'unreliable' (see graph 13)
khè-lê 'to complain'

2. Compounds:
lính-thuy 'sailor' (from the navy) (see graph 15)
guốc-gia 'nation (nation, family)' (see graph 14)
phụ-nữ 'woman'

3. Noun Phrases such as:
a) Noun + Noun or Noun + Verb
mưa bão 'typhoon (rain, storm)'
núi đá 'rocky mountain (mountain, rock)'
trường học 'school (school, to study)'

vuông mặt 'new (this, this way, this)!' (see graph 12)
nhà giàu 'wealthy people (house, is rich)'

b) Noun + Demonstrative
cây này 'this tree (tree, this) (see graph 16)
cái kia 'that thing there (thing, there)'
ngã này 'this way (way, this)' (see graph 72)
viec dỗ 'that affair (affair, that)'

c) Numerative or Definitive + Noun or Verb
miếng miếng 'a bit of vermicelli (piece, vermicelli)' (see graph 18)
tô cöm 'a bowl of rice (bowl, rice)' (see graph 17)
cái ăn 'eating (thing, eat)'

4. Verb phrases such as:

a) Modifier + Verb
không đi 'not going (not, go)'
gần về 'is going to come back (immediate future, go back)'
sắp lai 'will come soon (immediate future, come)'

b) Verb + Verb
dì chơi 'to go out (go, play)' (see graph 19)
muốn uong 'to want to drink (want, drink)''
quen thuởc 'to know well (know, know by heart)' (see graph 20)
chay lên 'to run up (run, go up)'
c) Verb + Direct Object

ăn cơn 'to eat a meal (eat, rice)' (see graph 21)
mua đồ 'to shop (buy things)'
giải nghĩa 'to explain (explain, explanation)'
d) Verb + Location, Manner or Time
dì chợ 'to go to the market, to go shopping (go, market)'
ra ngoài 'to go outside (go, go outside)'
ăn mau 'to eat fast (eat, fast)' (see graph 22)
làm liên 'to do it right away (do right away)'

5. Clauses i.e.

Subject + Predicate
nó thấy 'he sees'
bá mở 'she opens (she, open)' (see graph 23)
tôi đi 'I am going (I, go)' (see graph 24)

1.2.1.3. Stress in three-syllable utterances

As in two-syllable utterances, there are two main stress patterns.
1.2.1.3a. Stress Pattern 1: #  '  '  #

The first pattern begins with a weak stress, i.e. #  '  '  #

This pattern occurs

1) in pause groups ending in a Final Particle such as:
   - hết 'all'
   - rồi marker of completed action
   - mà emphatic particle
   - kia) affirmative particles
   - chào) also indicating emphasis

2) in pause groups ending in a Post-Verb Modifier:
   - làm 'very'
   - hơn 'more'
   - nhiều 'much', etc.

Illustrative Examples:
   - nó mua rồi 'he has already bought (he, buy, already)' (see graph 25)
   - ông già hơn 'he is better (he, is good, more)' (see graph 26)
   - tôi đi rồi 'I have already gone (I, go, already)' (see graph 36A)

1.2.1.3b. Stress Pattern 2: #  '  '  #

The second basic stress pattern which begins (when
counting regressively) with a strong stress, i.e.
# ́ ́ ́ #
occurs with all other utterances.

Illustrative Examples:

1) Compounds:
Tan-Tay-Lan 'New Zealand' (see graph 27)
tồng-tuyên-củ 'general election' (general, election)
Ha-Nghi-Viên 'Lower House (low parliament)' (see graph 82)

2) Noun Phrases:
cô ca-sĩ 'girl singer (young girl, singer)'
người dân-bà 'the woman (person, woman)'
ban báo-chi 'newspaper syndicate (committee, newspaper)' (see graph 28)

3) Verb Phrases:
ăn cöm tàu 'to eat Chinese food (eat, rice, Chinese)' (see graph 29)
di chợ đêm 'to go to the night market (go, market, night)'

4) Clauses:
chúng nó đi 'they are going (they, go)' (see graph 30)
chúng nó đánh 'they beat (they, beat)' (see graph 31)
The weak stress and its reduced free variant

In three-syllable utterances, some syllables which carry a weak stress in the rhythm stress pattern, may be further weakened.

This weakened stress [ə] occurs in free variation with the weak stress on syllables having certain grammatical functions. These syllables are the following:

1. Noun modifiers which follow the Noun Head in Noun Phrases - these modifiers can be:
   a) Demonstratives such as:
      nay 'this'
      kia 'that, there'
      do 'there'
   b) Personal pronouns in possessive noun phrases:
      toi 'I'
      nò 'he'
      ho 'they', etc.
   c) or personal pronoun substitutes (kinship terms):
      ông 'he'

chúng nó ngủ 'they are sleeping (they, sleep)'
(see graph 32)

nó trở lại 'he comes back (he, go back, come)'
(see graph 80)
bà 'she'
anh 'older brother'
em 'younger brother', etc.

Illustrative Examples:
cây nay dep 'this tree is beautiful (tree, this, is beautiful)'
em tôi đây 'my younger sister is here (younger sibling, is here)' (see graph 33)
chúng nó đánh 'they beat' (see graph 31)

2. Verb Modifiers which preceded the Verb Head in Verb Phrases i.e.
a) Time Modals such as:
   sẽ, sắp, gần 'future Time Modals'
   đã, vừa 'past Time Modals'
   đang, vẫn 'continued action'

Illustrative Examples:
   tôi sẽ đi 'I shall go (I, will, go)' (see graph 34A)
   ông vẫn bán 'he is still busy (he, still, is busy)'

b) Negative Modals such as:
   không 'not'
   chưa 'not yet'
Illustrative Examples:
em không đâu # 'I am not sick (I, not, is sick)' (see graph 34)
nớ chưa về # 'he is not back yet (he, not yet, come back)'

c) Affirmative Modals
co 'did do...'
Example:
ông có tôi # 'he did come (he, did, arrive)'

d) Auxiliary Verbs which precede the Verb Head such as:
dược 'to be allowed to'
muốn 'to want to'
thích 'to like, prefer'
ưa 'to like'
Examples:
nớ được đi 'he is allowed to go (he, is allowed to, go)'
nớ thích hoc 'he likes to study (he, like, study)'

e) The Verb đi 'to go' in Directional Verb Phrases such as:
di lên 'to group (go, group)'
di về 'to go back (go, go back)'
Illustrative Examples:

di ra 'to go outside (go, go outside)'

tớĩ đi về # 'I am going back (I, go, go back)' (see graph 35)

nớĩ di ra # 'he goes outside (he, go, go outside)'

Illustrative Examples:

vớĩ bán rỗi # 'he has already sold (he sell already)'

tớĩ đi rỗi # 'I have already gone' (see graph 36A)

vớĩ ngời giỏi hơn # 'he is better (he, is good, more)' (see graph 26)

Overall Intensity

Superimposed on the stress patterns are overall intensity patterns. These various overall intensity patterns are discussed in detail in section 1.4. It is only

necessary to mention at this point, that within the same pause group, the first syllable when counting progressively with strong stress has a higher absolute intensity than the following syllable with strong stress:

Likewise, the first syllable (when counting progressively) with weak stress has a higher absolute intensity than the next syllable with weak stress.

This overall intensity pattern can be represented schematically as follows:¹

1. **Figure 1**

   Absolute Intensity:

   [Graph]

   Stress pattern:

   '·' #

2. **Figure 2**

   Absolute Intensity:

   [Graph]

   Stress pattern:

   '·' #

1.2.1.4. Stress in longer utterances, i.e. utterances of more than three syllables.

¹These figures show, in a schematic form, the intensity curves which appear on the Oscillographic graphs. The upper and lower horizontal lines represent the limits of maximum and minimum intensity respectively.
1.2.1.4.0. Introduction

The factors which determine the starting point of the retrograde stress pattern in long utterances are similar to those which determine the starting point of the pattern in three-syllable utterances (see 1.2.1.3.).

1.2.1.4a. Stress Pattern 1: .... ' ˘ ' ˘ #

The rhythm pattern which begins (in terms of the retrograde pattern) with a weak stress occurs with pause groups ending in a final particle, a post-verb modifier, or a post-noun modifier.

Illustrative Examples

1) Pause groups of four syllables:
   stress pattern: # ' ˘ ' ˘ #
   tôi không đi đâu! 'I am not going! (I not, go, emphatic final particle)'
   (see graph 37A)
   bà về nhà rồi # 'she is already home (she, come back, house, already)'
   'ơ' độ mát lắm # 'it's very cool there (at, there, cool, very)' (see graph 38A)
   tôi không đi được # 'I can't go (I, not, go,
2) Pause groups of five syllables:
stress pattern: # ̄ ̄ ̄ ̄ ̄ #
nó nói lai ba nó # 'he tells his father (he, speaks, speak back, father, he)'
mây dậy nhỏ ngủ rồi # 'the children are already asleep (several, children, small, sleep, already)'
(see graph 39)

3) Longer utterances:
stress pattern: # ̄ ̄ ̄ ̄ ̄ #
chúng mình đi về chung đi! 'let's go back together (we, go, go back, together, imperative final particle)' (see graph 40)
stress pattern: # ̄ ̄ ̄ ̄ ̄ ̄ #
nó không muốn nói lai ba nó # 'he doesn't want to tell his father (he, not, want, speak, speak back, father, he)'

Additional remarks.
a) Utterances which end in more than one final particle, have the first strong stress on the syllable immediately preceding the two final particles.

The pattern is:

... . . . . . . #

Illustrative Examples:

má đi chợ rồi hả? 'has mother already gone shopping (mother, go, market, already, yes and no)' (see third section of graph 64)

không đi nó giản à nghe! 'he'll be angry if you don't go (not, go, he, is angry, final particles)' (see graph 41)

b) Utterances which end in a final particle which in turn is immediately preceded by a post modifier, have the basic stress rhythm beginning (in terms of the retrograde pattern) with a weak stress, i.e.

.... . . . . . . #

Illustrative Examples:
Tôi không đi được đâu! 'I really can't go (I, not, go, can, final particle)'

tự nhiên đi xe hơi | 'thì tiến hơn rồi!'

'of course it's more comfortable to go by car (of course, go, car, gas, comfortable, more, final particle)'

không phải ngăn đó | ngăn kia kia!

'it's not that drawer, it's the other one! (not, is right, drawer, that, drawer, that, final particle)' (see graph 42)

1.2.1.4b. Stress Pattern 2: ... ' ' ' '#

The second pattern which begins (when counting regressively) with a strong stress, occurs with all other types of utterances.

Illustrative Examples

1. Pause groups of four syllables
stress pattern: # ' ' ' '#

nó không được đi # 'he is not allowed to go
(he, not, allowed to, go)'
(see graph 43)
tôi đi mua rau # 'I am going to buy vegetables
(I, go, buy vegetables)'
(see graph 44)
2. Pause groups of five syllables:

stress pattern: # ' ´ ' ' ' '

nó đem thọ qua cây # 'he brings the letters over here (he, bring, letter, here)'

tôi ở ngoài sân này # 'I am in the courtyard (I, stay, outside, courtyard, this)'

3. Longer utterances:

stress pattern: ... ' ' ' ' ' ' ' '

xe ông đâm vào cái cây | 'his car hit a tree, (car, he, hit, go in, thing, tree)' (see graph 63)

ông Tư có hai con vịt | 'Mr Tư has two ducks (Mister, Tư, have, two, animal classifier, duck)' (see graph 45)

'o cô khi tôi thích đi hát | 'sometimes I like to go to the movies, (sometimes, I like, see, sing)' (see first section of graph 86).
The extra weak stress \[ \text{[o]} \]  

For a fuller understanding of stress patterns in utterances of more than three syllables, I anticipate briefly the description of the third degree of stress - the weak stress which has been mentioned earlier, occurs only in long utterances. It can modify the basic stress pattern of the pause group and occurs only with syllables with certain grammatical functions. Syllables which occur with the extra weak stress are considerably shorter than normal.

1.2.2. Basic Stress patterns in Interrogative sentences.

1.2.2.0. Introduction

In Interrogative sentences it is the type of interrogation which determines the starting point of the retrograde rhythm.

1.2.2.1. Stress Pattern 1: \[ ... ' \, ' \, ' \, # \]

The stress pattern which begins (when counting regressively) with a weak stress, occurs in interrogative sentences which contain a Yes-No Interrogative Marker.
Samples of Yes-No Interrogative Markers are:

không 'yes or no'

hã "

sao "

chưa etc...

Illustrative Examples:

anh không đi há || 'aren't you going? (you older brother, not, go, yes or no)' (see graph 47)

anh muốn chơi gì không || 'do you want to play anything? (you want, play, something, yes or no)' (see graph 48)

anh không ăn cơm nhà sao || 'aren't you eating at home? (you, not, eat, rice, house, yes or no)' (see graph 49)

anh đi chưa || 'are you going yet? (you, go, yes or no yet)' (see graph 102)
Additional remarks.

In interrogative sentences which have the Right Wrong Interrogative Marker 'phải không' 'Right or Wrong' at their end, the first strong stress (when counting regressively) is placed on the syllable which immediately precedes the Interrogative Marker.

The stress pattern is therefore ... ° ° ° ° #

Illustrative Example:

người đó | là người Pháp phải không ||

'that person is French, isn't he? (person, there, is, person, French, right or wrong) (see graph 107)

1.2.2. Stress Pattern 2: ... ° ° ° ° #

The stress pattern which starts (when stating in terms of the retrograde pattern) with a strong stress, i.e., ° ° ° ° # occurs with all other Interrogative sentences.

Illustrative Examples:

anh muốn đi đâu || 'where do you want to go? (you, want, go, where)' (see graph 50)
1.2.3. Modifications of the basic stress patterns.

1.2.3.0. Introduction.

The basic stress patterns described above can be modified by the occurrence of one of the following two stresses:

- the extra weak stress [°]
- the emphatic stress ["]

The modifications are discussed in this section.

1.2.3.1. Modifications caused by the occurrence of the extra-weak stress [°]
1.2.3.1a. Placement of the extra-weak stress.

The extra-weak stress may only be placed on syllables with certain grammatical functions. These are:

1. Verb Modifiers, i.e., Verb Modals, such as:
   - không 'Negative-Modal' 'not'
   - có 'Affirmative Modal' 'yes'
   - được 'Auxiliary Verb' 'to be'
   - phải 'allowed to, must'
   - sẽ 'Future Time Modal'
   - đã 'Past Time Modal'
   - đang 'Present Time Modal'

Illustrative Examples:

'Ở đây | không có nhiều tiệm ăn làm
'there aren't so many restaurants here
(at, here, not, is, many, shop, eat, very)'

(see graph 52)
'today, I will go and take pictures,' (today, I, will go, take pictures, pictures)'
(see graph 53)

'today, I will go and take pictures,' (today, I, will go, take pictures, pictures)'
(see graph 53)

'I have some work to do before 10 o'clock
(I, have, a bit, work, must, do, in order to, finish, before, then, hour)' (see graph 46)

2. Personal Pronouns, and Personal Pronoun substitutes such as:

'tôi' 'I'
'nó' 'he'
'òng' 'he'
'bả' 'she' etc.

Illustrative Example:

'hôm nay | 'nó hoi mét | 'today, he is slightly tired (today, he, slightly, is tired)'
3. Conjunctions, Prepositions and Introducers of Dependent Clauses such as:

- mà, nhưng 'but'
- và 'and'
- 'at'
- trong 'in'
- để 'in order to'
- neu ... thi 'if ... then'

Illustrative Examples:

- Tôi thì chỉ nói được tiếng Việt | và tiếng Pháp #
  'as for me, I can only speak Vietnamese, and French
  (I, then, only, speak, can, language, Vietnamese,
  and, language, French)’ (see graph 54)

- Tôi viết luôn | mà văn chưa xong #
  'I write all the time, but haven't finished yet
  (I, write, always, but, still, not yet, is finished)'
  (see graph 55)

- Họ cho nó vài đồng | để đi ăn mì #
  'they gave him some money, to eat some soup
  (they, give, him, a few, piasters, in order to, go,
  eat, noodle soup)’ (see graph 97)
4. The stative verb, có 'there is' in stative clauses.

Illustrative Examples:

"có hai ba người trong nhà"
'there are a few people in the house
(there is, two, three, person, in, house)'

"có ít người Mỹ mà nói tiếng Việt được"
'there are few Americans who can speak Vietnamese
(there is, few, person, America, who, speak, language, Vietnamese, can)'

5. The stative verbs là, làm 'to be'

Illustrative Example:

tôi biết là tôi lỡ"
'I know that I am wrong
(I, know, to be, I, to be wrong)'

(see graph 85)

Note however that the extra weak stress may fall on a syllable other than the ones just listed in the presence of the emphatic stress (see following section 1.2.3. lc.).

1.2.3. lb. Modifications of the basic stress patterns through extra-weak stress.
As has been stated previously, (see 1.1.3.) the Basic Rhythm of Vietnamese utterances consists of a retrograde pattern involving two stresses. The strong stress ['] and the weak stress [ˇ]. The basic retrograde pattern can have as a starting point either a strong or weak stress,¹ i.e.,

Pattern 1: ... ˇ' ˇ' ˇ' #
Pattern 2: ... ˇ ˇ' ˇ' #

Rule governing Modification 1.

When the extra weak stress falls upon a syllable which in terms of the Rhythm pattern described, carries weak stress, this weak stress changes to extra weak stress. At the same time, the adjacent syllable nearer to the starting point of the rhythm - which in terms of the rhythm pattern described carries strong stress - has its strong stress replaced by weak stress.

This modified stress pattern can be represented as follows:²

¹For the factors determining the starting point of the rhythm see 1.2.1.2., 1.2.1.3.
²The stress symbols stand for one syllable each.
Basic pattern 6 5 4 3 2 1

Occurrence of [⁰] on syllable 6

Modified pattern

Illustrative Examples:

đào 'nầy ơi 'khá 'bân | vì 'các 'em  |
'tôi  'vê 'dây 'nghĩ 'hề  #
'I am quite busy nowadays, because my sisters are back here for the holidays (nowadays, I, quite, is busy, because, all, younger siblings, I, come back, here, rest, summer)' (see graph 57).

tôi 'có 'chúc 'việc | phải 'lảm 'cho 'rỏi  |
'truởng 'một 'giờ  #
'I have some work to do before 10 o'clock (I, have, a bit, work, must, do, in order to, finish, before ten, hour)' (see graph 46).

1All the stress marks have been added to the sentences given in this section to illustrate the stress phenomena discussed, with the help of a number of practical examples.
there are few Americans who can speak Vietnamese' (there is, few, person, America, who, speak, language, Vietnamese, can).

**Rule governing Modification 2.**

When the extra weak stress falls upon a syllable which in terms of the rhythm described carries strong stress, this strong stress changes to extra weak stress. At the same time, the adjacent syllable nearer to the starting point of the rhythm which in terms of the rhythm pattern described has weak stress, maintains its weak stress.

\[
\begin{array}{cccccc}
6 & 5 & 4 & 3 & 2 & 1 \\
\end{array}
\]

**Basic pattern:**

\[
\begin{array}{ccccccc}
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \# \\
\end{array}
\]

**Occurrence of [·] on syllable 5**

\[
\begin{array}{ccccccc}
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \# \\
\end{array}
\]

**Modified pattern**

Illustrative Examples:

dùng `có trả lời tức khác như "vậy | không có "nên!`

'don't snap back, it shouldn't be done! (don't, affirmative, give back, speech,
immediately, like, that, not, affirmative, be correct)' (see graph 56)

nói gì cho nó vui vậy đó!

1.2.3.2. Modifications caused by the occurrence of the emphatic stress ['].

Placement of the emphatic stress.

The emphatic stress may be placed on any syllable in the pause group to give it extra importance.

Illustrative Examples:

Utterance with regular stress pattern 

Utterance with the emphatic stress placed on roi, (to emphasize the completed action)

tôi đi roi # 'I have already been there' (I, go already)' (see graph 36A)

Utterance with regular stress pattern: 

Utterance with emphasis on dau:

tôi không đi dau # 'I won't go (I, not, go, final particle) (see graph 37A)

Utterance with emphasis on dau:

tôi không đi "dau # 'I won't go'! (I, not, go, final particle (see graph 37B)
không phải ngăn đó ngăn "kia kia!"

'it's not that drawer, it's the other one
(not, is right, drawer, there, drawer, that
side, there)' (see graph 42)

Modifications of the basic stress patterns through
emphatic stress.

**Rule governing Modification**

The syllable which is adjacent to the one carrying
the emphatic stress ["], and is nearer to the starting
point of the retrograde rhythm pattern previously
described (see 1.2.3.1b), always carries an extra weak
stress.

The modification in the basic rhythm pattern could
be represented in the following manner:

```
6 5 4 3 2 1
```

Basic Pattern: 

```
\[ \sim \sim \sim \sim \sim \sim \sim \ sim \#
```

Occurrence of ["]
on Syllable 4:

```
\[ \sim \sim \sim \sim \]
```

Modified Pattern: 

```
\[ \sim \sim \sim \sim \sim \sim \sim \#
```

The above representation shows that, if the emphatic
stress falls on syllable 4, syllable 3 which in the
basic pattern would carry a weak stress [\~], now
carries extra weak stress [\*]. It follows that syllable
2 must carry weak stress [\textsuperscript{\textcircled{w}}] (see previous section 1.2.3.1b).

Illustrative Examples:

"cóc cái bà ở trong trường con | mọi chỗ đứa "
"con đó nghe | "bà tháng hà
'there is a lady in my school, she just had a baby you know... (there is, thing, woman, at, inside, school, I just, have, person, child, there, see)' (see graph 58A)
| bà cho khóc "đã ở | nó muốn "làm gì
'làm #
'the baby is only three months old, she lets him cry as much as he pleases (three, month, only, she, let, cry, 'all he wants' life, he, want, do, anything, do)' (see graph 58B).

nhở này "la thiet a nghe!
'what are you doing? (exasperated)
(boy or girl, is strange, truly, final particles)' (see graph 131)

1.2.4. Overall Intensity Patterns.

1.2.4.0. Introduction.

It has been stated that, in addition to the basic stress patterns, there are overall intensity patterns
which are co-occurring with the stress patterns.

The overall intensity pattern affects not only the absolute intensity level of the syllables, but also the absolute pitch of the tones in the pause group\(^1\).

There are two overall intensity patterns:

the decreasing overall intensity,

the sustained overall intensity.

1.2.4.1. The Decreasing Overall Intensity.

The decreasing overall intensity pattern is characterized by a gradual decrease in the absolute intensity of the strongly stressed syllables in the pause group, and can be graphically represented as follows:

\[ \begin{array}{c}
\text{#} 1 \text{ } 2 \text{ } 3 \text{ } 4 \text{ } 5 \\
\end{array} \]

The decreasing intensity pattern occurs between two absolute final pauses, i.e. /#/.

\(^1\) See Intonation, Chapter 3.

\(^2\) For the explanation of this diagram see Footnote 1, page 114.
Illustrative Examples:

mắt lúc này | em tôi hay đau #
'my brother often gets sick at this time (several, moment, this, younger sibling, I, often, is sick)' (see graph 59)

ông đêm thở qua nhà cho tôi #
'he brought the letter to the house for me (he bring, letter, over, house, for, I)' (see graph 60)

1.2.4.2. The sustained intensity pattern is characterised by a sustained overall intensity of the strongly stressed syllables in the pause group.

It could be represented as follows:

\[ \begin{array}{c}
\text{\textbullet} \\
\text{\textbullet} \\
\text{\textbullet} \\
\end{array} \]

The sustained intensity pattern occurs with pause groups ending in:

a) a tentative pause [ | ] i.e. in phrases and clauses which are embedded in larger grammatical units.

b) In pause groups ending in a final pause
accompanied by Rising or Rising-Falling Intonation, and symbolized with [ || ] and [ ! ].
This is the case with interrogative, imperative, and exclamatory statements.

Illustrative Examples:

- thời giờ của ba | rất "it #
  'I have very little time (time, belong, father, very little)'

- ó nhà còn tiền sữa chưa trả |
  'at home, there is still the money for the milk which hasn't been paid... (at, house, still, money, milk, not yet, pay)' (see graph 62)

- anh không đi hà || 'aren't you going? (you, not, go, yes or no)' (see graph 47)

- anh đi đi! 'you go ahead! (you, go, imperative particle)' (see graph 61)

1.2.4.3. Diminishing Sustained Overall Intensities

A series of pause groups having Sustained Overall
Intensity patterns may occur within two final pauses /#/ . In such cases, the overall intensity level of each succeeding pause group decreases so that the absolute intensity level of the first pause group is the highest, and the absolute intensity level of the last pause group is the lowest.

This can be represented as follows:

```
# #
```

Illustrative Examples:

nay ba ve ba hoi | "ma du roi | ma di ch roi ha |
'when Dad came back a few minutes ago, he asked, "where is Mother, has she gone out shopping?"
(sometime ago, father, arrive, father asks, mother, where, is already, mother, go, market, already, yes or no)' (see graph 64)

c0 khi toi thich coi hat | 'c0 khi toi khong thich #
'sometimes I like to go to the movies, sometimes I don't (sometimes, I, like, see, sing, sometimes, I, not, like)' (see graph 86)

long chay xe mau qua | xe long dung vo cai cay | lam
he drove so fast that his car hit a tree, so he had to stay in hospital for a few weeks (he, run, car, fast, too much, car, he, hit, in, thing, three, make, he, must, go in, hospital, lie down, all, several, weeks)' (see graph 63)

'besides rice and fish, the Vietnamese people also eat a lot of vegetables, pork, beef, chicken and so on (besides, rice, and, fish, person, Vietnamese, still, eat, much kind, vegetable, meat, pig, cow, meat, chicken, etc...)' (see graph 99)
CHAPTER II: TONES AND TONE VARIANTS

2.0. INTRODUCTION

2.0.1. Investigation of Significant Pitch Units and Pitch Fluctuations

Any detailed investigation of the tone system of a tonal language would need to include not only the description of the significant pitch units, i.e. tonemes, but also any pitch fluctuations, and pitch changes which might appear as a result of tone sandhi, tonal morphology, tonal morphophonemics, tonal syntax, stress and intonation. We are concerned at present with the analysis of Vietnamese tones - the lexical prosodemes - and their fluctuations. The conditioning factors governing the pitch contours of tones in one language are not necessarily those influencing the pitch of tones in another.¹


N.C.T. Chang, "Tones and Intonation in the Chengtu Dialect" (Szechuan, China), Phonetica 1958, 2, pp.59-85.

Y.R. Chao, "Tone and Intonation in Chinese", Bulletin of the National Research Institute of History and Philology of the Academia Sinica - IV, 1933, Pt.2, pp.121-34.

E.M. Kroll, "The Supra-Segmental phonemes of Thai (Bangkok Dialect)", Georgetown University, 1956. (Unpublished Master's thesis.)

(continued)
In Vietnamese, the determining factors of tone variations are the following:

- syllable structure,
- tones in juxtaposition,
- stress,
- position of the syllable carrying a given tone in the pause group,
- sentence intonation.

Of these factors, the most important for Vietnamese are stress, position in the pause group of the syllable carrying a given tone and sentence intonation.

This presentation also includes a description of the pitch of tones which are determined by the structure of the syllable, and by the juxtaposition of two or more tones in the same pause group. In Vietnamese, these factors play a minor role in the perturbation of the tones.

2.0.2. Problems Involved in the Investigation of Pitch Phenomena

The phonemic pitch levels and pitch contours of

---

(continued from previous page)

the tones in Vietnamese have long been established. Up to this date however, detailed investigations of the possible modifications of the significant pitch units - i.e. the allotones of the tonemes - have been almost non-existent.

One reason for this is that the analysis of pitch, and any other suprasegmental phenomena is difficult to accomplish as the investigator is confronted with many problems.

a) The first problem concerns the investigator's auditory perception of pitch and pitch changes. On the auditory level, it is often impossible to separate the effect of changes in pitch of a sound from the changes in its quality, its length, and other features.

For instance, although the vowels [i] and [a] may be pronounced with the same pitch, the untrained listener will often perceive the pitch of [i] as being higher than that of [a].

b) A second problem may concern an investigator who is studying his native tongue. In such a case, because of his intuitive familiarity with the language, he would automatically disregard any pitch fluctuations which are not "significant" and would therefore have great difficulty in hearing them.

c) Another problem may be that of pitch memory. It is nearly impossible for the human mind to remember, for contrastive purposes, the exact pitch of a word which has previously appeared in the investigation.

In a tone language, it is the memory of the relative contrastive pitch units that are of greater value, and requires a relatively small memory exercise because it is the contrast and not the absolute pitch that must be remembered. However, the study of the pitch modifications of these significant pitch units demands a memory for the exact absolute pitch of given syllables.

In studying the intonation contours in Vietnamese for instance, it was relatively simple for the author,
after some training, to hear the pitch changes\(^1\) of one particular tone in the utterance. For example, it was clear, from the auditory study, that in certain instances the last tone was rising and in others it was falling, or that in one case the pitch was higher here and lower there. But to contrast the pitch levels of one tone with those of tones which occurred previously in the sentence required more than simple memory.

In spite of these various problems, analysis of suprasegmental phenomena can still fruitfully be done after the investigator has had considerable training directed towards improving his auditory perceptive abilities - the present investigation was done first on the auditory level. From the auditory investigation a number of matters became evident:

a) the various pitch contours - allotones - or the last syllable in the pause group;

b) the various pitch levels of the tones in unemotional and emotional speech.

\(^1\)As it has been previously stated - see the introduction to Part 2 - the tones and tone variations, that is the tonemes and allotones, of Vietnamese are described in terms of pitch levels and pitch contours. In this text "pitch" refers not only to perceived pitch but also corresponds directly to the fundamental frequency of the sound since the study was done not only on the auditory, but also on the acoustic level.
Nevertheless, the correct assessment of the auditory impressions can be made considerably easier with the help of instruments.¹

Various types of equipment have been designed for this purpose.

2.0.3. Instruments used in the analysis of tone variants in Vietnamese

The instruments which were used for this study were the following:

a) the MLR 38 tempo-regulator or slowing down equipment which was used extensively in the auditory investigation.

This equipment however, proved to be insufficient in view of the persisting requirement for pitch memory.

¹ Many instrumental studies of suprasegmental phenomena have been made - some are listed here for reference purposes.

A. Abramson 'Vowels and Tones of Standard Thai' op. cit.
J.M. Cowan 'A Technique for the measurement of Intonation' Archiv für vergleichende Phonetik III, 1939.
K. Pike 'Pitch Accent in Fore' (New Guinea) op. cit.
Furthermore, the results of the preliminary study carried out with the help of this equipment were still based on subjective auditory impressions rather than on objective facts.

The instrument needed was therefore one which could translate these auditory impressions into objective, visually perceptible impressions.

b) The Trans-Pitch Meter and Brush Oscillograph

A Trans-Pitch Meter used in conjunction with the Brush 2300 Incandescent Light Beam Oscillograph served the purpose of translating the auditory impressions into objective visual impressions adequately. Since the description of these pieces of equipment have been presented previously in 0.2.2.2., they will not be described again here.

The experimental procedures - recording, materials for investigation, measurements and interpretation of the acoustic signals provided by the equipments mentioned have also been previously described (see the introduction to part 2).

The results arising from the acoustic study - results which were not noticeable in the auditory approach - were the following:
a) The allotonic pitch contours of the tonemes in individual syllables which were caused by the initial or final consonants of the syllable, for example, the initial rise in pitch of the tone of a syllable which starts with a voiced consonant, and the initial drop in pitch of the tone of a syllable which starts with a voiceless consonant;

b) The gradual decrease or the sustaining of the pitch level of the tones in the same pause group.

2.0.4. Basic Pitch Contours

For the description of the various pitch contours of the tones, it was necessary to choose one pitch contour for each tone as a central reference point so that contrastive statements could be made. The criterion for choosing the pitch contour to serve as the central reference pitch contour was the one suggested by Professor Pike in his book "Tone Languages"¹, i.e. that of "predictability in description". By this is meant that for the convenience of description, the pitch contour chosen as the central reference point should be one which would easily allow for the statement of rules predicting the tones

¹K.L. Pike "Tone Languages", University of Michigan Press, Ann Arbor, Michigan, 1948
which are perturbed elsewhere. The pitch contour chosen to serve as a central reference pitch contour for the Vietnamese tones will be termed from now on "basic pitch contour of tones" - the term "basic" therefore refers here to the central reference point.

2.0.5. Order of Presentation

The Tone and Tone variants - tonemes and allotones - of Vietnamese are described in the following order:

1. Tones.
   a) The five significant relative pitch units.
   b) Choice of a basic pitch contour for each tone.

2. Tone Variants - allotones - as determined by:
   a) Syllable structure
   b) Tones in juxtaposition
   c) Stress
   d) Position in the pause group, of a syllable carrying a given tone.

The allotones described are those occurring in the following utterances:

   a) one-syllable utterances, i.e. Tones in isolation
   b) two-syllable utterances, i.e. Tones in pairs
c) three-syllable utterances
d) longer utterances.

2.1. Tones.

2.1.0. The Significant Pitch Units.

2.1.0.1. Traditional Description.

Traditionally, Southern Vietnamese has been described as having five distinctive tones involving:

- 3 pitch levels - high, mid, low, and
- 2 pitch contours - level and rising.

The five tones mentioned are:

1. High-level (unmarked in the orthography)
2. Low-level
c. High-rising
d. Mid-rising
5. Low-rising
d

According to L.C. Thompson\(^1\), the basic phonetic characteristics of the tones are:

1. /HL/ High and level
2. // low trailing
3. /c/ high, rising sharply to the top of the normal voice range

\(^1\)L.C. Thompson *A Vietnamese Grammar*, op. cit.
4. /~/ long rise beginning low mid and rising sometimes as high as /\ high rising
5. /./ very low, dipping slightly and rising. With syllables ending in -p, -t, -k, it is level.

The tones thus described can be graphically represented in the following way:

```
600
450
350
250
150

/HL/ /~/ /~/ /~\ /./
```

Instrumental investigations have given somewhat different results.

The most striking difference lies in the pitch contours of two tones:

a) the mid-rising tone /~/

b) the low-rising tone /./

These tones have been found to have not only a rising _______

---

1 On this chart and on similar charts following in the text the upper and lower lines represent the upper and lower limits of the normal speaking voice. The lines in between are drawn to provide a reference grid. The numbers on the left give the approximate frequencies in cycles per second. The absolute fundamental frequency figures can be observed in the illustrative graphs which are attached as an appendix to the thesis.
contour or in the case of /./ a very low slightly dipping and rising contour, but a falling-rising contour.

The basic phonetic characteristics of these two tones should therefore be described as:

/~/ mid falling to low and rising to high;
/./ mid falling to low and rising to mid.

However, in syllables ending in /-p, -t, -k/ it is only falling.

2.1.0.2. Basic Pitch Contours of the Tones

Instrumental investigations show the five tones of Vietnamese to have the following basic phonetic characteristics:

/HL/ mid and level
/\/ Low and level
// mid rising sharply to high
/~ mid falling to low and rising to high
/./ mid falling to low and rising to mid, or only falling to low.

The Basic Pitch Contours of the Vietnamese tones thus described could be represented as follows:

---

1 For the choice of basic pitch contours see: Part II, 2.0.4.
For the present description, the pitch contours of the tones as described above have been chosen as basic - or central - reference pitch contours. These pitch contours occur in environments showing the following three characteristics:

a) the tone occurs in citation forms which are not at the beginning or at the end of an intonational contour or sequence
b) the tone carries strong stress
c) it occurs in syllables beginning with a vowel and ending with a vowel or semi-vowel.

Note: Although phonetic descriptions of the tones in this study differ from the traditional ones, the traditional names given to the five tones have been retained.

2.2. Tone Variants or Allotones.

2.2.1. Tones in Isolation: Metatone

2.2.1.0. Introduction.

1 "Metatone" refers to the realisation of a toneme pronounced in isolation.
In the following section, the different pitch patterns of each of the five tones will be described in the light of two conditioning factors:

a) the segmental shape of the syllables in which the tones occur

b) the position of the syllable in the pause group.

The conditioning factor of stress is not significant here, as all words occurring in isolation carry strong stress.

2.2.1.1.1 Tone patterns conditioned by the segmental shape of the syllables.

2.2.1.1.1.1 Tone patterns in syllables consisting of an initial voiced consonant and a final vowel \((C_{vd})V\). All tones occurring in \((C_{vd})V\) syllables start with a short rise to their basic pitch level.

The tones are represented as follows:

\[
\begin{array}{cccccc}
600 & \_ & \_ & \_ & \_ & \_ \\
450 & \_ & \_ & \_ & \_ & \_ \\
350 & \_ & \_ & \_ & \_ & \_ \\
250 & \_ & \_ & \_ & \_ & \_ \\
150 & \_ & \_ & \_ & \_ & \_ \\
\end{array}
\]

\( /HL/\  /\ \ /\ \ /\ \ /\ \ /\ \) 

\[\text{The expression 'Tone patterns' is used here instead of 'The pitch patterns of the tones'.}\]
Illustrative Examples:

/HL/ ba 'father, three' (see graph 65A)
/~/ ba 'lady' (see graph 65B)
/~/ ba 'she (lady)' (see graph 65C)
/~/ ba 'chief' (see graph 65D)
/~/ ba 'without choosing' (see graph 65E)

(See also graphs 8A, -B, -C, -D, -E, 3A, -B, -C, -D, -E)

2.2.1.1.2. Tone patterns in syllables with an initial voiceless consonant and a final vowel:

\[ C_{vls} V \]

In such environments, the level tones and the High rising tone, /HL/ /~/ /~/, begin with a short drop to their basic pitch levels.

The mid rising and low rising tones, /~/ /~/, retain their basic patterns.

Illustrative Examples:

ta 'we' (inclusive) see graph 66A

tà 'panel' (of a dress) (see graph 66B)
2.2.1.1.3. Tones in syllables ending in Nasal Consonant\(^1\):

\[(C) VC_n\]

In syllables with a final nasal consonant, level tones \(-/HL/ /\sim\) rise slightly at their end points whereas in syllables with a final vowel they tend to stay level. Rising tones \(/\wedge/ /\sim/ /\dot{}/ \) rise slightly higher than syllables ending in a vowel.

![Graph showing pitch fluctuations for different tones]

**Illustrative Examples:**

- can 'courage' (see graph 67A)
- cang 'pincers of a crab' (see graph 67B)
- can 'handle (of a knife)' (see graph 67C)
- cang 'port, harbour' (see graph 67D)
- can 'empty' (see graph 67E)

\(^1\)Since the pitch fluctuations of the tones in syllables with consonant onsets have been described, it is not necessary to describe them again here. Thus in \((C)VC_n\), (C) stands for either a voiced or a voiceless consonant.
2.2.1.1.4. Tones in syllables with a final stop.

(C) V C -p-t-k

Only two tones occur in such syllables:

- the high rising tone //
- the low rising tone ./.

In such environments the high rising tone does not rise as high as normally\(^1\).

The low rising tone has a very short rise or no rise at all\(^2\).

Illustrative Examples:

// mác 'cool' (see graph 68A)

./. mac 'ruined' (see graph 68B)

// mác 'eyes' (see graph 69A)

./. mät 'face' (see graph 69B)

\(^1\)The term 'Normal' in this section refers to the basic pitch contour.

\(^2\)In the majority of instances,
  a) there is a rise if the vowel nucleus is long - phonetically long vowel nuclei are the vowels [ə] [iː] [ʊ] and diphthongs [ai] [ia] etc. (see Phonology Part I. Chapter 2) (graph 68 A,B).
  b) There is no rise if the vowel nucleus is short - short vowel nuclei are [i e ɛ a ʌ u o] (see graph 69).
2.2.1.2. Tone patterns conditioned by the position of the metatone in the citation forms.

2.2.1.2.0. General Remarks.

The metatones occurring in final positions in the pause group, i.e. at the end of a citation form, have an absolute pitch level which is relatively lower than the basic pitch, and a falling pitch contour.

Metatones which occur initially and medially in the pause group i.e. initially or medially in the intonational contour of citation forms, retain their basic pitch, and are manifested by a rising pitch contour, i.e., the level tones rise slightly towards the end while the rising tones have a normal rise.

2.2.1.2.1. The High Level Tone

In initial and medial position in the intonation contour of a citation form, the High Level Tone starts level and rises slightly towards the end.

In final position, it begins slightly lower and falls towards the end.

In these positions, the High Level tone can be represented as follows:

---

1 The metatone occurring in final position in the pause group refers to the realisation of the toneme at the end of a citation form.
2.2.1.2.2. The Low Level Tone /\H/.

In initial and medial position, the Low Level tone tends to rise slightly at the end. In final position, it starts slightly lower and tends to fall from beginning to end.

1The low level tone, in addition to being lower in pitch than the high level tone, is also a less dynamic tone, i.e. it is lax while the high level tone is tense. This characteristic difference between the level tones is manifested in the oscillographic tracings by a wavy line for the high level tone, and by a comparatively straighter line for the low level tone - (see Phonology 1.3.3. for definition of tense and lax Tones) (see Graphs 8A - 8C, 3A - 3B).
2.2.1.2.3. The High Rising Tone /~/.

In initial and medial position, the high rising tone starts at a higher-mid pitch level, rises first slightly and then sharply to a high level. In final position, the rise is shorter and flatter.

<table>
<thead>
<tr>
<th>Medial</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

Illustrative Examples:
\[ \hat{d}o \] 'to bet' (see graph 8D)
\[ \hat{l}a \] 'leaf' (see graph 3C)

2.2.1.2.4. The Mid Rising Tone /~/

The Mid Rising tone is unique in that it occurs most frequently accompanied by a glottal stop. The glottal stop manifests itself after the initial fall.

The Mid Rising tone is also frequently accompanied by a pharyngeal constriction\(^1\).

In initial and medial position in the pause group the mid rising tone shows its usual fall and rise, in final position the rise is not as high.

---

\(^1\) These features manifest themselves on the oscillographic traces as 'upward jumps'. (See also Phonology section 1.3.3.).
Illustrative Examples:

<table>
<thead>
<tr>
<th>Medial</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

\[ /\flat / \]

 Illustrative Examples:

\[ \ddot{d}\text{" to throw away"} \quad \text{ (see graph 8E)} \]

\[ \acute{l}\text{" pure"} \quad \text{ (see graph 3D)} \]

2.2.1.2.5. The Low Rising tone /\flat /\.

As with the Mid Rising tone, the fall and rise of the Low Rising tone is normal in initial and medial position,

in final position the rise is shorter.

<table>
<thead>
<tr>
<th>Medial</th>
<th>Final</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

Illustrative Examples:

\[ \ddot{d}\text{" degree"} \quad \text{ (see graph 8B)} \]

\[ \acute{l}\text{" strange"} \quad \text{ (see graph 3E)} \]

2.2.1.2.6. The Summary tone chart A which follows, represents the different allotones described in this section.

In this chart and the following tone charts, the basic pitch contour of each tone is given first, then the allotonic variations are presented.
The characteristics of the allotonic variants shown on Chart A are summarised here:

1) Tones in isolation or metatones occurring in citation forms which are not at the beginning or at the end of an intonational contour or sequence.¹

   Tones occurring in this environment tend to have a rising contour, i.e., level tones rise at their end point (/HL/ and /'/).

   Rising tones have a normal rise (/'/, /~/ and /\·/).

2) Tones in isolation (metatone) occurring in final position i.e., in citation forms which are at the end of an intonational contour or sequence.

   Tones occurring in this environment tend,
   a) to be lower in pitch than those occurring medially in the utterance;
   b) to have a falling contour, i.e., level tones fall towards the end, rising tones do not rise as high as usual.

3) Tones occurring in syllables which contain a voiced consonant onset generally start with a short rise to their basic pitch level.

¹Each syllable carrying a given tone constitutes a pause group.
5. Tones occurring in syllables with a nasal consonant coda rise higher at the end than in other syllables.

6. Tones occurring in syllables with a final stop consonants have
a) a short rise(\'/\'  \'/\') or
b) a fall(\'/\').
### TONES IN ISOLATION

<table>
<thead>
<tr>
<th>TONES</th>
<th>BASIC PITCH CONTOURS</th>
<th>In Utterance Medial Position</th>
<th>Utterance Final Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Syllable Pattern: C V</td>
<td>(C) V C</td>
<td>(C) V (C)</td>
</tr>
<tr>
<td>HIGH LEVEL /H L/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOW LEVEL / ' ' /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIGH RISING / ' ' /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MID RISING / ' ' /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOW RISING / . . /</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CHART A
2.2.2. Tones in Pairs.

2.2.2.0. Introduction.

In the previous section the pitch contours of the tones were described in the light of the conditioning factor of the position of the tone in utterance. In this section, an additional conditioning factor is considered; that of the tones occurring in juxtaposition in the pause group.

The tone pertubations are presented first in non-identical tone pairs, then in identical tone pairs.

The determining factors of stress and position in the utterance are also considered.

2.2.2.1. Tone conditioned by another tone occurring in juxtaposition in the pause group.¹

¹Tone Variations caused by tones occurring in juxtaposition in the same pause group is a regular feature of many tone languages. The following example is taken from Mandarin (see Y.R. Chao Mandarin Primer) the words /i/ and /bu/ 'one' and 'no' (a) which in isolation or in Phrase final position have tones i and 4 respectively, i.e. /i/ is pronounced with tone 1, /bu/ with tone 4, and have a special tonal behaviour in two syllable utterances - the rules are as follows:

(b) /i/ and /bu/ are pronounced with tone 4 if they are followed by tones 1, 2, 3, i.e.

\[
\begin{align*}
\end{align*}
\]

(c) /i/ and /bu/ are pronounced with tone 2 if followed by tone 1, i.e. 

\[
/i/ /bu/ + 4 \rightarrow 2 + 4
\]
2.2.2.1. Variation in Pitch Contours of the tones in non-identical tone pairs.  

In Non-identical tone pairs, only the tone which occur in syllables beginning with a voiced consonant or /h/ are affected.

2.2.2.1.1a. In a pair consisting of a low tone followed by a higher tone, i.e. 

\[
\begin{array}{c}
\text{\textbackslash '} / \text{HL/} / \text{'}/ + ( / \text{'}/ \\
\prime / \text{~}/ \\
\end{array}
\]

the second tone of the pair, i.e. /HL/ /\text{'}/ \\
/\text{~}/ starts as low as the first tone i.e. as /\text{'}/, and rises to its normal pitch level.

The second tones of the above mentioned tone pairs can be represented as follows:

The influence of a tone upon another is largely a progressive one in Vietnamese, i.e. the contour of a tone depends on the tone which precedes it in the same pause group.
Illustrative Examples:

*binh-minh* 'down' (see graph 70)

*hàng-hoa* 'merchandise'

2.2.2.1.lb.

In a pair consisting of a high tone followed by a lower tone such as:

a) `/~/ + (/HL/`  
   `/~/`  
   `/./`

b) `/HL/ + `/~/`

c) `/~/ + (/`~/`
   `/./`

the second tone of the pair starts high and drops to its basic pitch level.

Illustrative Examples:

*te-nhi* 'subtle, delicate' (see graph 71)

*uồng roi* '(he) already drunk (it)' (see graph 12)

*nga nay* 'this way' (see graph 72)
2.2.2.1.2. Variations in Pitch Contours and Tones in Identical Tone Pairs.

In Identical Tone Pairs, only the High Rising Tone /*/* shows any evidence of tone perturbation.

In a pair composed of two high rising tones, the starting pitch of the second tone is higher than the first. In addition the second tone has a higher rise than the first, provided that the syllable on which it occurs carries strong stress, and is in utterance medial position.

Illustrative Examples:

lọc cộc (see graph 9)
'clicking sound of wooden sandals'

miếng miếng (see graph 18)
'a bit of rice noodles'

2.2.2.2. Tone variants conditioned by Stress and the Position of the Syllable in the utterance.

2.2.2.2.0. The tone variants in this section are presented as follows:

---

1 BC stands for Basic Contour
All for Allotone
1) Tones in Final position
(a) with strong stress [']
(b) with weak stress ["]

2) Tones in Medial position
a) with strong stress [']
b) with weak stress ["]

2.2.2.2.1. Tone patterns in utterance Final Position.

2.2.2.2.1a. With syllables carrying strong stress ['].

In syllables carrying strong stress and occurring in utterance final position, all tones have a falling contour. The pitch level of the last tone is slightly lower than its basic contour.

The phonetic characteristics of the tones are as follows:

a) level tones start level and fall towards the end
b) rising tones do not rise as high as usually.
Illustrative Examples:
The examples which follow are examples of two syllables carrying identical tones and having a stress pattern which, in terms of the retrograde rhythm, begins with a strong stress, i.e.

/HL/  coincidence

/"/ disorderly (see graph 73)'

/"/ a bit of rice noodles' (see graph 18)

/~/ she opens' (see graph 23)

/~/ the old man waits'

2.2.2.2.1b. Tones in Syllables occurring in final position and carrying weak stress.
The tone of the last syllable in the utterance which carries a weak stress has

a) a falling contour

b) a pitch level slightly lower than the pitch level of the tones in syllables carrying strong stress.
The pitch contours of the various tones are as follows:

level tones tend to fall
rising tones have a shorter and flatter rise than in syllables with strong stress.
2.2.2.2.2. Tone patterns in utterance Medial Position.

2.2.2.2.2a. With syllables carrying strong stress.

In strongly stressed syllables occurring in medial position all tones tend to have a rising contour, i.e.
level tones tend to rise towards the end
rising tones have a normal rise

Illustrative Examples:

ání-chợ 'unreliable'  (see graph 13)
châm-châm 'slowly'  (see graph 11)
2.2.2.2b. Tones in syllables occurring in medial position and carrying weak stress.

In medial position, tones of syllables with weak stress show the following phonetic characteristics:

- Level tones tend to stay level
- Rising tones do not rise as high as with strongly stressed syllables.

### Medial Position

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HL</td>
<td>/\</td>
<td>/'</td>
<td>/-</td>
<td>/ .</td>
</tr>
</tbody>
</table>

**Illustrative Examples:**

- **lòc-cóc** 'clicking sound of wooden sandals'  
  (see graph 9)
- **lôi-thôi** 'unreliable'  
  (see graph 13)

2.2.2.3. A summary chart of Allotonic Variants in Tone pairs, i.e. utterances of two syllables is presented in Chart B.

The chart gives the following tone features, and summaries of their characteristics:

1. Tone variants caused by the position of the tone in the syllable
# Tones in Pairs

<table>
<thead>
<tr>
<th>Tones</th>
<th>BASIC PITCH CONTOURS</th>
<th>In Utterance Medial Position</th>
<th>Identical Tones</th>
<th>Utterance Final Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH LEVEL /H L/</td>
<td>/H L/</td>
<td>/' /</td>
<td>/~ /</td>
<td>/ . /</td>
</tr>
<tr>
<td>LOW LEVEL / ' /</td>
<td>/ ' /</td>
<td>/~ /</td>
<td>/ . /</td>
<td></td>
</tr>
<tr>
<td>HIGH RISING / ' /</td>
<td>/ ' /</td>
<td>/~ /</td>
<td>/ . /</td>
<td>/ . /</td>
</tr>
<tr>
<td>MID RISING / ' /</td>
<td>/ ' /</td>
<td>/~ /</td>
<td>/ . /</td>
<td>/ . /</td>
</tr>
<tr>
<td>LOW RISING / . /</td>
<td>/ . /</td>
<td>/~ /</td>
<td>/ . /</td>
<td>/ . /</td>
</tr>
</tbody>
</table>

CHART B
a) Tones in Medial position have a relatively higher pitch than those which occur in final position.

b) Tones in Final position have a falling pitch contour while those occurring in medial position have a "rising contour".

2. Tone Variants caused by Tone Variants caused by Tones occurring in Juxtaposition in the Pause Group.

3. Tone Variants caused by stress show the following features:

a) the tone of a syllable which carries strong stress is generally higher in pitch than the tone of a syllable carrying weak stress.

b) The tone of a syllable with strong stress has usually a "rising contour" whereas the tone of a syllable with weak stress has a more "levelled" contour.

2.2.3. Tone Variants in three-syllable utterances.

2.2.3.0. Introduction.

As in shorter utterances, the allotonic variations in the pitch contours of the tones depend on the conditioning factors mentioned earlier. They are:
a) Tones Occurring in Juxtaposition

b) Stress

c) position in the utterance

Tone variants in three-syllable utterances show patterns identical to those described for two-syllable utterances.

In order to avoid repetitions, the following section describes in detail only those perturbations in the tone patterns which have not previously been analysed. These are:

a) the High Rising tone in a pause group consisting of three syllables all of which carry High Rising Tones only,

b) tone patterns of syllables carrying a 'reduced' weak stress [~] (see Stress),

c) tone patterns of syllables carrying emphatic stress ["].

For the tone patterns which were fully described in 2.2.2., only graphic representations are given.

2.2.3.1. The High Rising tone.

In a pause group consisting of a series of High Rising tones, each succeeding tone starts at a higher pitch level.

1 It is not necessary to mention again the conditioning factor of syllable shape.
than the preceding tone, so that the last one of the group has the highest starting pitch.\footnote{1}

\[
\begin{array}{c|cccc}
\hline
& 600 & 450 & 350 & 250 & 150 \\
\hline
/\ & \ & \ & \ & \ \\
\hline
\end{array}
\]

Illustrative Examples:

chúng nó đánh # 'they are beating' (they beat) (see graph 31)
chúng nó té # 'they fall' (they, fall)

2.2.3.2. Tone patterns of syllables carrying a reduced or weakened weak stress [\footnote{2}]

It has been previously observed that, in the presence of a weak stress, the pitch level of the tones are lower than the basic pitch levels.

The reduced weak stress has a similar influence on the tones, i.e. their pitch levels are lower than normally\footnote{2}

\footnote{1}This characteristic feature of the High Rising Tone is also present in longer pause groups:

Illustrations:

nó muốn bán giấy # 'he wants to sell paper (he, want sell, paper) (see graph 75)

\footnote{2}i.e. relatively lower than their basic pitch levels.
and lower than the pitch levels of weakly stressed syllables.

The phonetic characteristics of each tone are as follows:

level tones have a lower pitch than usually and tend to fall continuously (with weak stress they remain level).

The pitch contour of the level tones could be represented in the following manner:

**Illustrative Examples:**

- em `tôi `cây # 'my sister is here (younger sibling, I, is here) (see graph 33)
- cây `nay xanh # 'this tree is green (tree, this, is green)
The High Rising tone /~/ has a higher starting pitch than usually. The rise, however, is shorter and flatter.

Illustrative Examples:
chúng >nó danh # 'they are beating (they beat) (see graph 31)

The Mid Rising and Low Rising tones /~/, /~/ have a shorter rise than usually.

Illustrative Example:
tớí >sẽ đi # 'I, will, go)' (see graph 34A)

2.2.3.3. Tone patterns conditioned by the emphatic stress ["].
Because of the special characteristics of the emphatic
stress it has been considered preferable to discuss its influence on tones in a separate section to point out its special nature (see section 2.1.5)

2.2.3.4. Tone in Juxtaposition in three-syllable utterances

As has been mentioned, the tones occurring in juxtaposition in three-syllable utterances are identical with the tone variants of the tones occurring in juxtaposition in tone pairs. Therefore, the present section will only present:

a) a summary rule of tone combinations
b) the graphic representation of the tones which can be perturbed
c) examples illustrating these points.¹

2.2.3.4.1. Tone Variants of Tones Occurring in Juxtaposition in non-identical tone groups.

2.2.3.4.1a. Combinations of a High tone and a Lower tone

Any lower tone preceded by a higher tone is perturbed in that the lower tone falls from the higher tone to its basic pitch contour.

¹A detailed analysis has been given in Part II, section 2.2.2.1.
1) Combination of High Level and Low Level Tone.

Illustrative Example:

nô mua rồi # 'he has already bought (he, buy, already)' (see graph 25)

2) Combination of a High Rising or Mid Rising tone and a Low Level tone.

Illustrative Example:

ở ngoài này # 'out here (at, outside, here)' (see graph 76)

3) Combination of a Mid Rising tone and a Low Rising tone
Illustrative Example:

nọ tro' lai # 'he comes back (he, come back, come back) (see graph 80)

2.2.3.4.1b. Combination of a Low tone and a Higher tone.

Any higher tone preceded by a lower tone is perturbed in that the higher tone starts from the level of the lower tone and rises to its basic level.

Combination of a low level tone and a high rising tone

<table>
<thead>
<tr>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

Illustrative Example:

ba bà nói # 'three ladies said (three, lady, speak)

2.2.3.4.2: Tone Variants of Tones Occurring in Juxtaposition in Identical tone groups

In identical tone groups, pertubation occurs only with combinations of High Rising tones. It has been mentioned (see 2.2.3.1.) that in this environment, each following High Rising tone is perturbed in that its starting pitch is always higher than the starting pitch of the preceding tone.
Illustrative Examples:

chúng nó đánh # 'they are beating' (they beat)' (see graph 31)

2.2.3.5. Tone patterns conditioned by Stress and the Position of the syllable in the utterance.

The tone perturbations conditioned by stress and the position of the syllable in the utterance are similar to those already described for tones occurring in the tone pairs (see 2.2.2.2.)

This section will present:
1) summary statements of the tone perturbations
2) graphic representations
3) illustrative examples.

2.2.3.5.1. Tone patterns in utterance Final position.

In utterance final position, all tones have a 'falling' Contour. The characteristics of the 'fall' are determined by the degree of stress present. With syllables carrying weak stress [ˌ], tones tend to fall lower than with strong stress [ˈ].
2.2.3.5.1a. Tones in utterance Final position with syllables carrying strong stress[

1) The High Level tone

<table>
<thead>
<tr>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

Illustrative Example:
tôi ăn cơm # 'I am eating (a meal)' (I, eat, rice) (see graph 77)

2) The Low Level tone

<table>
<thead>
<tr>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

Illustrative Examples:
tôi đi về # 'I am going home (I, go, goback)' see graph 35)
chúng nó thế # 'they swear' (they, swear)

3) The High Rising tone

<table>
<thead>
<tr>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

Illustrative Examples:
ban báo-chí # 'newspaper syndicate (committee, newspaper)' (see graph 28)
chúng nó đánh # 'they are beating' (they, beat)' (see graph 31)
4) The Mid Rising tone

Illustrative Example:
chúng nó ngủ # 'they are sleeping' (they sleep) (see graph 32)

5) Low Rising tone

Illustrative Examples:
ño muốn chạy # 'he wants to run (he, want, run)' (see graph 84)
ño trở lại # 'he comes back (he, come back, come back)' (see graph 80)

2.2.3.5.1b. Tones in Final position with syllables carrying weak stress.

1) High Level tone
Illustrative Example:

ông giỏi hơn # 'he is better' (he, is efficient, more)' (see graph 26)

2) Low Level tone

```
<table>
<thead>
<tr>
<th></th>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
<td></td>
</tr>
<tr>
<td></td>
<td>450</td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td></td>
</tr>
<tr>
<td></td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>
```

Illustrative Example:

mua rồi # 'he has already bought it (he, buy, already)' (see graph 25)

3) High Rising tone

```
<table>
<thead>
<tr>
<th></th>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
<td></td>
</tr>
<tr>
<td></td>
<td>450</td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td></td>
</tr>
<tr>
<td></td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>
```

Illustrative Example:

đó mát làm # 'it's very cool there (at, there, is cool, very)' (see graph 38A)

4) Mid Rising tone

```
<table>
<thead>
<tr>
<th></th>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
<td></td>
</tr>
<tr>
<td></td>
<td>450</td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td></td>
</tr>
<tr>
<td></td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>
```

Illustrative Example:

đi chơi nữa # '(he) go out again'
5) Low Rising tone

Illustrative Example:
(tôi) không đi được # 'I can't go (I, not, be able to)' (see graph 81)

2.2.3.5.2. Tone patterns in utterance Medial position.

In Medial position, tones tend to have

a) a rising contour with syllables carrying strong stress

b) a more levelled contour with syllables carrying weak stress.

2.2.3.5.2a. Tones in Medial position with syllables carrying strong stress.

1) High Level tone

Illustrative Example:
Tan-Tay-Lan  'New Zealand'  see graph 27)
2) Low Level tone

Illustrative Example:

`bà về rồi # 'she is back (she, come back, already)'`

3) High Rising tone

Illustrative Example:

`(nó) muốn bán giấy # 'he wants to sell paper (he, want, sell, paper)'`

(see graph 75)

4) Mid Rising tone

Illustrative Example:

`hai bữa nữa # 'two more days (two, day, more)'

5) Low Rising tone
Illustrative Example:

Ha-Nghi - Viên 'Lower House (low, parliament)'
(see graph 82)

2.2.3.5.2b. Tones in Medial position with syllables carrying weak stress.

1) High Level tone

<table>
<thead>
<tr>
<th></th>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>600</td>
</tr>
<tr>
<td>/HL/</td>
<td></td>
<td>450</td>
</tr>
<tr>
<td></td>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

Illustrative Example:

tôi ra sân # 'I am going in the court-yard
(I, go out, courtyard)'
(see graph 83)

2) Low Level tone

<table>
<thead>
<tr>
<th></th>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>600</td>
</tr>
<tr>
<td></td>
<td></td>
<td>450</td>
</tr>
<tr>
<td>|</td>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>

Illustrative Example:

bà về nhà # 'she goes home (she come back)

3) High Rising tone

<table>
<thead>
<tr>
<th></th>
<th>BC</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>600</td>
</tr>
<tr>
<td>|</td>
<td></td>
<td>450</td>
</tr>
<tr>
<td></td>
<td></td>
<td>350</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150</td>
</tr>
</tbody>
</table>
Illustrative Example:

nó muốn chạy # 'he wants to run (he, want, run)' (see graph 84)

4) Mid Rising tone

Illustrative Example:

toị sẽ đi # 'I will go (I, will, go)' (see graph 34A)

5) Low Rising tone

Illustrative Example:

Hạ Nghi - Viên # 'Lower House (low parliament)' (see graph 82)

2.2.4. Tone Variants in utterances of more than three syllables.

2.2.4.0. Introduction.

The tone perturbations described for two-and three-syllable utterances remain identical for longer utterances (see 2.2.2., 2.2.3). In longer utterances however, an
additional conditioning factor is present - that of the extra weak stress ["].

2.2.4.1. Tone patterns conditioned by the extra weak stress ["].

Because of the influence of the extra weak stress on the tones causes a wide range of phonetic dissimilarities, no summarizing general statement can be given. The modifications of the pitch contours of the tones are presented under three headings:

1) perturbations of the High and Low Level tones, /HL/ /˘/
2) perturbations of the High Rising tone /'/
3) perturbations of the Mid and Low Rising tones /~'/ /'/.

2.2.4.1.1. The Level tones /HL/ and /'/ instead of having a higher-mid pitch and a level contour, are manifested as a sharp rapid fall.

They can fall to their basic pitch level or to a lower pitch.
Illustrative Examples:

ông đềm thọ qua đây cho tôi #
'he brings the letter over here for me

(he, bring, letter, over, here, for, me)  
(see graph 60)

dạo này tôi khá bận vì các em tôi về đây nghĩ hè #
'nowadays I am quite busy because my sisters are here for the holidays (nowadays, I, quite, is busy, because, many, younger, sibling, I, come back, here, rest, summer).

(see graph 57)

tôi biết là tôi lỗi # I know that I am wrong
(I, know, is, I, is wrong)'  
(see graph 85)

2.2.4.1.2. The High Rising tone occurring with a syllable carrying an extra weak [°] stress has two variants:
a) if it is immediately preceded by a High Rising or a Mid Rising tone, it starts at a much higher pitch than normally and consists of a very short flat rise. At times, it is almost level.

b) In all other environments, it consists of a very short flat rise.

Illustrative Examples:

chúng "nó đi # 'they are going out (they, go)' (see graph 30)
"có khi tôi thích coi hát | "có khi tôi không thích #
'sometimes I like to go to the movies, sometimes I don't (sometimes I, like, see, sing, sometimes, I, not, like)' (see graph 86)

2.2.4.1.3. The Mid Rising and Low Rising tones ~/~ /~/

a) have a higher starting pitch than usual,
b) fall to a higher circumflection point than usual,
c) have a very short rise.
Illustrative Examples:

ô£ dây mét làm  # 'it's very cool here (at, there, is cool, very)'
(see graph 38A)
tối có chúc việc  "phái làm cho rồi
trước muội giờ" # 'I have some work to do before 10 o'clock (I, have, little, work, must, do, until, is finished, before, ten, hour)
(see graph 46)

2.2.4.2. Tone patterns conditioned by the emphatic stress ["]

The emphatic stress modifies the basic pitch contour of the tones in two ways:

a) the pitch level of the tones is higher than in syllables with strong stress
b) the entire pitch range of each of the tones
is wider than in syllables with strong stress,
i.e. the rise and fall of each of the tones
is more extensive than usual.

Following are examples of syllables carrying emphatic stress.

2.2.4.2.1. The High level tone.

The High Level tone shows the following characteristics:

a) in Medial position, it is higher than usual
and tends to rise

b) in Final position it tends to have a sharp rise and fall towards the end.

Illustrative Examples:

..."ba "tháng hà 'three months only
(three, month, final particle)' (see graph 58A)

...không có "nên! 'it is not done (not,
affirmative, should do)
(see graph 56).
2.2.4.2.2. The Low Level tone /\'/

The Low Level tone displays the same characteristics as the High Level tone -

Illustrative Examples:

tôi qua đây "hoài" 'I come here all the time
(I, go over, here, always) (see graph 115)
mua "rôi" .... 'it's already bought! (buy, already)' (see graph 87)
nó muốn "làm gì làm # 'he can do whatever he wants to do (he, want, do anything, do)' (see graph 58B)
tôi đi "rôi" # 'I have gone already (I, go, already)' (see graph 36B)
(noí "rôi! 'I have already told (him)! (speak, already)' (see graph 88).
2.2.4.2.3. The High Rising tone /`.\.

The High Rising tone has a higher and longer rise than usual.

Illustrative Examples:

"thây em`không! 'goodness! (see, tomb, not)' (see graph 138) 

hai ba người "nói! 'too many people are telling me! (protesting that too many people are criticizing).
(two, three, persons, speak) (see graph 133)

2.2.4.2.4. The Mid Rising and Low Rising tones /~/, /./.

In syllables with emphatic stress, the Mid Rising and Low Rising tones,

a) rise higher than usual
b) have a higher circumflection point
Illustrative Examples:

mua rồi / còn gì "nứa! 'it's already bought, what else do you want! (buy, already, is still, anything, still)" (see graph 87)

không "phải! 'it's not right! (not is right) (see graph 90)

bà cho khóc "đã ở đó! 'she lets him cry all he wants (she, give, cry, to his contentment, life)'
(see graph 58B first part)

Illustrative Examples:

nhồ này "là 'thiệt à nghe! 'you are really strange! (child, this, is, is strange, true, final particles)' (see graph 131)

dùng cố trả lời tức-khác như "vậy don't snap back like that... (don't, affirmative, answer, speech, immediately, like that)" (see graph 56)
2.2.4.3. Summary

Tone Chart C which follows presents the various allo-tonic patterns in three-syllable utterances and in longer utterances as described above. The tone variants shown are those determined by stress and position of the syllable in the utterance.

Characteristic features of the tones can be summarized as follows:

1) Tones of syllables carrying strong stress ['] tend to be higher in pitch than those with weak stress ["].
2) Tones co-occurring with reduced weak stress ["] and the extra weak stress ['"] tend to have a short and 'falling' contour.
3) Tones co-occurring with the emphatic stress ["] have a rising contour, and are usually higher in pitch than tones with strong stress ['].
4) In utterance Medial position tones tend to have a 'rising Contour' if the syllable in which they occur carries strong stress, and a more 'levelled contour' if the syllable carries weak stress.
5) In utterance Final position, the tones have a 'falling' contour, and have a pitch slightly lower than in medial position.
<table>
<thead>
<tr>
<th>TONES</th>
<th>BASIC PITCH CONTOURS</th>
<th>IN LONGER UTTERANCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH LEVEL /HL/</td>
<td>Utterance Medial</td>
<td>Utterance Final</td>
</tr>
<tr>
<td>LOW LEVEL /`/</td>
<td>or</td>
<td>or</td>
</tr>
<tr>
<td>HIGH RISING /`/</td>
<td>or</td>
<td>or</td>
</tr>
<tr>
<td>MID RISING /`/</td>
<td>or</td>
<td>or</td>
</tr>
<tr>
<td>LOW RISING /./</td>
<td>or</td>
<td>or</td>
</tr>
</tbody>
</table>

CHART C
3.0. Introduction

3.0.1. General Characteristics

When spoken, every sentence, every word, and every syllable must be given some pitch. This fact remains true whether the language is tonal, such as Vietnamese, Thai or Chinese, or non-tonal, such as English, French or German.

Fluctuation in pitch occurs in the sentences of all languages. These pitch fluctuations form highly organized patterns of variations, so that in each language, all speakers of it use basic pitch sequences in similar ways under similar circumstances.

These abstracted pitch characteristics of spoken sentences may be called

Intonation Contours or sentence melodies.¹

Unlike the pitch characteristics of tones which serve to distinguish the lexical meanings of individual words, the pitch characteristics of Intonation Contours do not affect the basic lexical meanings of the words.

Several authorities such as Egerod and Chang (see footnote 1), have stated that in tone languages the intonation contours are "superimposed" on the individual tones, i.e., co-occur with them, in the sense that they determine the absolute pitch of the tones, and the general inflection of the utterance, and the notion underlying this statement may well be accepted, though its wording may be open to criticism. The intonation contours add shades of meaning to the spoken utterance, i.e., they convey the attitude of the speaker and they also reflect in meanings and instances the grammatical structure of

1 By "superimposed" it is - at least in my view - not meant that the intonation replaces the basic tone system but only that the tone system co-occurs with, i.e., is correlated with, the intonation contour: the absolute pitch of a given tone is determined by the intonation contour.

Studies made in the Chengtu Dialect and the Lungtu Dialect of Chinese and in Thai seem to show that these languages display the same characteristics of intonation as Vietnamese.


the utterance.¹

3.0.2. Types of Intonation Contours.

Two general types of intonation contours are presented in this study:

a) Non-emotional contours, i.e., intonation contours which occur in normal speech and usually serve to distinguish one type of utterance from another. These contours reflect the grammatical structure of the utterance, e.g. that of a statement versus a question.

b) Emotional contours which are contours which are caused by and reflect the emotional attitude of the speaker,² and they also reflect in many instances the syntactic structure of the utterance.³


³Lieberman, P. in his book "Intonation, Perception and Language", M.I.T. Press 1967, contends that "Intonation does convey the emotion and attitude of the speaker, however, the "marked breath group" is clearly related to the deep phrase markers of questions through syntactic rules (p. 129).
3.0.3. Problems Involved in the Investigation of Intonation.

The problems involved in the investigation of pitch phenomena have been discussed earlier. (see Part 2, Introduction).

The most acute problem in the auditory study of the intonation of tone languages is perhaps that of pitch memory. It was nearly impossible for the author to remember, for contrastive purposes, the exact pitch of a word which appeared previously in the utterance, or previously in the investigation. This problem was overcome however, by the use of various kinds of acoustic equipment. These have been described earlier.¹

The materials used for this study of intonation and the method of investigation, as well as the informants used in the investigation, have also been discussed earlier in the text and need not be stated again.

¹See the Introduction to Part 2.

It must be emphasised again that the primary approach used in the investigation was the auditory approach and that the acoustic study was resorted to only as an aid to perception.

The general results of the study are presented below.

In the auditory study, a) unaided, i.e. purely auditory, and b) aided, i.e., with use of the sound stretcher, the intonational characteristics that were most easily observable and perceived were the variations in the pitch realizations of the last tone of a pause group.

Final syllables showed three different pitch realizations, i.e. contour characteristics of the tone:

1) A falling contour
2) A sustained contour
3) A rising contour

The acoustic study however provided the following important additional characteristics of the intonation contours of Vietnamese utterances:

A) There is a strong correlation between the pitch realisations of the intonation contours and the overall
intensity patterns.

B) The overall pitch levels of the tones in the pause groups could be clearly determined, and three general pitch levels for the intonations contours of Vietnamese could be established.

Pitch 1 or normal pitch which occurs with statements.

Pitch 2 or raised pitch which occurs with non-statements i.e., questions, commands, etc.

Pitch 3 or high pitch which is characteristic of emotional intonation contours.

These three general pitch levels of the intonational contours are not to be confused with the three contours mentioned above for which the pitch realizations of the final syllable of a pause group are diagnostic, and not the overall pitch levels of the entire pause groups.

C) The absolute pitch range of each tone in the pause groups was easily assessed. This was particularly easy in the investigation of the emotional contours.

By way of introducing summarization, it can be stated that it emerges from what has been stated above that there are cross-cutting classification possibilities for intonational phenomena in Vietnamese, with the pitch realizations of the tones of the final syllable
of a pause group, the overall pitch levels of an
entire pause group, and the nature of the co-occurring
intensity patterns providing criteria for classification.

Of the potential total of theoretical classifi-
catory possibilities determined by various combinations
of these factors, only a small number are realized.
They are as follows:
<table>
<thead>
<tr>
<th>Pitch level</th>
<th>Co-occurring Intensity Pattern</th>
<th>Realization (i.e. pitch contour) of the pitch of the tone of the final syllable</th>
<th>Utterance type</th>
<th>Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch 1</td>
<td>decreasing intensity</td>
<td>falling contour</td>
<td>(complete)</td>
<td>non-emotional</td>
</tr>
<tr>
<td></td>
<td>sustained intensity</td>
<td>sustained contour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitch 2</td>
<td>generally sustained intensity</td>
<td>rising contour (+ modifications)</td>
<td>non-statement</td>
<td></td>
</tr>
<tr>
<td>Pitch 3</td>
<td>generally sustained intensity</td>
<td>{ rising contour, rising-falling contour }</td>
<td>various</td>
<td>emotional</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.0.5. Order of Presentation

In the present chapter, the intonation contours of Vietnamese are described in two major sections:

1. Non-emotional Contours.
2. Emotional Contours.

In each section the characteristic features of each contour are presented as follows:

1. General characteristics of the contour.
2. Characteristics of the tones.
3. Graphic representation of the contour.
4. Occurrence of the contour.
5. Examples illustrating the contour.

3.1. Non-emotional Intonation Contour

3.1.0. Introduction

Vietnamese has been found to have, in addition to the contrastive pitch patterns of the tone system, pitch patterns similar to those present in English, French and German, i.e., pitch patterns which can in certain instances distinguish two sentence types.

These sentence pitch patterns or intonation patterns do not change the basic tone system of Vietnamese, but modify the phonetic character of the tones, i.e., the phonemic contrast between the tones
is not affected but the phonetic features of each tone can vary considerably.¹

The acoustic study showed quite often that descriptively, there was a strong correlation between the pitch realizations of the intonation contours, and the intensity of the syllables in the pause groups.

As has already been indicated above to some extent, the intonation contours in Vietnamese are best described in terms of the following characteristics:

¹As mentioned in the introduction to Part 2, the phonemic contrast between the tones in Vietnamese is never affected. In Thai and Chinese however, some tones are neutralised under certain conditions. See for example, Chao, Y.R. "Mandarin Primer" Harvard University Press, 1948.

A similar influence on the tones of Thai, the Lungtu Dialect and the Chengtu Dialect is observed in the studies of tones and intonations of these languages. See for example, Chang, N.C.T. "Tones and Intonations in the Chengtu Dialect of Szechuan, China" op. cit., Egerod, S. "The Lungtu Dialect" op. cit., and Abramson, A.S. "The Vowels and Tones of Standard Thai, Acoustic Measurements and Experiments", op. cit.

a) The pitch realization of the tone of the last syllable in the pause group
b) The pitch level of the entire pause group
c) The co-occurring intensity pattern of the pause group
d) The grammatical structure with which each intonation contour is correlated.

In the light of criteria for the classification of the intonation contours as mentioned above under a), three intonation contours are observable:

1) Falling contour
2) Sustained contour
3) Rising contour

3.1.1. The Falling Intonation Contour

3.1.1.0. General Characteristics

The falling intonation contour is characterised by the following:

a) The last tone of the pause group has a falling pitch realization;

---

1The intonation contours are mostly easily identified by the pitch realization of the tone of the last syllable of the pause group.
b) The pitch of the tones in the pause group show a gradual descent, i.e., the absolute pitch range of each of the tones decreases when progressing from the beginning to the end of the pause group;

c) The co-occurring overall intensity level of the syllables in the pause group shows a gradual decrease, i.e., the absolute intensity of each strongly stressed syllable decreases.

3.1.1.1. Characteristics of the tones in the contour.

The phonetic features of the last tones of the pause group are as follows:

a) Level tones.

The high level, and the low level tones /HL/, /~/, start lower than previously in the pause group, stay level and fall towards their end point.

b) Rising tones.

The High rising tone /~/ has a short and flat rise.

The Mid Rising /~/ and Low Rising tones /~/ have a shorter rise than usually.
The last tone of the Falling Intonation Contour can be graphically represented as follows:

```
600 ----~----------------..---- ,
450 ~-- ........ "-------f-----+-----+---- ,
350 "-------1-------4---2'---+-----l-t---- 1
250 J------s.--..__------.-------+--~-+-+- ..... ~- ·
150-------l---_;a. _________________ ,
HL /' /
I .
```

3.1.1.2. Graphic representation of the contour.

The Falling Contour may be depicted in the following manner:

```

```

\[1\] In the above figure and in similar figures appearing later in the text, the upper and lower lines represent the limits of the absolute pitch range of the tones. The short lines in between stand for one tone each. Such figures are intended to show in a schematic form, the general tendency in the pitch pattern of the tones in a specific intonation contour. The phonetic characteristics of each tone are not taken into account. These schemes are the ones used by H.N. Coustenoble and L.E. Armstrong in their Studies in French Intonation to represent Intonation contours in French. See: H.N. Coustenoble and L.E. Armstrong, Studies in French Intonation, W. Heffer and Sons Ltd. Cambridge, England 1937.
The decline in the pitch of the tones is most effectively heard in groups of identical tones.

Examples:

/ HL/  tôi đi theo anh  # 'I follow you (I, go, follow, you)' (see graph 91)

/^/  tôi về vài ngày  # 'I am going back for a few days (I, go back, several, day)' (see graph 92)

^/  nó muốn bán giấy  # 'he wants to sell paper (he, want, sell, paper)' (see graph 75)

/.  họ bị mạ-lì  # 'they were insulted (they, suffer, insults)' (see graph 93).

3.1.1.3. Occurrence of the Falling Contour.

The Falling intonation is used with all ordinary declarative statements. It indicates, on the part of the speaker, that the statement has an air of finality, i.e. it is finished and complete.¹

¹L.C. Thompson, in "Vietnamese Grammar" (University of Washington Press 1965, pp.17) observes that "final syllables accompanied by tones beginning or ending lower than usual, signal the end of sentences which are produced with certainty."
3.1.1.4. Illustrative Examples:

Tôi quen một ông thầy dạy ở trường Gia-Long có #
'I know a teacher, who is teaching at Gia-Long (school) (I, know, one, man, teacher, teach, at school, Gia-Long), (see graph 94)

ông Tù có hai con vịt; ông Ba thì có hai con heo #
'Mr. Tù has two ducks, and Mr. Ba has two pigs (Mr. Tù, have, two, classifier for animate things, duck, and Mr. Ba, then, have, two classifier, pig)' (see graph 45).

Nó làm bài chưa rồi #
'he hasn't finished his homework (he, do homework, not yet, is finished) (see graph 95)
See also graphs 79 -95 - 97 - 98.

3.1.2. Sustained Intonation Contour

3.1.2.0. General Characteristics.

The sustained contour has the following features:

a) The last tone in the pause group has a rising pitch realization;
b) The pitch level of all the tones in the pause group is sustained, i.e., the absolute pitch range of the tones remain unchanged;

c) The co-occurring overall intensity pattern of the pause group is sustained, i.e., the absolute intensity of each strongly stressed syllable does not decrease within the pause group.

3.1.2.1. Characteristics of the tones in the contour.

The phonetic features of the last tone in the pause group are the following:

a) Level tones /HL/ and /~/ start with a level contour and tend to rise towards the end.

b) Rising Tones /~/, /~/, /./ tend to rise higher than the rising tones preceding them in the pause group.

The last tones of the sustained contour can be graphically represented in the following manner:

```
0 0 0 4 5 0 3 5 0 2 5 0 1 5 0

/HL/ /~/ /~/ /~/ /./
```
3.1.2.2. Graphic representation of the contour.

The sustained contour can be depicted as follows:

```
- - - -
```

3.1.2.3. Occurrence.

The sustained contour occurs in clauses which are within sentences, in phrases which are within clauses, i.e., it occurs in grammatical units which are within larger units. It indicates the incompleteness or non-finality of an utterance.¹

¹Thompson, L.C. in "A Vietnamese Grammar" notes that "final syllables which have their tone beginning and ending higher than usual (raised tone) indicate that the sentence expresses some kind of uncertainty or indefiniteness."
3.1.2.4. Illustrative Examples:

'Tôi đi thấy bên này có nhiều xe anh'

'I noticed that there are a lot of British cars here (I put, mind, see, over, here, have, many, car, English) (see graph 98)

'ở nhà còn tiền sữa chưa trả | tiền rau cải chưa trả | tiền đồ giấc chưa trả |

'at home there is still the milk bill to pay, the vegetable bill to pay, the laundry bill to pay ...(at, house, is still, money, milk, not yet, pay, money, vegetables, not yet, pay, money, thing, wash, not yet, pay)' (see graph 62)

3.1.2.5. Additional remarks.

In a series of sustained contours which occur within an overall falling contour, i.e., in a sentence which consists of several clauses, or in a clause consisting of several phrases, the following characteristics are observable:

a) the absolute pitch range of each succeeding sustained contour decreases step by step so that
b) the pitch range of the last sustained contour is the lowest.

An overall Falling Contour which comprises two or more Sustained Contours can be graphically represented as follows:

```
\_\_\_
```

Illustrative Examples:

'n'ong'ài ra cöm và cả | 'ngu'ôi việt 'cön ẩn nhiều thú rau | thít heo | thít bò | thít gà | vân-vân #

'besides rice and fish, the Vietnamese people also eat many kinds of vegetables, pork, beef, chicken and so on. (Besides, rice, and, fish, person, Vietnamese, still, eat, many, kind, vegetable, meat, pig, meat, cow, meat, chicken etc...) (see graph 99)

'ốc có khi tôi thích coi hát | ốc có khi tôi không thích #

'Sometimes I like to go to the movies, sometimes I don't (sometimes, I, like, see, sing, sometimes, I not like)' (see graph 86)
hình như trời sắp mưa nửa | chứng minh đi vào nhà
cho khỏi mắc mưa #

'it looks like it's going to rain, let's go inside
so we won't be caught in the rain (looks like, sky,
going to, rain, again, we, go, go in, house, in
order, evade, catch, rain)' (see graph 100)

ông chạy xe mau quá | xe ông đâm vào cái cây | ông
phải nằm nhà-ường | hết hai tuần #

'he drove so fast that his car hit a tree, and he
had to stay in the hospital for two weeks (he, run,
car, fast, very, car, he, hit, go in, thing, tree,
he, must, be, hospital, altogether, two week)'

(see graph 63)

3.1.3. Rising Intonation Contour
3.1.3.0. General Characteristics
The most important characteristic of the rising
intonation contour as opposed to the previous two contours
is a) that the absolute pitch level or pitch range of all
the tones of the pause group is raised, i.e., the pitch
range starts higher and finishes higher than in the
falling contour or the sustained contour.¹

¹Note the same remark as made by Jones and Thong in
An Introduction to Spoken Vietnamese op.cit.
In addition to the raised pitch, the rising contour displays the following features:

b) the tone of the last strongly stressed syllable in the pause group has a rising pitch realization\(^1\)

c) the co-occurring overall intensity level of the syllables in the pause group is sustained.

### 3.1.3.1. Characteristics of the tones in the contour.

The phonetic characteristics of the last tone co-occurring with strong stress are the following:

a) Level tones /HL/ /'/'
   start level and rise towards the end

b) Rising tones /'/' /"/' /''
   rise higher than the same tones which precede them in the same pause group.

A graphic representation of the last tones, which are accompanied by strong stress, is as follows:

\[
\begin{array}{c|c|c|c}
600 & \_ & \_ & \_ \\
450 & \_ & \_ & \_ \\
300 & \_ & \_ & \_ \\
250 & \_ & \_ & \_ \\
150 & \_ & \_ & \_ \\
\end{array}
\]

1 The acoustic study reveals the fact that it is not the pitch realization of the tone of the last syllable of this contour which characterises the contour, but that of the tone of the last strongly stressed syllable.
3.1.3.2. Graphic representation:

The rising contour itself can be represented as follows:

\[ (-)(-) \rightarrow (-)(-) \]

3.1.3.3. Occurrence

The rising contour occurs with all interrogative sentences,\(^1\) imperative sentences which express an exhortation, and unrepeated calls.

Illustrative Examples:

a) Examples of Rising Intonation Contours in Interrogative Sentences.

1. The last strong stress is located on the last syllable of the pause group.\(^2\)

\(^1\)Chang, in the study of "Chengtu Tones and Intonation, Szechuan, China," op. cit. states that "a rising tune occurs with all questions" - this characteristic is similar to Vietnamese tones.

Lieberman, in his book *Intonation, Perception and Language*, op. cit. contends that this rising intonation contour is a characteristic present in all languages.

\(^2\)This statement can be altered to 'the first strong stress is placed on the first syllable of the pause group' if the statement is made in terms of the retrograde stress pattern. For further details on the location of the strong stresses in Interrogative sentences see Part II, 1.1.2.
Anh muốn đi đâu || 'where do you want to go? (you, want, go, where)' (see graph 50)

Gần đây có gì || 'what's near here? (near, here, have, what)' (see graph 51)

Nam nay em mấy tuổi || 'how old are you? (year, this, younger sibling, how many, age)' (see graph 101)

Compare the pitch level of the contour in the answer to this question:

Nam nay em tâm tuổi 'I am eight years old this year (year, this, I, eight years)' (see graph 101)

Tại sao họ phải đi || 'why do they have to go? (why, they, must, go)' (see graph 103)
Ngày anh mới đi Mỹ || 'when will you be going
to America? (month, which,
you, will finally, go, America)'
(see graph 104)

2. The last strong stress is not located on the last
syllable of the pause group.

Anh không đi hà || 'Aren't you going? (you, not,
go, yes or no)' (see graph 47)

Có ai đây không || 'Is there anyone here? (there
is, who, here, yes or no)'
(see graph 105)

Từ đây đi tôi nhà ông || khó không ông ||
'is it hard to go from here to your house?
(from, here, go, arrive, house, you, is difficult,
yes or no, you: polite form)' (see graph 106)

Người đó là người pháp phải không || 'that person
is French, isn't he? (person, there, is, person,
French, right or wrong)' (see graph 107)
b) Examples of Rising intonation contours in Exhortative Imperative sentences.

\[ \text{(---)} \]

chúng mình di theo chịu || 'let's follow them'
(we, go, follow, imperative marker)' (see graph 108)

chúng ta đi đi || 'let's go! (we, inclusive, go, imperative marker)' (see graph 109)

chúng mình đi về chúng đi || 'let's go back together'
(we, inclusive, go, go back, together, imperative marker)'
(see graph 40)

3.1.3.4. Additional Remarks: Modifications of the Rising Intonation Contour.

The rising intonation contour which is characteristic of non-declarative sentences can be modified in two ways. The modifications are presented below.
3.1.3.4a. The pitch realization of the tone of the last syllable in the pause group displays a rising-falling tendency and not a rising tendency.

The tones of the last syllable of the pause group show the following phonetic characteristics:

a) Level tones: start level, then rise sharply and fall at the end.
b) Rising tones rise much higher than usually.

The rise is often followed by a short drop at the end.

The last tones can be graphically represented in the following way:

```
<table>
<thead>
<tr>
<th>150</th>
<th>250</th>
<th>350</th>
<th>450</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>/HL/</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

The modified rising contour can be represented graphically as follows:
This contour occurs with imperative sentences expressing commands, and with exclamatory statements. These sentences usually include a final particle.¹

Illustrative Examples:

a) Examples of the Rising-Falling Contour + Sustained Intensity in Imperative Sentences:

Đi ra ngoài mà chơi! 'go outside to play! (go, go out, outside in order to, play)' (see graph 110)

Đi theo túi nó chơi đi! 'go and play with them' (go; follow, them, play, imperative marker)' (see graph 111)

Kêu mà nó ra đây! 'call your mother here (call, mother, he, go out, here)'

anh đi đi (you) go ahead! (you, go, imperative marker)' See graph 61)

b) Examples of the Rising-Falling contour in exclamatory statements:

¹Thompson, in *A Vietnamese Grammar*, op.cit., observes that in utterances expressing a variety of exclamatory colourings, the final and medial syllables are accompanied by a tone contour that covers more of the voice range than usual.
Tôi có đi đâu đâu! 'I am not going anywhere, I assure you! (I, affirmative, go, anywhere, emphatic, negative final particle)' (see graph 112)

Cô ấy mua mà! 'she bought it, I am sure! (young lady she, that, buy, emphatic final particle)' (see graph 113)

Thấy ông ấy ốm quá! 'that man looks so thin! (see, man, there, is thin, very)' (see graph 114)

Mua rồi còn gì nữa! 'I have bought it what else do you want! (buy already, is still, what, again)' (see graph 87)

Tôi qua đây hoài không biết sao được!
'I come here all the time, how can I not know it! (I, go over, here, always, not, know, how, can)' (see graph 115)
3.1.3.4b. The rising contour can also be modified in the following way:

   a) the pitch realization of the tone of the last syllable of the pause group shows a slight rise and fall;
   b) the co-occurring overall intensity level of the strongly stressed syllables in the pause group decreases gradually.

The tones of the last syllable in the pause group are realised collectively as follows:

   a) Level tones start level, rise slightly and fall at the end, or start level and fall at the end.
   b) Rising tones rise higher than normally but not as high as in the modification of the rising intonation contour as described above in 3.1.3.4a.

The graphic representation of the last tones in the pause group is as follows:

```
6 0 0
4 5 0
3 5 0
2 5 0
1 5 0

/HL/  /'/  '/'  '//'  '/.'
```
This contour can be represented in the following way:

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

It is found in polite imperative sentences, i.e., requests.

Examples:

Anh làm ơn viết giùm tôi thư này!
'please write this letter for me!
(you, do, favour, write, for, I, letter, this)'
(see graph 116)

mới ông đi ăn cơm!
'dinner is served!
(invite, you, go, eat, rise)'
(see graph 145)

3.1.3.5. Pertinent Remarks on the Intonation contours of calls.

The intonation contours of calls display characteristics of the rising contour but with both types of the possible modifications (see 3.1.3.4a, and 3.1.3.4b.) of the rising contour. Some examples are given below.
a) Intonation Contour of Non-repeated Calls.

The contour of non-repeated calls is Rising + Co-occurring Sustained Intensity.

Illustrative Example:

Ba ̀ā!  'father' (see graph 148)

b) Contours of Repeated Calls.

Rising-falling + Sustained intensity.

This contour shows the following characteristics:

a) the co-occurring overall intensity of the total number of calls is sustained;

b) the tone of the last syllable of the last call has a rising-falling contour, while

c) the tone of the last syllable of all the calls preceding the last call has a rising contour.

It can be represented in the following manner:

[Diagram of intonation contour]
The above call contour occurs with Insistent calls, and calls to a distant person.

Chú Sáu ơi! Chú Sáu à! Ba ơi! Ba!
'(calling) Chú Sáu and Ba! (see graph 121)

Giang à! Giang! ra ăn cơm!
'Giang! come and eat dinner!' See graph 119)

Giang ơi! Giang à! Giang! (calling)
'Giang' (see graph 118)

Contours of Repeated Calls 2.

Rising-falling + Co-occurring Decreasing Intensity.
This contour displays the following features:

a) the co-occurring overall intensity of the total number of calls is decreasing, however

b) the co-occurring intensity of each of the calls is sustained,

c) the tone of the last syllable of all the previous calls has a rising contour.

The graphic representation of this contour is as follows:
The contour described above occurs with repeated ordinary calls, and calls to a person who is not distant. Illustrative Examples:

Giang ơi! Giang ạ! Giang! 
(calling) Giang! (see graph 120)

Tui con ơi! tui con! 
'children! children! 
(Father calling his children)' (see graph 117)

It may be mentioned that it may be theoretically preferable to treat the various intonation contours as described above, not as a number of co-ordinated phenomena, but as modifications of a neutral base, i.e., an "intonation base", plus the factors of complete statement, incomplete statement, non-statement (with subdivisions) resulting in the "intonation contours" discussed. In brief, these "intonation contours" could be treated as a base + modifying factors. Such an approach would, for instance, make it easier and clearer to handle cases like
that in which a number of sustained intonation contours in succession show the overall features associated with the falling intonation contour: a case like this could be regarded as the intonation base + the modifying factors of incomplete statement + complete statement. It would also be possible, in such an approach, to take the "neutral base + statement" as the "intonation base", basic to all utterances, and to treat all other contours as modifications of it as brought about by various factors.

This approach could be extended to include the emotional contours discussed below, through introducing additional modifying factors.

3.2. Emotional Intonation Contours

3.2.0. Introduction

The following sections present the various remarks on the intonation contours which are characteristic of emotional speech, i.e., speech which reflects the attitude or the emotion of the speaker, such as joy or anger, surprise, contentment, etc.

3.2.0.1. General Characteristics of Emotional Contours.

The effects of emotion on the intonation contours
have been studied by many scholars. Following are some of their remarks: "Excited speech tends to use wide intervals between the pitch levels of the intonation contours; monotonous, weary or professional style tends to utilize narrow intervals.

Excited speech tends to be high in overall pitch whereas grief and scorn tends to be low."\(^1\)

Lieberman, in his study of *Intonation, Perception and Language* notes "several studies have discussed the emotion aspect of intonation. Some speakers apparently raise the average fundamental frequencies when they are angry, other speakers lower their average fundamental frequencies. Extreme emotion may result in a wider range of fundamental frequencies or it may result in a lowered or narrowed fundamental frequency range."\(^2\)

The characteristic tendencies of intonation contours in emotional speech in Vietnamese can be summarised as follows:

1. The overall absolute pitch level of given tones is relatively higher than in unemotional,

---


ordinary speech.

2. The overall absolute pitch level of the tones rises in accordance with the state of excitement of the speaker - i.e., high excitement is marked by a higher pitch rise than mild excitement.

3. The absolute pitch range of individual tones is wider than in unemotional speech.

4. The co-occurring overall intensity pattern of emotional contours tends to be sustained.

3.2.0.2. The most important characteristics of emotional contours are as follows:

1. the last tone of the pause group has
   a) a rising pitch realization
   b) a rising-falling pitch realization

2. the pitch level of the entire pause group is raised, i.e., it is higher than in rising contours in non-emotional speech

3. the co-occurring overall intensity level is sustained.

3.2.0.3. Remarks on the investigation of Emotional Contours.

Because of the special circumstances associated
with the occurrence of emotional speech, it was not feasible to make tape recordings of all the emotional contours existing in Vietnamese. Therefore, in the following description, only those contours will be discussed in detail for which objective proof on the basis of tape recorded materials can be given. However, some remarks on additional emotional contours will be added for which the author has to rely on her own personal subjective observations.

3.2.1. Examples of rising contour + co-occurring sustained intensity in emotional speech

3.2.1.0. Characteristic tendencies of the Contour.

The Rising contour in Emotional Speech is marked by the following:

a) a sharp rise in the tone of the last syllable carrying strong stress,

b) a rising tendency of all the tones in the pause group

c) the absolute pitch of each succeeding tone tends to be higher than the previous one, so that the pitch of the last tone is the highest.
3.2.1.1. Characteristics of the tones.

The phonetic features of the last tone of the contour are as follows:

Level tones start high and rise higher and more abruptly than in intonations with Pitch level 2. Rising tones rise very sharply.

3.2.1.2. Occurrence

Rising Contour + co-occurring Sustained Intensity in Emotional Speech occurs mostly with Interrogative Sentences which reveal the speaker's personal attitudes.

3.2.1.3. Illustrative Examples:

Following are examples of Emotional intonation contours. Each example is accompanied by

a) an explanation of the emotion conveyed or the situation involved,
b) the graphic representation of the contour.¹

1. Highly surprised, repeated question,

\[ \text{ba đi đâu || 'where did Dad go? (Dad, go, where)'} \]
(see graph 122)

2. Slightly annoyed,

\[ \text{Nam đâu || ... Sao không đi ăn há || } \]
'where is Nam? Isn't he going to eat?
(Nam, where, why, not, go, eat, yes or no)'
(see graph 123)

¹In this figure and similar ones in this section the tone of the last strongly stressed syllable of the pause group (when counting progressively) is represented by a relatively longer rising or rising-falling line, while other tones are represented by shorter lines.
3. In a menacing, threatening tone.

\[ \text{\_\_\_\_\_\_\_\_\_\_} \]

lây cả ai mà dè dò \|
'whom did you take that from, and leave it there?
(take, belong to, who, then, put, there)'
(see graph 124)

The gradual rise in the total pitch level of the tones
(see 3.2.0.1.) is exemplified in the following sentences:

4. Highly vexed - snappy.

\[ \text{\_\_\_\_\_\_\_\_\_\_} \]

ai biết || 'Who knows (i.e., how should I
know or i.e., I don't know, besides, I don't
care) (who, know)' (see graph 89)

5. Strongly protesting.

\[ \text{\_\_\_\_\_\_\_\_\_\_} \]
sao không có lương || 'why shouldn't they get their pay! - i.e., of course they are, don't be silly, why do you think they shouldn't - (why, not, have, salary)' (see graph 125)

sao không nghe || 'why can't I hear? - i.e., of course I can - (why, not, hear)' (see graph 134)

6. Very irritated and exasperated.

____

___

cái gì || 'what! - i.e., what do you want now, you are bothering me, go away - (thing, what)' (see graph 126)

7. Very exasperated, threatening.

____

___

làm gì vậy || 'what are you doing! - i.e., you are going to be beaten if you don't stop this - (do, what, like that)'
8. Protesting, dissenting.

\[ \text{\ldots} \]

If you leave them here, then where are they going to stay? - i.e., how can you think of leaving them here when you know they won't be allowed to stay here - (send, several, children, he, stay, here, then, stay, where)’ (see graph 127)

9. Reprimanding, with a threatening attitude.

\[ \text{\ldots} \]

'If you have finished eating, take your plate away! ... are you going to sit there? - i.e., hurry and clear the table right away or else! - (eat, already, clear, go down, otherwise, sit there, yes or no)' (see graph 128)
3.2.2. Examples of Rising-Falling contours + Co-occurring Sustained Intensity in Emotional Speech

3.2.2.0. Characteristic tendencies of the contour.

The Rising-Falling contour with Pitch Level 3 displays the following characteristics:

a) a sharp rise and fall of the last tone in the pause group. The rise and fall is relatively sharper when the excitement is great and less sharp when it is mild.

b) a tendency of all other tones within the pause group to rise.

3.2.2.1. Characteristics of the tones.

The phonetic characteristics of the last tone of the contour can be represented graphically in the following way:

```
600 450 350 250 150
\-- /HL/ \ /' /' /~/./
```

```
600-450-350-250-150
\-- /HL/ \ /' /' /~/./
```
3.2.2.2. Occurrence.

The Rising-Falling Contour occurs with all exclamatory statements except those expressed in the interrogative form.

3.2.2.3. Graphic representation of the contour.

This contour can be represented as follows:

```
  --
  |   |   |
  |   |   |
  |   |   |
  |   |   |
  |   |   |

Illustrative Examples:

a) In the following examples, the tone of the last syllable of the pause group is a level tone, /HL/ /'/.

1. Very excited:
   Má cho con cái bao! 'Mum leave me that bag - i.e., don't throw it, I want it - (Mother, give, I, thing, bag)' (see graph 129)

2. Strongly protesting - stressing a point - dismissal of a topic:
   Phải rồi! 'it's right! - i.e., don't argue, it's right - (is right, already)' (see graph 90)
Sao không có pương! 'why shouldn't they get their pay? (why, not, have, salary)' (see graph 143)


Nói "rồi! 'I have already told (him) - i.e., why do you keep asking? - (speak already)" (see graph 88)


ăn không có no đâu! 'you won't be full eating that! - i.e., and you'd better stop arguing - (eat, not, affirmative, is full, final particle)'

(see graph 130)


nhỏ này "lạ thịnh à nghe! 'don't be stupid - i.e., what are you trying to do here! - (you, child, this, is strange, true, final particles)"

(see graph 131)

6. Impatient.

ba đi "rồi! má đi ăn đi! 'Dad has gone! Go and eat, mother! - i.e., why don't you go and eat instead of waiting here - (father, go, already, mother, go, eat, imperative marker)" (see graph 132)
7. In a highly mocking voice - sarcastic.

thời!"bó lại đi! 'come on! leave it there! - i.e., are you trying to be funny, you don't want it I know - (stop, throw, go back, imperative particle)' (see graph 142)

b) In the following sentences the last tone is a Rising tone /'/ /~/ or /./.

Note that with the level tones there is a sharp rise and fall, while with the rising tones, there is usually no fall, but a very sharp high rise.

1. Highly vexed.

Hai ba người nói! 'too many people are reprimanding me! (two, three, persons, speak)'
(see graph 133)

2. Discrediting - indignant outcry.

ông đố ông diễm | ông hỏi ông!
'he is mad! why ask him! - i.e., how can you ask a crazy man like that - (he, that, he, is mad, stay, ask, him)' (see graph 136)
3. Highly alarmed.

vế "ghê qua váy! 'it's terrifying to go back!" - i.e., how can one go there, it's so terrible; the thought of it is terrifying - (go back, is frightening, very like that)' (see graph 135).


sướng quá váy! 'you are lucky! - i.e., wonderful news, how lucky you are! - (is happy, very, like that)' (see graph 141)

5. Very Sarcastic.

chưa lên giấy lấy gì mà chạy! 'how can it run if you don't wind it up? (not yet, wind up, thread, get, what, in order to, run)' (see graph 137)

c) Note the marked widening in the absolute pitch range of each of the tones in the following examples:


thất mờ không! 'goodness! what a thing to do! (see, ghost, not)' (see graph 138)
2. Giving an order with a somewhat threatening attitude.

Nhắc ghê "ngồi đi Đài! 'Đài!' take a chair and sit down! (get, chair, sit down, imperative marker, Đài)' (see graph 139)

3. Annoyed - very impatient.

Thôi! nó không chịu ăn mà! 'he doesn't want to eat! stop pressing him! (stop, he, not, want, eat, final particle)' (see graph 140)

3.2.3. Additional remarks.

3.2.3a. In the two examples which follow the tone of the last syllable of the pause group - which in this case is the high rising tone - shows a contour which seems to be peculiar to "deliberate" speech.

The phonetic feature of the tone is a slow rise and fall followed by another rise. It can be represented as follows:

```
/\n```

Illustrative Examples:

1. Mildly protesting in a persuasive manner.

Mãy người đó muốn ở lại để lãnh tiền chó! 'they want to stay to have more money! what do you think! (several person, there, want, stay, go back, in order to, receive, money, time particle)' (see graph 143)

2. Stressing the evident thing.

Chắc không cho người ta gì hết đồ! 'that's because you didn't give them anything! (maybe, not, give, person, they, anything, at all, there)' (see graph 144)

3.2.3b. In the example below, the relative pitch contrasts between the tones, i.e., the difference in pitch between the tones, are narrower than usual. It indicates anger, and great annoyance.

Illustrative Examples:

1. Very annoyed and menacing, with anger.

con Ðài đó! làm lẽ đi! xếp đó vô! v่อง cho być tay bài giò!
'Đái! hurry up! put your clothes in! or I'll give you a beating now! (you, Đái, there, do, quickly, imperative particle, fold up, things, go in, slap, give, slap, slap, hand, immediately)' (see graph 147)

3.2.3c. It has been observed that when a speaker is very annoyed at someone, or with something that has happened, the entire pitch range of his voice drops to a level lower than the pitch level in ordinary speech.

Unfortunately it was not possible to record examples to illustrate this.

3.2.3d. In deferential speech, the pitch range of the tones seems to be much narrower than in non-deferential speech. This gives the impression of a 'monotone' voice.

3.2.4. Summary.

As mentioned earlier, the intonation contours of Vietnamese are most easily identified by the tones of the last syllable, or by the tone of the last strongly stressed syllable, of the pause group.

The Summary Chart D which follows, shows the pitch contour of the last tone in each of the intonation contours described in this chapter.
### Non-Emotional Intonation Contours

<table>
<thead>
<tr>
<th>TONES</th>
<th>Pitch Level 1: Normal Pitch</th>
<th>Pitch Level 2: Raised Pitch</th>
<th>Emotional Contours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic Pitch Contour</td>
<td>Falling</td>
<td>Sustained</td>
</tr>
<tr>
<td><strong>High Level</strong> /H L/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low Level</strong> /~/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>High Rising</strong> /~/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mid Rising</strong> /~/</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Low Rising</strong> /~/</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chart D**
4. GENERAL SUMMARY FOR PART II: Salient features of Stress, Tones and Intonation

In the preceding three chapters, the systems of stress, tone variations, and intonation in Vietnamese were described in detail.

Because of the complexities in the analysis and description of suprasegmental phenomena, some major points of the discussion are summarised below.

4.1. Stress

Stress, Intensity and Degrees of Stress.

In this study, stress is described in terms of physical intensity. The physical intensity of the sounds has been analysed with instruments designed for this purpose. The equipment used for this investigation was the Intensity Meter.

From the analysis of intensity tracings, it has been concluded that there are four degrees of stress in Vietnamese;

They are:

['] strong
['] weak
[~] extra weak

1. The weak stress has a reduced free variant: the reduced weak stress [~].
The placement of the strong and weak stress in the pause groups constitutes the basic rhythm pattern of Vietnamese utterances.

**Basic Rhythm.**

The characteristic features of the basic stress rhythm pattern in Vietnamese are the following:

1) it is a retrograde pattern, i.e. the starting point of the pattern is the last syllable of pause group.
2) it is determined by the syntactic function of the syllables in the pause group.
3) it displays an alternative occurrence of the strong and weak stress.

There are two possible patterns:

1) one which starts—regressively — with a weak stress

\[ \ldots \cdot \cdot \cdot \] \# \textsuperscript{1}

2) one which starts with a strong stress

\[ \ldots \cdot \cdot \cdot \] #

Pattern (1) occurs with all pause groups ending in a final particle, a Post Verb Modifier or a Post Noun Modifier.

\[ \textsuperscript{1} \text{The Stress symbols stand for one syllable each.} \]
Pattern (2) occurs with all other pause groups.

**Modifications of the Basic Rhythm.**

a) Modification caused by the occurrence of the extra weak stress [•]

The extra weak stress which occurs only in utterances of more than three syllables can modify the basic rhythm of the pause group by requiring the syllable following it (when counting progressively) in the same pause group, to always carry weak stress [~].

For example: the pause group represented here has a basic rhythm pattern of:

```
5 4 3 2 1
.,~,,#
```

If [•] falls on syllable 4 the rhythm pattern of the pause group is modified as follows:

```
5 4 3 2 1
.,~,,#
```

\[\downarrow\downarrow\]

```
modified rhythm ; . ~ , ~ , #
```

The extra weak stress [•] falls only on syllables with certain grammatical functions such as prepositions, particles etc.
b) Modification caused by the occurrence of the emphatic stress ["].

The emphatic stress can alter the basic rhythm pattern of the pause group by requiring the syllable which follows it\(^1\) to always carry an extra weak stress [\*].

For example, the following pause group has a basic rhythm of:

```
5 4 3 2 1
```

If ["] falls on syllable 5 the rhythm pattern is modified to:

```
basic rhythm 5 4 3 2 1
\_\_\_\_\_\_
\_\_\_\_\_\_
\_\_\_\_\_\_
```

Overall Intensity Patterns.

In addition to the rhythm patterns described, there are also overriding overall intensity patterns which can occur with the rhythm patterns.

\(^1\)i.e. When counting progressively. If the syllables are counted in accordance with the retrograde rhythm pattern, the syllable preceding the one carrying emphatic stress is affected.
Overall intensity patterns are of two types:
1. Decreasing overall intensity
2. Sustained overall intensity

The decreasing overall intensity pattern is characterized by a gradual decrease in the absolute intensity of the strongly stressed syllables in the pause group.

The sustained overall intensity is marked by an overall sustained absolute intensity of the strongly stressed syllables in the pause group.

Descriptively there is a strong correlation between the intonation patterns and the overall intensity patterns.

4.2. Tones and Tone Variants.

Conditioning Factors of Tone Perturbations in Vietnamese.

In Vietnamese, as in many other tone languages, the phonetic variants of the tones can be determined by:
1. Tones occurring in juxtaposition.
2. Stress
3. Position of the tones in the utterance, and sentence intonation.

The tone variants in Vietnamese are described below in terms of the abovementioned conditioning factors.
Tone Variants conditioned by Tones occurring in Juxtaposition

Vietnamese differs from many other tone languages in that tones occurring in juxtaposition do not play an important role in determining the pitch contours of the tones. There is however, one instance of tones occurring in juxtaposition in Vietnamese worth mentioning at present, which concerns the High Rising tone /ˊ/.

In a combination of two high rising tones the second rising tone has a starting pitch which is higher than that of the first one. It can be represented as follows: /ˊ/ + /ˊ/

However, unlike in languages such as Chinese and Thai, a tone in Vietnamese is never replaced by another phonemic tone in any environment. The relative pitch contrast between the five tones is always maintained and the opposition between them is never neutralized.

Tones conditioned by Stress.

1. Tones + ['] (strong stress).

Tones of syllables carrying strong stress are higher
in pitch than tones of syllables with weak stress, and tend to have a rising contour, i.e. level tones: /HL/ and /~/, rise at their end point; rising tones: /~/, /~/ and /~/, have a normal rise which is regarded here as the basic and usual norm.

2. Tones + [\~] (weak stress).

Tones of syllables with weak stress tend to have a relatively levelled contour, i.e. level tones stay level.

Rising tones do not rise as high as they do when associated with strong stress.

3. Tones + [+\~] (extra weak stress).

Tones of syllables carrying the extra weak stress display a special behaviour:

the syllable on which it occurs is very short.

Level tones have a short, rapid fall. Rising tones have a very short fall and rise, and have a higher circumflection point than usually, i.e. the point between the fall and the rise is higher in pitch than is usually the case.


Tones of syllables carrying emphatic stress have the following characteristics:
they have a higher pitch than tones with strong stress, they tend to have a rising contour: level tones rise towards the end, rising tones rise higher than usually.

Tones conditioned by the Position of the syllable in the utterance.

1. Tones in utterance final position.

Tones which occur finally in an utterance before an absolute final pause [#] have the following characteristics:

- they are lower in pitch than tones which occur initially in the utterance,
- the have a falling contour, i.e. rising tones have a shorter rise than usual.

2. Tones in initial and medial position.

Tones which occur initially or medially in an utterance:

- have a level or rising pitch contour depending on the placement of the stress: have a normal basic pitch level.
4.3. Intonation contours.

Unlike the tones, the intonation patterns do not affect the lexical meaning of the words, but co-occur with the basic tone system to add 'shades of meaning' to the spoken utterances.

Intonation contours in Vietnamese are of two types:

4.3.1. Non-emotional intonation contours.

All the intonation contours are described in correlation with the overall intensity patterns. Intonation contours in Vietnamese are most easily identified by the pitch contour of the last tone in the pause group.

The phonetic characteristics of each individual tone are described in 2., and are summarised graphically in Tone Chart D.

The different intonation contours and their characteristic features are described briefly below.

Non-emotional Intonation Contours.

General Characteristics:

The non-emotional contours are those which can serve to distinguish two types of utterances such as a statement versus question or versus a command, i.e., the non-emotional intonation contours can reflect the
grammatical structure of the pause group.

The non-emotional intonation contours are of three types:

1. falling contour
2. sustained contour
3. rising contour

Types of non-emotional contours.

The three non-emotional contours of Vietnamese can be briefly described as follows:

1. Falling intonation contour:
   This intonation contour is characterised by:
   a co-occurring gradual decrease in overall intensity:
   a gradual drop in the absolute pitch of the tones occurring in the pause group;
   the last tone of the pause group having a falling pitch realization or contour; i.e. level tones fall and rising tones do not rise as high as usual.
   The falling intonation contour occurs with all complete statements. It denotes a feeling of completeness and certainty.

2. Sustained intonation contour: This intonation contour is marked by:
   a co-occurring sustained overall intensity pattern:
   a sustained absolute pitch level of all the tones of the pause group:
the last tone of the pause group having a rising pitch realization or contour, i.e., level tones tend to rise at the end point; rising tones rise as usual or higher, depending on the degree of stress on the syllables in which they occur.

The sustained intonation contour occurs in incomplete statements, e.g., in phrases and clauses which are embedded in larger grammatical units. It denotes a feeling of incompleteness and uncertainty.

3. Rising Intonation Contour

This intonation contour has the following characteristics:

- a co-occurring sustained intensity pattern;
- the tone of the last strongly stressed syllable has a rising contour;
- the pitch level of all the tones in the pause group is raised, i.e., is higher than in the Falling and Sustained Intonation contours.

It occurs with all interrogative sentences and with imperative sentences and calls.

In imperative sentences expressing command the following modification in the rising contour is observed:
the tone of the last syllable in the pause group shows a rise and fall instead of a rise.
In imperative sentences expressing a polite request the following modifications are observed in the rising contour:

- a decreasing co-occurring overall intensity pattern;
- a slight rise and fall in the last tone of the pause group.

These Non-Emotional Intonation Contours could be treated as modifications of a neutral "intonation base" by a number of factors, instead of being regarded as co-ordinated phenomena. Also, in such an approach, the "netural base + statement" could be taken as the "intonation base" basic to all utterances, with the other contours constituting modifications of it as brought about by a variety of factors.

The introduction of additional modifying factors would allow to extend this approach to include the emotional contours as well.

For a more detailed discussion of this possible approach see 3.1.

4.3.2. Emotional Intonation Contours

Emotional Intonation contours are those which
reflect the speaker's personal attitudes and emotional state.

Emotional Intonation contours have the following characteristic pitch tendencies:

1. The co-occurring overall intensity pattern is sustained,

2. The overall pitch level of the tones is in most cases higher than in ordinary unemotional speech. The absolute elevation in the overall pitch range depends on the emotions conveyed by the speaker.

3. The absolute pitch range of each of the tones is wider than in ordinary unemotional speech.

4. The pitch contour of the last tone in the pause group is either rising or rising-falling.
SELECT BIBLIOGRAPHY

References for Vietnamese

Andrevv, N.D. and Gordina, M.V.

Bouchet, A.L.
1934 Cours Elémentaire d'Annamite, 4ème Edit. - Haiphong.

Cadière, Léopold

Cordier, G.
1932 Cours de Langue Annamite, Ngô-Tú-Hà, Hanoi.

Đào Duy Anh

Đào Văn Tập

Emeneau, Murray B.

Ferkinghoff, Klaus

Francastel, P.
1948 Précis de Langue Vientamienne, Nguyễn Văn Cú, Saigon.
Grammont, Maurice

Gouin, Eugène
1957 Dictionnaire Vietnamien - Chinois - Français, Saigon.

Haudricourt, André G.


Henderson, Eugénie J.A.


Honey, P.J.
Jones, Robert B., Jr and Hùynh Sanh Thong
1960  Introduction to Spoken Vietnamese, American
Council of Learned Society, revised edition, Washington, D.C.

 Lê Bá Khanh and Lê Bá Kong

Lê Văn Lý

Martini, Francois

Maspero, H.

Mchitarjan, T.T.
1959  Fonetika vietnamskogo jazyka (Phonetique de la langue vietnamienne), Moskva Izd Vostchoj literaturey.

Meillon, G.

Miller, John D.


1957  "Speak Vietnamese," Publication of the School of Languages, Saigon.


Tran Trong Kim

Trương Vinh Kỳ
1894 Abrégé de Grammaire Annamite, Imprimerie Nouvelle Saigon.

Other References

Abdalla, Albert G.
1961 An Instrumental study of the intonation of Egyptian Colloquial Arabic, University of Michigan Dissertation.

Abramson, Arthur S.

Armstrong, L. and Ward, Ida

Arnold, G.F.
1956/7 Stress in English Words, Lingua, 6, pp.221-67, pp.397-441.

Artemov, Vladimir

Bascom, Burt

Benedict, Paul
Bolinger, Dwight L.

Chang, Nien-Chuang T.
1958 Tones and Intonations in the Chengtu Dialect (Szechuan, China), *Phonetica*, 2, pp.59-85.

Chao Yuen Ren

Chomsky, Noam, Halle, M. and Lukoof, F.

Cooper, F.S.

Cowan, J.M.
1939 A technique for the measurement of Intonation, *Archiv für Vergleichende Phonetik III*, pp.223-34.
Coustenoble, Helena N. and Armstrong, Lilias E.

Daneš, František

Egerod, Søren,
1956 *The Lungtu Dialect, a Descriptive and Historical Study of a South China Idiom*. Ejnar Munksgaard Limited, Copenhagen, Denmark, 1956.

Fant, Gunnar M.


Faure, Georges


Fischer - Jørgensen, Eli
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title and Details</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Linguistische Einheiten im Rahmen der Modernen Sprachwissenschaft, <em>Springer - Verlag</em>.</td>
</tr>
</tbody>
</table>
Jakobson, R. and Halle M.  

Jones, Daniel  

Joos, Martin  

Katz, Jerrold and Postal, Paul  

Kingdom, Roger  


Kroll, Mary Elizabeth  
1956 *Suprasegmental Phonemes of Thai (Bangkok Dialect)*, Georgetown University, unpublished master's thesis.

Ladefoged, P.  

Lee, W.R.  

Lehiste, Ilse  

Lehiste, Ilse


Lewis, Don
1936 Pitch, its definition and Physical determinants, University of Iowa Studies in Psychology IV, PP.346-73.

Liberman, A.M.

Lieberman, Philip.

Lieberman, Philip, and Lees, Robert D.

Longacre, Robert

1959 Trique tonemorphemics, Anthropological Linguistics, 1, pp.5-42.

Newman, Stanley S.

Noss, Richard B.
1964 Thai-Reference Grammar, Foreign Service Institute, Dept. of State, Washington, D.C.
Peterson, G.E. and Lehiste, Ilse

Pickett, Velma B.

Pike, Eunice V.

Pike, Kenneth L.
1948 *Tone Languages*, University of Michigan Press, Ann Arbor, Michigan.

Pike, Kenneth L. and Kinberg, Willard
1956 A Problem in Multiple Stresses (Campa), Latin American Indian, *Word*, Vol.12, No.3.

Rigault, André

Schramm, W.L.
Shorto, H.L., Jacob, J.M. and Simmonds, E.H.S.
1963 Bibliographies of Mon-Khmer and Tai Linguistics, Oxford University Press.

Sprigg, R.K.
1955 The tonal system of Tibetan (Llasa Dialect) and the nominal Phrase, Bulletin of the School of Oriental and African Studies, Vol.12, No.1.

Stertsema, B.

Stockwell, Robert F.

Stockwell, Robert F., Bowen, F., Donald, J. and Silva-Fuenzalida, I.

Trager, George L. and Smith, Henery, Lee Jr.

Wang, William S.Y.
1968 The Basis of Speech. Project on Linguistic Analysis No.4, Berkley University of California, Berkley.

Ward, Ida C.

Wells, Rulon S.
Welmers, Wm. E.
1959  Tonemtics, morphotonemics and tonal morphomes, 

Wurm, S.A.
1951  The Karakalpak Language, Anthropos, International review of Ethnology and Linguistics, 
      Vol.46, Posieux (Fribourg, Switzerland).

Yao Shen
1964  Some Experiments on Chinese (Mandarin) Tone 
      Sandhi, Proceedings of the 5th International 
      Congress of Phonetic Science, Münster, 
      pp.525-8.
APPENDIX

OSCILLOGRAPHIC TRACINGS
anh
muốn
cỡ
gi
không
tôi,
để,
ý,
thấy
bên
nay
có
nhiều
xe,
anh
có
ai
dày
không
người
dó
là
người
pháp
phải
không
phải