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No. 9

PAPERS IN SOUTH EAST ASIAN LINGUISTICS No. 1

by

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CANBERRA 1967

THE AUSTRALIAN NATIONAL UNIVERSITY

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The Circle is indebted to the Australian National University for help in the production of this series.

This publication was made possible by a grant from the Hunter Douglas Fund.

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ENGLISH FOR VIETNAMESE

NGUYỄN ĐĂNG LIÊM

In the Republic of Vietnam, besides Chinese spoken by 126,000 people, and the Mon-Khmer languages spoken by 300,000 people, Vietnamese with 12,000,000 speakers is the standard official language to which national sentiment is strongly attached. It is provided with a Roman alphabet created by a Portuguese missionary, Alexander of Rhodes, in the seventeenth century. Its sizable literature, which includes poetical and religious works, has a history of several centuries and is written in Chinese characters, Demotic characters (believed to have been created by Han Thuyen in the fourteenth century), or the National (Roman) alphabet. Vietnamese is embedded in a national culture which, although deeply influenced by the Chinese culture, is different from it in many ways. Being now the language for government administration and business communication, and the medium of instruction in elementary, secondary, and higher schools, Vietnamese needs to develop in new technical terms and grammatical devices to cope with modern science and technology.

Although the country does not need an international language, or a lingua franca for internal communication and mass education as is the case with many multilingual countries, the teaching and learning of languages of wider communication in Vietnam is of great importance. As one of the major rôles of language is the expression of a culture, the learning of a foreign language is the key to the intellectual, aesthetic, and literary riches of another nation, and its value in general education is therefore undeniable. In view of the fact that Vietnam has a vital interest in keeping abreast of modern international culture, the use of one or more languages of wider communication by a large segment of its population is a factor in the educational, social, and economic development of the nation. In fact, there are at least two communication needs to be recognized here: transmission of science and technology, and international communication.

Science and technology: there are urgent needs for the country to have access to the scientific, technical, and economic knowledge of the modern world.

International communication: Vietnam wishes to enter the international scene and establish effective channels of communication with other nations.

Because second language learning is an important factor in the national development, Vietnamese high-school students are required to learn two foreign languages, the first one for seven years, and the second one for three years. When one compares the number of students enrolling to learn French as the first foreign language over the past eight years and those enrolling to learn English, it is apparent that French, which used to be an official language in the country, still has a higher number of students enrolled, while English, because of its increasing rôle in international communication and the influence of the English speaking countries in the modern world, has a higher ratio of increase in enrolments. This change in the enrolments of foreign language learning and the fact that over 150,000 people are involved in the teaching and learning of English in Vietnam, proves the necessity of having a well designed English language teaching programme for Vietnamese students.

In the United States of America, and the British Commonwealth, a new concept of applying modern linguistic science to the teaching of foreign languages has been developed and proved very efficient.

The central idea of this concept is the important rôle of the native language in foreign language learning. Each language has its own sound system and grammatical structure. The foreign language learner has already learned his native language extensively enough to grasp and express a variety of experience and he can never again be in the same position as a child learning his own language. He tends to transfer into the foreign language to be learned those habits of sound-production and word-order which are particular to his native language. This produces a distortion in the foreign language which will only be eradicated when the learner has adapted his speech habits to those of the people whose language he is learning.

Another important aspect of the concept is that it states that mastery of a language does not consist of knowing all the words in the language. If it were the case, no one could claim to have mastered even his own language, for the simple reason that no one knows all the words in such different fields as politics, economics, literature, religion,

psychology, physiology, or agriculture. The main problem in learning a foreign language, then, is not primarily that of acquiring vocabulary items - a process which accompanies our experience and takes time. It is first the mastery of the pronunciation (to be able to understand the stream of speech, to recognize the different sounds, and to pronounce them in an acceptable way) and the grammar (the features of forms and arrangements of which the foreign language makes use to signal its various layers of meaning). Once the phonological and grammatical features have become automatic habits - within a limited vocabulary - of the learner, he can then expand his knowledge of new words.

The Vietnamese student who sets out to learn the pronunciation of English will find some English sounds and combinations of sounds quite easy, and others quite difficult. This is because he is so "imprisoned" within the sound structure of his own language that he can pronounce only the sounds in English that are similar to the ones in Vietnamese. It is a very difficult task for him to learn the new sounds. In the first place, this is a matter of habit. Through years of practice he has built up a set of muscular habits which make him skilful in the pronunciation of the sounds of his native language, but only these sounds. These muscular habits are so well formed that they exclude the possibility of producing other sounds than the Vietnamese ones. In the second place, the student may be emotionally unable to pronounce new sounds, which just strike him as queer or even ridiculous. Thus even with the best intentions of pronouncing English sounds, he merely substitutes for them the Vietnamese sounds that appear to him to be identical with the English ones. Unfortunately, to the ear of the native speaker of English, the substituted sounds are either strange or unintelligible.

The Vietnamese student finds it very hard to hear the difference between the English pairs of vowels in the words *beat* vs *bit*, *gate* vs *get*, *set* vs *sat*, *pool* vs *pull*, *note* vs *naught*, or even *but* vs *bought*. He hears each pair of words indifferently as the same word. Consequently, he pronounces them alike too. Thus, he might want to say "The man *beat* the dog" when he actually says "The man *bit* the dog". The misunderstanding is rather serious, so he has to learn to pronounce the English sounds correctly!

Likewise, the Vietnamese student of English mixes up the pairs of initial consonants in the words *choke* vs *joke*, *tie* vs *thigh*, *day* vs *they*. Sometimes he is unable to hear the

difference between the words *pain vs bane*, *feel vs veal*, *seal vs zeal*, and *rain vs lane*. The final consonant contrasts in such pairs of words like *ridge vs rich*, *bath vs bass*, *race vs raise*, *tag vs tack*, *reef vs wreath*, *much vs muss*, etc. certainly confuse him. And the combinations of consonants at the beginning of words like *sprite*, *squeeze*, *thread*, or at the ends of words like *healths*, *nymphs*, *fifths*, *thousandths*, are absolutely impossible for him to pronounce at first.

The first thing the student has to do in pronunciation classes is to recognize all the different vowels and consonants, and the combinations of consonants in initial position as well as in final position. Once he can hear the meaningful differences, then he can try to pronounce them properly.

These are not the only difficulties the Vietnamese student finds in the pronunciation of English. The complex rise and fall, the rhythm, the lilt, the various kinds of signals that mark what is emphasized, what are disjoined, or what are joined together, are actually the most confusing features in English pronunciation for him.

He will probably not understand, for example, that the sentence "*John went to school*" pronounced with a rising pitch at the end is a question and not a statement.

Furthermore, Vietnamese is a tone language, i.e. it uses pitch differences to convey meanings. It has five or six tones depending upon the particular dialect under consideration. Thus, for example, the syllable *ma* has five or six completely different meanings ("mother, horse, tomb, young rice plant, but, or ghost"), depending on which of the six tones it is pronounced with. The same tone pattern occurs in the Vietnamese student's English speech. Thus, the following sentence might have many of its syllables (those italicized) pronounced on a very high pitch level. "If you *had enough* time, I *would suggest* that you *meet* the *headmistress*". These intonational oddities strike the ear of the English native speaker most. Consequently, the student has to throw off all restraint and self-consciousness in his mimicry of the English intonational pattern, and his acceptance of the unfamiliar absence of tones in English.

Because of the likelihood of misunderstanding due to pronunciation mistakes, and because the beginner has to form new habits of pronunciation, phonological training proves to be most effective in the early stages of the student's acquaintance with the English language. It aims first at

the recognition of difficult sounds or intonational patterns. Once the student can recognize the difference between say *beat* and *bit*, he can then try to produce the two vowels in the words correctly, by imitating the model (i.e. a teacher, tape-recording or record) which must have a native-like pronunciation. The best method of teaching pronunciation would be to have small classes with many hours of imitation, repetition, and practice with a native or a native-like model and with skilful guidance based upon understanding of the specific nature of the Vietnamese-English interference as mentioned briefly earlier. The audio-lingual laboratory may be also of great help because it permits the student to listen to a master tape as many times as he needs, to record his own pronunciation for comparison, while the instructor can spot his mistakes and correct them.

It has been noted that learning English pronunciation is learning to recognize and produce the sounds and intonational features of the language. Besides the pronunciation, the student has also to learn the grammar of English.

It is our task now to find what English grammar actually means. "Grammar" means different things to different people. For those who have learned Latin, it may mean the memorizing of paradigms for various declensions and conjugations. For those of us who have learned French, it can mean logical definitions of the "verbs", "nouns", "adjectives", "prepositions", etc. Thus, grammar is something very technical and highly "philosophical", and knowing grammar is being able "to talk about sentences".

By grammar we do not mean either of these things - the memorizing of paradigms or logical analysis of sentences or learning of universal rules. We mean by grammar the patterns of forms and arrangements by which "words" are put together. The existence of these patterns explain why children use such forms as "*two tooths*", or "*I swimmmed yesterday*". This is the case of extending the major patterns for the plural of nouns and the past tense of verbs which follow a different pattern.

English grammar for non-native speakers consequently consists of *patterns* or *structural devices* which the language uses to signal one of its layers of meaning. It does not attempt to legislate on the use of the language or rationalize its usages. To learn English grammar for the Vietnamese student is to practise structural patterns again and again until they become automatic. One may also note that

there is a two-fold way of learning grammar: *recognition*, that is, to understand structural patterns when one hears them, and *production*, that is, to be able to use the patterns automatically.

Some special English pronunciation problems for Vietnamese speakers were pointed out previously. Likewise, there are, for the Vietnamese student, special English grammar difficulties which are again due to the transfer of forms and meanings, and the application of forms and meanings of Vietnamese to English - both receptively and productively. English grammatical devices which do not exist or are different in Vietnamese are pitfalls for the learner of English. A scientific description of the grammar of English carefully compared with a parallel description of Vietnamese grammar would point out all the pitfalls to the teacher.

As examples of difficulties the English passive constructions like "*The flowers were given to Mary*" or "*John was elected chairman*", are difficult for the student because the same ideas would not be conveyed by passive constructions in Vietnamese. Differences in word order in the two languages also constitute problems. For example, the question "*When did he arrive?*" in English is difficult because in Vietnamese it would have the word order "*He arrived when*" and the English construction "*the blue shirt*" does not have the same word order as the Vietnamese "*the shirt blue*". The inflections such as the plural ending of nouns, the tenses of verbs etc., in English, constitute another group of difficulties, because the student is used to an uninflected language.

In order to master the complex structure of English sufficiently, the student should be taught only one point at a time. And there should be enough drill for control and sufficient review for mastery. He needs to acquire the automatic habit of calling on any grammatical device in his repertory, and using it with an appropriate vocabulary which he has learned without any conscious thought of analysis. Grammatical drills are designed for oral use in the classroom or in the language laboratory, and consist of a key example (a full sentence generally), a cue (a minimum instruction of how to modify the model), and a response (given by the student). They can be substitutional drills in which, given a sentence such as "*John bought a book yesterday*", and cue words such as "*sell, get, lose*", etc., the student has to produce sentences like "*John sold the book*",

etc. They can be transformational drills in which, for example, a statement "*John went to school*" is made into a question "*Did John go to school*". Or they can be expansional drills, for example, given the sentence "*Mary drove a car*", and words like "*new, old, black*", the student has to say "*Mary drove a new car*", etc.

In the choice of grammatical structures to be taught, the text writer must bear in mind that there are two levels of mastering a language: production and recognition. In the use of a foreign language, the difference between the production level - which is the lower one - and the recognition level stands out noticeably. One can recognize the meanings of many more words and structural patterns than one can use orally. The fundamental principles of the language (the word order; patterns of statements, questions, and requests; the fixed positions of word modifiers of substantives or verbs) which must be mastered on the production level should be made *unconscious habits* in the early stages of learning English. The use of common patterns (for example, *be + going to + verb* as a future time expression) should be made automatic to the student while more difficult patterns (*will, shall + verb*) should be taught for recognition in the early stages of learning.

Once the student has mastered the pronunciation and the grammar of English, he can go on learning new vocabulary items. At this stage, it is also possible to issue different vocabulary books for different students according to their specialized field of study. Thus, students of philosophy and agriculture will need different specialized vocabularies.

The fundamental objective of all foreign language learning is to achieve an understanding as complete as possible between people of different linguistic backgrounds. In order to arrive at this aim, the student of language has to learn the culture or cultures of the people speaking the language he learns, for language is closely related to culture. Since the meanings expressed in a language are culturally determined to a large extent, one cannot understand fully without understanding at least the distinct cultural meanings expressed through it. Thus, the foreign student cannot go far into the language to be learned without facing differences in cultural meanings. He needs to have substantial knowledge of specific facts concerning the culture, some understanding of the main patterns of thought, beliefs and traditions, and some appreciation of the values that

account for the way the people live and behave. He must also be able to recognize the significance of the accomplishments of the people.

It is told that once upon a time a very powerful emperor was invited to a splendid, formal dinner in a foreign court. His first action was to pick up his bowl of soup and drink the soup from the bowl nicely and elegantly. All the other distinguished guests and the hosts, in order not to offend their visitor, did the same thing. The foreign language student should not act like the emperor in the tale, because nobody would imitate him, and everyone would think him ignorant and crude. He should not let himself use the norms of his native culture to interpret the ways of acting and thinking of the people whose culture he is learning, nor look with suspicion or disapproval upon the behaviour of the latter rather than try to understand what those traits really are and mean.

The Vietnamese student of the English culture or cultures has to learn the way the English speaker eats, drinks, exercises, how he caters for the needs of his personality (artistic, social, or educational activities), or for his soul (religious activities). He should know the proper way of using forks and knives, just as he should be able to appreciate the Englishman's enthusiasm for a cricket match, or the American's love for a college football game. In order to understand the English culture or cultures, he should know the English folk-tales that teach morals or are representative of the way of thinking: the stories, among others, of King Alfred and the burning of cakes, Robin Hood, Hereward the Wake, Dick Turpin, Paul Bunyan, Pecos Bill, Daniel Boone, George Washington and the Cherry Tree, Crooked Mick of the Speewah, The Man from the Snowy River, and Clancy of the Overflow. He should be able to recognize the significance of the intellectual, literary, or philosophical accomplishments of great men like Chaucer, Shakespeare, G.B. Shaw, Churchill, of Benjamin Franklin, John Adams, Abraham Lincoln, or Thoreau, or Henry Lawson, Banjo Patterson and Billy Hughes in Australia. He should also understand the turning points of history such as the conquest of Britain by William the Conqueror, the Magna Carta, the formation of the British Empire, or the Industrial Revolution; the American Revolution, the Civil War, or Pearl Harbour; or the Federation in 1901 of the Australian States, and the ANZAC tradition ("when Australia first became a nation"), etc.

With all the pronunciation, grammar, culture, and literature of a language spoken by hundreds of millions of people in many countries throughout the world like the English language, the Vietnamese student, as any other non-native learner, has a task that is not easy but which is at the same time very rewarding because it opens the door to one of the richest and most varied heritages of thought and experience of the human race. Important as it is, the field of teaching English as a foreign language in Vietnam can claim intensive research in pedagogy, linguistics, psycholinguistics, sociolinguistics, etc., and accurate international coordinations by which Vietnamese English language teaching research centres will be able to exchange ideas as well as specialists and study teams with other similar organisations throughout the world. It also offers a rewarding experience to native speakers of English, and a promising career to enthusiastic Vietnamese students.

The first part of the paper discusses the historical and social context of English in Vietnam. It notes that English has been used in Vietnam since the early 20th century, primarily as a medium of instruction in schools. The paper argues that the use of English in Vietnam has been largely limited to the classroom, and that there has been very little practical use of English in everyday life. This has led to a situation where many Vietnamese students who graduate from English-speaking schools are unable to use English effectively in real-world situations. The paper also discusses the role of English in the development of Vietnam's economy and society, and the need for a more practical approach to English teaching in Vietnam.

REFERENCES

PHONEMIC SYLLABLE REPERTORY IN VIETNAMESE

NGUYỄN ĐĂNG LIÊM

0. Introductory.
1. The Syllable.
2. Onset and Coda.
3. Nucleus.
4. Tones.
5. Combinations of Nuclei and Codas.
6. Phonemic Sequences and Number of Syllables.

0. INTRODUCTORY

Vietnamese¹ is, on the phonological level, a monosyllabic language, in that phonemic syllables are phonemic words², and no phonemic word contains more than one phonemic syllable. On the morphological level, although there are polysyllabic words which are formed by two or more monosyllabic words or by reduplication³, a large number of morphemic

¹ See Nguyễn Đình Hòa, "Reading List on Vietnamese Language and Writing", *Văn-Hóa Nguyệt-San (Culture)* 11.695-97 (1962), Saigon: Directorate of Cultural Affairs, Department of Education.

² Trager and Smith define the phonemic word in English as 'A phonemic phrase having no plus juncture' (*An Outline of English Structure*, Studies in Linguistics: Occasional Paper 3, p. 50, Washington D. C.: American Council of Learned Societies, 1957). For the discussions on the word in Vietnamese, see David D. Thomas, "On Defining the 'Word' in Vietnamese", *Văn-Hóa Nguyệt-San (Culture)* 11.519-23, and Laurence C. Thompson, "The Problem of Word in Vietnamese", *Word* 19.39-52 (1963).

³ For reduplications in Vietnamese, see Murray B. Emeneau, *Studies in Vietnamese (Annamese) Grammar*, Berkeley, and Los Angeles: University of California Press (1951), or Lê Văn Lý, *Le Parler Vietnamien* Saigon: Institute of Historical Researches, Department of National Education (1960).

words⁴ are monosyllabic. Thus, the language must have a fairly large number of phonemic syllables in order not to have too many homophonous morphemes.

It is the aim of this paper to examine the occurrence, non-occurrence, or the possibility of occurrence of phonemic sequences within syllable boundaries in Saigon Vietnamese⁵, and to find rules as to the patterning of existing combinations.

1. THE SYLLABLE

Thompson defines the syllable in Saigon Vietnamese thus:

"In Saigonese a fraction of utterance which begins with an onset of stress and ends immediately before the next onset of stress or before a pause is a SYLLABLE. No phone is obstructed to extend over a syllable boundary: an intersyllabic long consonant or vowel is taken to be two separate phones, the second beginning with the new onset of stress."⁶

The distribution of phonemes in Saigon Vietnamese is stated with reference to the boundaries of the phonemic syllable, the smallest phonological unit occurring in isolation. Each syllable is composed of the following elements (which are optional if they occur only in some syllables and are obligatory if they occur in all syllables):

⁴ See Trager and Smith, *op.cit.*, p. 58ff.

⁵ Saigon Vietnamese is one of the standard dialects of Vietnamese. Henri Maspéro, in his historical classification of dialects of Vietnamese, has divided them into two main groups: Tonkinese-Cochinchinese and Haut Annam dialects. This means that the northern speech and that of the southern region are more closely related than either is to the speech of the central region. ("Etudes sur la phonétique historique de la langue annamite: Les initiales", *Bulletin de l'Ecole Française d'Extrême-Orient*, 12.1-3 (1912). For a phonological comparison of dialects of Vietnamese, see Laurence C. Thompson, *A Vietnamese Grammar*, Seattle, Washington: University of Washington Press, 1965.

⁶ Laurence C. Thompson, "Saigon Phonemics", *Language* 35.454-76 (1959), p. 455.

- (a) an optional onset⁷ - a consonant or consonant cluster;
- (b) an obligatory nucleus - a vowel or diphthong;
- (c) an optional coda - a consonant; and
- (d) an obligatory tone.

As a minimum unit in phonological phrase groups or pause groups⁸, the syllable carries a unit of stress, pitch, and length⁹, which are not discussed in this paper, because they can be better described on higher phonological levels than that of the syllable itself¹⁰.

2. ONSET AND CODA

There are twenty-two single consonants in Saigon Vietnamese¹¹.

⁷ The terms 'onset', 'nucleus', and 'coda' used in the description of syllable structure are taken from Charles F. Hockett, *A Manual of Phonology*, Memoir 11 of the International Journal of American Linguistics, p. 51ff. (1955).

⁸ The idea of language as hierarchically ordered is taken from Kenneth L. Pike, *Language in Relation to a Unified Theory of the Structure of Human Behaviour*, Parts I, II, and III, Glendale, California: Summer Institute of Linguistics (1954, 1955 and 1960). For a comparison of grammatical hierarchies in English and Vietnamese, see, Nguyễn Đăng Liêm, *A Contrastive Analysis of English and Vietnamese*, vol.1 *English Grammar*, Canberra: Linguistic Circle of Canberra Publications, The Australian National University (1966), vol.2 *Vietnamese Grammar*, and other volumes forthcoming.

⁹ For an instrumental analysis of Vietnamese intonation, see Aurélie H.M. Trần, *The Vietnamese Intonation*, The Australian National University, forthcoming Ph. D. dissertation.

¹⁰ For an analysis of stress and pitch on higher phonological levels than that of the syllable itself, see John Chapman Crawford, *Totontepec Mixe Phonotagmatics*, Norman, Oklahoma: Summer Institute of Linguistics (1963).

¹¹ There can be multiple analyses of the Saigon Vietnamese phonology, and there seem to be some points of indeterminacy in the analyses done so far.

		Labial	Dental	Retroflex	Palatal	Velar	Glottal
Stops	plain	p^{12}	t	$ṭ$	c	k	
	aspirated		t^h				
	voiced		d				
Fricatives	voiceless	f	s	$ʂ$		x	h
	voiced	v^{13}				g	
Lateral					l		
Nasal		m	n		$ɲ$	$ŋ$	
Trill				r^{14}			
Semi-Consonants		w			j		

TABLE 1. CONSONANTS

The twenty-two consonants, as well as the fourteen clusters / tw , dw , t^hw , cw , kw , $ʂw$, sw , xw , t^hw , lw , gw , $ɲw$, jw /, fill the optional onset slot¹⁵. It is noted that all the clusters have / w / as their second phoneme.

¹² The phoneme / p / has initial voiced implosive or plain allophones and final voiceless and unreleased allophones. Jones and Thông among others set two phonemes / b / and / p / (*Introduction to Spoken Vietnamese*, Washington D. C. second edition [1960]).

¹³ The phoneme / v / has three phones [v , b^i , v^i].

¹⁴ The phoneme / r / has three phones [r $r̃$ $ṛ$].

¹⁵ For an analysis of phonotagmemes as slots plus filler classes, see John Chapman Crawford, op.cit.

Only eight consonants /p, t, k, m, n, ŋ, w, j/ can fill the optional coda slot.

3. NUCLEUS

Eleven vowels¹⁶, and four diphthongs fill the obligatory nucleus slot.

VOWELS		FRONT	CENTRAL	BACK	
				Unrounded	Rounded
HIGH		i		u ¹⁷	u
	Close	e		σ ¹⁷	o
MID	Open	ɛ	â ¹⁷		
	Close		ã ¹⁷		ɔ
LOW	Open		a		

DIPHTHONGS

/iə, rə, uə, əu/

TABLE 2. VOWELS AND DIPHTHONGS

While the other nuclei can occur in free position, i.e. without being followed by a final consonant, /â, ã, əu/ can occur only in bound position, i.e. they must be followed by a final consonant.

¹⁶ /i, e, u, σ, u, o/ have homophonously diphthongized allophones in free position, viz. [iⁱ, e^e, u^u, u^u, o^o].

¹⁷ The symbols u, σ, â, and ã are taken from traditional spelling, and they represent roughly the sounds [u γ ʌ ɑ] in the International Phonetic Association system.

4. TONES

There are five phonemic tones in Saigon Vietnamese whose allotones are conditioned by the relative stress of the syllables which bear them, as well as by the relative pitch and intonation contour. In the following table, each tone is represented only by its stressed allotone¹⁸.

HR	MR	LR	HL	LL
HR = High-Rising /↑/				
MR = Mid-Rising /∞/				
LR = Low-Rising /f/				
HL = High-Level /o/				
LL = Low-Level /↓/				

Example: má 'mother'
 " *mả 'tomb'*
 " *ma 'young rice plants'*
 " *ma 'ghost'*
 " *mà 'but'*

TABLE 3. TONES

5. COMBINATIONS OF NUCLEI AND CODAS

Besides twelve free nuclei, there are sixty-six combinations of nuclei and codas as shown in Table 4.

¹⁸ For more detail on allotones, see Aurélie H.M. Trần, *op.cit.*

NUCLEI	C O D A S								
	Free	-p	-t	-k	-m	-n	-ŋ	-j	-w
i	i	ip	it		im	in			iw
e	e	ep	et		em	en			ew
ɛ	ɛ	ɛp		ɛk	ɛm		ɛŋ		ɛw
â		âp		âk	âm		âŋ	âj	âw
ǎ			ǎt	ǎk		ǎn	ǎŋ		
a	a	ap		ak	am		aŋ	aj	aw
ʊ	ʊ	ʊp		ʊk	ʊm		ʊŋ	ʊj	ʊw
ɔ	ɔ	ɔp ¹⁹		ɔk	ɔm ¹⁹		ɔŋ	ɔj	ɔw
u	u	up		uk	um		uŋ	uj	
o	o	op ¹⁹		ok	om ¹⁹		oŋ	j	
ɔ	ɔ	ɔp ¹⁹		ɔk	ɔm ¹⁹		ɔŋ	ɔj	
iə	iə			iək			iəŋ		
ʊə	ʊə			ʊək			ʊəŋ		
uə	uə			uək			uəŋ		
ǎu				ǎwk			ǎwŋ		

TABLE 4. COMBINATIONS OF NUCLEI AND CODAS

6. PHONEMIC SEQUENCES AND NUMBER OF SYLLABLES

The statement of the phonemic composition of the syllable in Saigon Vietnamese in Section 1 can be formulated in terms of "canonical"²⁰ forms, or patterns of segmental and tonal phonemes (again stress, pitch contours, and length being disregarded because they are irrelevant in this paper). Phonemic syllables in the language can be of the following patterns of segmental and tonal phonemes:

VT, VCT, CVT, CVCT, CwVT, and CwVCT

¹⁹ The nuclei of /ɔp, op, ɔp/ and also of /ɔm, om, ɔm/ lose their phonemic contrast in less careful speech.

²⁰ The term "canonical" is taken from Eugene A. Nida, *Morphology: The Descriptive Analysis of Words*, Ann Arbor: The University of Michigan Press, second edition, 1957, p.66.

where C represents a consonant, V a vowel or diphthong, w the semi-consonant /w/, and T a tone (which is conventionally placed at the end of the formulae).

In total, there are 4,467 phonemic syllables in Saigon Vietnamese. The method used to find all syllables was to look through standard dictionary entries²¹ and to check the entries with the author's own idiolect. Reduplicating syllables, which are by themselves meaningless, were not counted.

Although there are fourteen consonant clusters in the language, there is only a relatively small number (337) of syllables beginning with an initial cluster.

While initial consonants have practically no influence on the permissibility of tone occurrences, there are phonological laws forbidding the combination of the mid-rising, low-level, and high-level tones with final stops. Other non-occurrences of particular tones and final consonants are not accounted for by any generalisation. The only possible explanation to the fact that phonemic syllables do or do not occur is that such is the phonological system of the language.

Tables 5-9²² show the number of syllables for each of the five tones in Saigon Vietnamese as found in the material used for this article. It is noted that the high-rising tone and the low-rising tone, both occurring with any syllable ending, have the largest numbers of syllables, 1198 and 938 respectively. The other three tones do not occur with final stops, and consequently have smaller number of syllables. There are 917 syllables with the high-level tone, 758 with the low-level tone, and 656 with the mid-rising tone.

Tables 10-24 show the number of syllables for each of the fifteen syllable nuclei.

²¹ Dictionaries used: Eugène Gouin, *Dictionnaire Vietnamien Chinois Français*, Saigon: Imprimerie d'Extrême-Orient (1957), and Thanh-Nghĩ, *Từ-Điển Việt-Nam*, Saigon: Thời-Thế (1958).

²² Tridimensional tables in which the third dimension would classify syllables according to their first segmental phoneme are not necessary, seeing that such a classification would not give much more information on the combination of tonal and segmental phonemes in the language.

		Free	Coda							TOTAL	PERCENTAGE		
			Stops			Nasals			Semi-Consonants				
			-p	-t	-k	-m	-n	-ŋ	-y			-w	
Nucleus	Vowels	i	23	14	27		14	16			17	111	9.3
		e	20	7	19		3	10			7	66	5.5
		ɛ	26	14		25	10		13		16	104	8.7
		â		17		21	15		13	17	12	95	7.9
		ǎ			21	26		17	21			85	7.1
		a	29	17		27	14		30	30	21	168	14.0
		ɤ	15	4		24	8		13	6	4	74	6.2
		ɔ	19	13		11	8		11	11	2	75	6.2
		u	18	11		21	12		17	14		93	7.8
		o	14	8		15	6		13	19		75	6.3
	ɔ	15	13		17	12		10	20		87	7.3	
	Diphthongs	iə	9			22			22			53	4.4
		ɤə	15			19			13			47	3.9
		uə	5			13			6			24	2.0
		ǎu				22			19			41	3.4
TOTAL		208	118	67	263	102	43	201	117	79	1198		
PERCENTAGE		17.4	9.8	5.6	21.9	8.5	3.6	16.8	9.8	6.6			

Table 5. SYLLABLES HAVING THE HIGH-RISING TONE

		Free	Coda							TOTAL	PERCENTAGE		
			Stops			Nasals			Semi-Consonants				
			-p	-t	-k	-m	-n	-ŋ	-y			-w	
Nucleus	Vowels	i	26	10	19		8	12			12	87	9.3
		e	22	5	13		2	8			4	54	5.8
		ɛ	11	12		16	3		9		17	68	7.3
		â		17		15	16		13	10	11	82	8.7
		ă			17	17		12	13			59	6.3
		a	21	13		28	14		23	18	19	136	14.5
		ʊ	12	3		23	8		9	5	5	65	6.9
		ɔ	16	6		10	5		8	7		52	5.5
		u	17	12		21	12		13	13		88	9.4
		o	11	11		11	4		10	10		57	6.1
	ɔ	15	9		14	6		9	9		62	6.6	
	Diphthongs	iə	3			18			20			41	4.4
		ʊə	9			13			13			35	3.7
		uə	2			9			4			15	1.6
ău					20			17			37	3.9	
TOTAL		165	98	49	215	78	32	161	72	68	938		
PERCENTAGE		17.6	10.4	5.2	22.9	8.3	3.4	17.2	7.7	7.3			

Table 6. SYLLABLES HAVING THE LOW-RISING TONE

		Free	Coda							TOTAL	PERCENTAGE		
			Stops			Nasals			Semi-Consonants				
			-p	-t	-k	-m	-n	-ŋ	-y			-w	
Nucleus	Vowels	i	31				20	21			18	90	9.8
		e	25				6	18			11	60	6.6
		ɛ	27				11	23			19	80	8.7
		â					22	21		24	17	84	9.2
		ǎ						25	24			49	5.3
		a	30				15		32	27	20	124	13.5
		ɤ	15				10			6	13	44	4.8
		ɔ	21				10		15	19		65	7.1
		u	21				10		20	14		65	7.1
		o	20				12		16	17		65	7.1
	ɔ	21				12		19	16		68	7.4	
	Diphthongs	iə	10						30			40	4.4
		ɤə	14						21			35	3.8
		uə	13						14			27	2.9
		ǎu							21			21	2.3
TOTAL		248				128	108	212	123	98	917		
PERCENTAGE		27.9				14	11.8	23.1	13.4	10.7			

Table 7. SYLLABLES HAVING THE HIGH-LEVEL TONE

		Free	Coda							TOTAL	PERCENT-AGE		
			Stops			Nasals			Semi-Consonants				
			-p	-t	-k	-m	-n	-ŋ	-y			-w	
Nucleus	Vowels	i	26				10	20			12	68	9.0
		e	20				4	13			10	47	6.2
		ɛ	23				11		12		17	63	8.3
		â					20		17	14	11	62	8.2
		ă						24	19			43	5.7
		a	27				14		26	25	19	111	14.6
		ɤ	14				8		18	8	3	51	6.7
		ɔ	20				11		10	12		53	7.0
		u	17				12		20	13		62	8.2
		o	12				10		14	15		51	6.7
	ɔ̃	18				10		12	11		51	6.7	
	Diphthongs	iə	7						24			31	4.1
		ɤə	6						18			24	3.2
		uə	9						12			21	2.8
		ău							20			20	2.6
TOTAL		199				110	57	222	98	72	758		
PERCENT-AGE		26.3				14.5	7.5	29.3	12.9	9.5			

Table 8. SYLLABLES HAVING THE LOW-LEVEL TONE

		Free	Coda							TOTAL	PERCENT-AGE		
			Stops			Nasals			Semi-Consonants				
			-p	-t	-k	-m	-n	-ŋ	-y			-w	
Nucleus	Vowels	i	23				10	12			10	55	8.4
		e	19				1	12			4	36	5.5
		ɛ	18				3		11		17	49	7.5
		â					14		14	13	9	50	7.6
		ǎ						17	16			33	5.0
		a	28				11		25	25	16	105	16.0
		ʉ	14				3		18	9	9	53	8.1
		ɔ	22				5		7	6	1	41	6.2
		u	15				5		17	14		51	7.8
		o	21				4		9	12		46	7.0
	ɔ	16				11		8	9		44	6.7	
	Diphthongs	iə	15						23			38	5.8
		uʉ	11						11			22	3.4
		uə	8						4			12	1.8
ǎu								21			21	3.2	
TOTAL		210				67	41	184	88	66	656		
PERCENT-AGE		32.0				10.2	6.3	28.0	13.4	10.1			

Table 9. SYLLABLES HAVING THE MID-RISING TONE

		-i	-p	-t	-m	-n	-w	TOTAL	%
1	f-	o+t∞f		t f	o+t∞	o t	o t	15	4.0
2	b-	o+t∞f	t f	t f	o+t	o+t∞f	t∞	19	5.1
3	t-	o+t∞f	t f	t f	o+t f	o+t∞f	o+t∞f	23	6.1
4	t ^h -	o+t∞f	t f	t f	o+t f	o+t∞f	o+t f	22	5.9
5	ṭ-	o+t∞f	t	t f	o	o+t∞f	t∞f	17	4.5
6	d-	o t∞	f	t f	t t∞	o+t∞f	o+t∞f	19	5.1
7	c-	o+t∞f	t	t f	o+t	o+t∞	o+t f	19	5.1
8	k-	o+t∞f	t f	t f	o t ∞f	o+t	o+t∞f	21	5.6
9	f-	o+t∞f		t	o t	t∞	o t	12	3.2
10	v-	o+t∞f		t f	o	o ∞f	t	12	3.2
11	s-	o+t∞f		t	o	o+t∞	o+t∞f	16	4.3
12	ʃ-	o t∞	t	t	o ∞	o+t f	o	12	3.2
13	x-	o+t∞	t	t	o t	o t	o t	12	3.2
14	g-	o t f		t f	o			6	1.6
15	h-	o+t∞	t f	t f	t t∞	o t	o t ∞f	17	4.5
16	w-	o+t∞f		t f		o+t		10	2.7
17	r-	o+t∞f	f	t f	o	o t f	o+t	15	4.0
18	l-	o+t f	t	t f	o+t∞f	o+t∞f	o+t∞f	22	5.9
19	m-	o+t∞f	t	t f	t ∞	o t f	o+t	16	4.3
20	n-	o t∞f	t	t f	o t f	o t ∞f	o t f	17	4.5
21	ɲ-	o+t∞f	t f	t	o t ∞f	t t f	o+t∞	19	5.1
22	ŋ-	o+t∞f	f	t f	o ∞f	o t∞	o	15	4.0
23	y-	o+t f	t f	t f	o+t∞f	o+t	o t f	19	5.1
TOTAL		104	24	41	61	78	67	375	
PERCENTAGE		27.7	6.4	10.9	16.3	20.8	17.9		

Entropy: $\frac{375}{690} = 54.3$.

Table 10. SYLLABLES HAVING /i/ AS NUCLEUS

		-i	-p	-t	-m	-n	-w	TOTAL	%
1	tw-	o f						2	5.7
2	dw-								
3	ɬw-	o f						2	5.7
4	cw-	ɔ						1	2.9
5	kw-	o t + ∞ f		t f		++		9	25.7
6	sw-	o t		t				3	8.6
7	ʒw-	o t		t				3	8.6
8	xw-	o				o	∞ f	4	11.4
9	t ^h w-	t + ∞ f						4	11.4
10	lw-	∞ f						2	5.7
11	gw-								
12	ɲw-	f						1	2.9
13	nw-	o f		t				3	8.6
14	yw-	o						1	2.9
TOTAL		25		5		3	2	35	
PERCENTAGE		71.5		14.3		8.6	5.7		

Entropy: $\frac{35}{420} = 8.3$.

Table 10a. SYLLABLES HAVING /i/ AS NUCLEUS AND INITIAL CLUSTERS

		-e	-p	-t	-m	-n	-w	TOTAL	%
1	e-	o t	o	o f	o t	∞		8	3.4
2	b-	o t ∞ f	t	t f		o t ∞ f	o t f	16	6.8
3	t-	o t ∞ f		t	o	o		8	3.4
4	t h-	o t ∞ f	t	t	o t	o	o t	12	5.1
5	t̥-	o t ∞ f		f			o t f	8	3.4
6	d-	o t ∞ f	f	t	o t f	t ∞	t	14	6.0
7	c-	o t t f	t	t f	o ∞	o t ∞		12	5.1
8	k-	o t ∞ f	t	t f	t	o t f	o t	14	6.0
9	f-	o t f		t		o ∞	t ∞	9	3.8
10	v-	o t t f		t		o t ∞ f	o t t	13	5.6
11	s-	o t ∞ f	t f	t f		o t		11	4.7
12	ʃ-	t f	t	t f		o t ∞	o t	11	4.7
13	x-	o t t f				o ∞ f	o t	9	3.8
14	g-	o t t				t		4	1.7
15	h-	o t ∞ f		t	t	o t ∞	∞	10	4.3
16	w-	o t t ∞ f		t				6	2.6
17	r-	o t t ∞	f	t		o t	o t f	11	4.7
18	l-	o t ∞ f	f	t f		o t f	o t ∞	14	6.0
19	m-	o t t ∞ f		f	t	o t ∞ f	t	13	5.6
20	n-	o t ∞ f	t f		o t f	o t t f	o t	15	6.4
21	ŋ-	∞						1	0.4
22	ɳ-	o t f		t f		o ∞	o ∞ f	10	4.3
23	y-	o t ∞		f		f		5	2.1
TOTAL		89	13	27	16	54	35	234	
PERCENTAGE		38.0	5.6	11.5	6.8	23.0	15.0		

Entropy: $\frac{234}{690} = 33.9$.

Table 11. SYLLABLES HAVING /e/ AS NUCLEUS

		-e	-p	-t	-m	-n	-w	TOTAL	%
1	tw-	† f		†		o		4	13.3
2	dw-					†∞		2	6.6
3	t̥w-								
4	cw-	†						1	3.3
5	kw-	o† f		† f		o††	†	9	30.0
6	sw-	o †∞		f		†		5	16.6
7	ʃw-								
8	xw-	o		†				2	6.6
9	tʰw-	o† ∞						3	10.0
10	lw-								
11	ʒw-								
12	ɲw-	f						1	3.3
13	nw-			†				1	3.3
14	yw-	f				†		2	6.6
TOTAL		15		6		8	1	30	
PERCENTAGE		50.0		20.0		26.6	3.3		

Entropy: $\frac{30}{420} = 7.1$.

Table 11a. SYLLABLES HAVING /e/ AS NUCLEUS AND INITIAL CLUSTERS

		-ε	-p	-k	-m	-ŋ	-w	TOTAL	%
1	ε-	o t t f	t f	t	o t	o t	o t t ∞ f	16	5.0
2	b-	o t t ∞ f	t f	t f	t ∞	o t t ∞ f	o t t ∞ f	21	6.5
3	t-	o t t ∞	t f	t f	o t t	o ∞	o t ∞ f	17	5.3
4	t ^h -	o t t ∞	t	t	t	o t f	o ∞ f	13	4.0
5	t̥-	o ∞		t f	t	∞	o t t f	10	3.1
6	d-	o t ∞	f	t f	o	o t f	o t t ∞	14	4.4
7	c-	o t t ∞	t f	t f	o t	o t t ∞ f	o t t ∞	19	5.9
8	k-	o t t ∞ f	t f	t f	o t t ∞	t t ∞ f	o t t ∞ f	22	6.9
9	f-	o t t	t	t f		o t	t	9	2.8
10	v-	o t t ∞		t f	f	o t ∞ f	o t t ∞ f	16	5.0
11	s-	o t ∞	t f	t f	o t	o t ∞	o t t ∞ f	17	5.3
12	ʃ-	o t ∞		t	t	o t	f	8	2.5
13	x-	o t t f	t	t	o	o	t	9	2.8
14	ʒ-	o t t ∞ f	t	t	t	o t	f	11	3.4
15	h-	o t t f	f	t	t ∞	o t f	o t t ∞	15	4.7
16	w-	o t f						3	0.9
17	r-	o t t ∞		t f	t	o t t	o t ∞	13	4.0
18	l-	o t t ∞ f			o t t f	o t t ∞	o t t ∞ f	18	5.6
19	m-	o t t ∞ f	t f	t f	o t	o t t	o t t ∞ f	19	5.9
20	n-	o t t ∞	t f	t f	o t	t	o t ∞	14	4.4
21	ɲ-	o t t f	t f	t	o t t f	o	o t t f	16	5.0
22	ɳ-	o t t		t f		t ∞ f	t ∞ f	11	3.4
23	y-	t t ∞	t f		t	o	o ∞ f	10	3.1
TOTAL		88	26	33	38	58	78	321	
PERCENTAGE		27.4	8.1	10.3	11.8	18.1	24.3		

Entropy: $\frac{321}{690} = 46.5$.

Table 12. SYLLABLES HAVING /ε/ AS NUCLEUS

		-ε	-p	-k	-m	-η	-w	TOTAL	%
1	tw-	+		+ f		o		4	9.1
2	dw-								
3	ɣw-								
4	cw-	o+						2	4.5
5	kw-	o++∞		+ f		o++ f	o++ f	14	31.8
6	sw-	+ f		+ f		o		5	11.4
7	ɕw-								
8	xw-	o+ ∞		+			+	5	11.4
9	tʰw-								
10	lw-	o++		+				4	9.1
11	ɣw-								
12	ɲw-	+				o ∞		3	6.8
13	ɳw-	o+				o ∞	o+ ∞f	8	18.2
14	yw-								
TOTAL		17		8		10	9	45	
PERCENTAGE		38.6		18.2		22.7	20.5		

Entropy: $\frac{44}{280} = 15.7$.

Table 12a. SYLLABLES HAVING /ε/ AS NUCLEUS AND INITIAL CLUSTERS

		-p	-k	-m	-n	-w	-y	TOTAL	%
1	â-	t	t	o+t∞	o+t ∞	o+t ∞	o+t f	15	4.2
2	b-	t f	t f	o+t∞f	o+t∞f	o+t f	o+t∞f	22	6.1
3	t-	t f	t f	o+t∞	o+t∞f	o+t ∞f	o+t ∞	20	5.6
4	th-	t f	t f	o+t∞f	o+t∞f	o+t	o+t∞	19	5.3
5	t̥-	t	f	o+t∞		o+t	o+t	10	2.8
6	d-	t f	t	o+t∞f	o+t f			12	3.3
7	c-	f	t f	o+t f	o+t∞f	o+t f	o+t	18	5.0
8	k-	t f	t f	o+t∞	o+t∞f	o+t∞f	o+t f	22	6.1
9	f-	t f	t f	∞	o+t∞f	o ∞	o+t ∞	15	4.2
10	v-	t	t f	o+t f	o+t∞		o+t∞f	14	3.9
11	s-	t f	t	o+t∞f	o+t	o+t	o+t∞	16	4.5
12	ʃ-	t f		o+t f	o+t	o+t	o f	14	3.9
13	x-	t	t	o ∞	o ∞	o+t ∞f	o ∞	12	3.3
14	g-	t f	t f	o+t f	o+t	t	o+t∞f	15	4.2
15	h-	t f	t	o+t∞f	o f	o+t f	o+t ∞	15	4.2
16	w-		t f	o				3	2.4
17	r-	f	t	o+t f	t+t f	o+t f	o+t	14	3.9
18	l-	t f	f	o+t∞f	o+t∞f	o+t∞f	o+t∞f	22	6.1
19	m-	f	t f	o+t	o+t∞f	o+t∞f	o+t∞f	19	5.3
20	n-	f	t	o+t∞	o	o+t	o ∞	11	3.1
21	ɲ-	t f	t f	o+t f	o ∞f	f	o+t	15	4.2
22	ŋ-	f	t	o+t∞f	o+t∞	t∞	o+t	15	4.2
23	y-	t	t f	o+t f	o+t∞f	o+t∞f	o+t∞f	21	5.8
TOTAL		34	34	85	75	60	71	359	
PERCENTAGE		9.5	9.5	23.7	20.9	16.7	19.8		

Entropy: $\frac{359}{690} = 52.0$.

Table 13. SYLLABLES HAVING /â/ AS NUCLEUS

		-p	-k	-m	-ŋ	-w	-y	TOTAL	%
1	tw-								
2	dw-								
3	t̥w-								
4	cw-								
5	kw-		t̥ f	f	t̥t̥		o t̥ ∞ f	9	64.2
6	sw-						o t̥	2	14.2
7	ɸw-								
8	xw-						o t̥	2	14.2
9	t ^h w-								
10	lw-								
11	ɣw-								
12	ɲw-								
13	nw			f				1	7.1
14	yw-								
TOTAL			2	2	2		8	14	
PERCENTAGE			14.2	14.2	14.2		57.1		

Entropy: $\frac{14}{420} = 3.3$.

Table 13a. SYLLABLES HAVING /â/ AS NUCLEUS AND INITIAL CLUSTERS

		-t	-k	-n	-ŋ	TOTAL	%
1	ǎ-	† f	†	o†+∞	†	8	3.2
2	b-	† f	† f	o†+∞f	o†+	12	4.8
3	t-	† f	† f	o†+ f	o + f	11	4.4
4	t ^h -	†	†	o†+∞f	o†+∞f	12	4.8
5	ṭ-	† f	† f	o†+∞	o†+∞f	13	5.2
6	d-	†	† f	o†+∞	o†+∞f	12	4.8
7	c-	† f	† f	o†+ f	o†+∞f	13	5.2
8	k-	† f	† f	o†+∞f	o†+∞f	14	5.6
9	f-	† f	†	o ↓	o ∞	7	2.8
10	v-	† f	† f	o +∞f	o†+∞	12	4.8
11	s-	† f	†	o	o†+∞	8	3.2
12	ʃ-	†	† f	o†+∞	o† ∞	10	4.0
13	x-	†	†	o† ∞	o† ∞	8	3.2
14	g-	f	† f	o†+ f	o†+ f	11	4.4
15	h-	† f	†	o +∞f	o†+∞	11	4.4
16	w-	f	† f	o†+∞	o ∞	9	3.6
17	r-	† f	† f	o +∞	o†+ f	11	4.4
18	l-	† f	† f	o†+∞f	o†+∞f	14	5.6
19	m-	†	† f	o†+ f	o†+ f	11	4.4
20	n-	†	† f	o†+ f	o†+ f	11	4.4
21	ɲ-	†	† f	o†+∞	o†+∞f	12	4.8
22	ŋ-	† f	† f	o†+∞f	o† ∞	12	4.8
23	y-		† f	o† f	o + f	8	3.2
TOTAL		35	40	89	86	250	
PERCENTAGE		14.0	16.0	35.6	34.4		

Entropy: $\frac{250}{860} = 29.1$

Table 14. SYLLABLES HAVING /ǎ/ AS NUCLEUS

		-t	-k	-n	-ŋ	TOTAL	%
1	tw-						
2	dw-			‡		1	5.2
3	tʷ-						
4	cw-		‡			1	5.2
5	kw-	o‡ f			‡	4	21.0
6	sw-		‡		o‡ ∞	4	21.0
7	ʃw-						
8	xw-						
9	tʰw-		‡		o‡	3	15.8
10	lw-			o	‡	2	10.5
11	ɣw-						
12	ɲw-						
13	ŋw-	f		∞		2	10.5
14	yw-			o‡		2	10.5
TOTAL		5	3	5	6	19	
PERCENTAGE		26.3	15.8	26.3	31.6		

Entropy: $\frac{56}{280} = 20.0$.

Table 14a. SYLLABLES HAVING /ǎ/ AS NUCLEUS AND INITIAL CLUSTERS

		-a	-p	-k	-m	-ŋ	-w	-y	TOTAL	%
1	a-	o+t∞f	t f	t f	o t ∞	o t	o+t∞f	o t ∞	22	4.1
2	b-	o+t∞f		t f	t	o+t∞f	o+t∞f	o+t∞f	23	4.3
3	t-	o+t∞f	t f	t f	o+t f	o+t∞f	o+t∞f	o+t∞f	28	5.2
4	t h-	o+t∞	t f	t f	o+t∞	o t ∞	o+t∞f	o t ∞	23	4.3
5	t̥-	o+t∞	t	t f	t∞f	o+t f	o+t∞	o t ∞f	23	4.3
6	d-	o+t∞	t f	t f	o+t∞f	o+t∞f	o+t∞f	o+t∞f	28	5.2
7	c-	o+t∞f	f	t f	t f	o+t∞f	o+t∞f	o+t∞f	25	4.6
8	k-	o+t∞f	t f	t f	o+t∞f	o+t∞f	o+t∞f	o+t∞f	29	5.4
9	f-	o+t	t f	t f	t f	o+t∞f	o+t	o t ∞	20	3.7
10	v-	o+t∞f		t f	t f	o+t∞f	t	o+t∞f	20	3.7
11	s-	o+t∞f	t	t f	o+t∞	o t	o+t∞f	t∞	22	4.1
12	ʃ-	o+t∞	t f	t f	o+t f	o+t∞f	o+t∞f	o+t∞	26	4.8
13	x-	o+t∞	t f	t f	o t ∞f	o+t∞f	o ∞	o t ∞	22	4.1
14	g-	o+t∞f		t f	o	o+t f	t t f	o+t∞	19	3.5
15	h-	o+t∞f	t f	t f	o t∞f	o+t∞f	o+t∞f	o+t∞f	28	5.2
16	w-	o+t∞f		t f		t∞f		t f	13	2.4
17	r-	o+t∞f	t f	t f	o t f	o+t f	o+t∞f	t t	23	4.3
18	l-	o+t∞f	t f	t f	o t∞f	o+t∞f	o+t∞f	o+t∞f	28	5.2
19	m-	o+t∞f		t f		o+t∞f	o+t∞f	o+t∞f	22	4.1
20	n-	o+t∞f	f	t f	o t f	o+t∞f	o+t∞f	o+t∞f	26	4.8
21	ɲ-	o+t∞f	t	t f	o+t∞	o t∞f	o+t f	o+t∞	24	4.4
22	ŋ-	o t∞	t	t f		o+t f	o+t f	o+t∞f	19	3.5
23	y-	o+t∞f	t	t f	o+t∞f	o+t∞f	o+t f	o+t∞f	27	5.0
TOTAL		106	29	46	68	101	95	95	540	
PERCENTAGE		19.7	5.4	8.5	12.6	18.7	17.6	17.6		

Entropy: $\frac{540}{805} = 67.1$.

Table 15. SYLLABLES HAVING /a/ AS NUCLEUS

		-a	-p	-k	-m	-n	-w	-y	TOTAL	%
1	tw-	o t ∞ f		t f		o t ∞		t f	12	11.1
2	dw-	f		f		o t ∞ f		t t	9	8.3
3	ʃw-									
4	cw-					o t ∞		o t ∞	7	6.5
5	kw-	o t ∞ f		t		o t ∞	t f	o t ∞	15	13.9
6	sw-	o t ∞		f		o t		t t	9	8.3
7	ʒw-							t	1	0.9
8	xw-	o t ∞		t		o t ∞		o t	9	8.3
9	t ^h w-	o t ∞		t f		o t ∞		o t ∞ f	12	11.1
10	lw-	o t ∞		f		o t ∞ f		o t f	13	12.0
11	ɣw-	t							1	0.9
12	ɲw-	t				t		o t t	5	4.6
13	nw-	o f	t			o f	t	o t ∞ f	11	10.2
14	yw-	t f				o ∞			4	3.7
TOTAL		30	1	9		35	3	30	108	
PERCENTAGE		27.8	0.9	8.3		32.4	2.8	27.8		

Entropy: $\frac{108}{490} = 22.0$.

Table 15a. SYLLABLES HAVING /a/ AS NUCLEUS AND INITIAL CLUSTERS

		-u ^ɔ	-p	-k	-m	-n	-y	-w	TOTAL	%
1	u ^ɔ -	o+t f	t	t f	o+t	o+t ∞	o	o	14	4.9
2	b-	o+t f	t	t f	o+t f	o+t ∞	o ∞	o+t ∞	20	7.0
3	t-	o+t ∞ f		t	o	o+t ∞	o+t	∞ f	14	4.9
4	t ^h -	o+t ∞ f		t f		o+t	t	∞	11	3.9
5	t̥-	t+t ∞ f		f		o+t	f	o+t	11	3.9
6	d-	t+t	f	t f	o+t ∞ f	t+t f	f	o	15	5.3
7	c-	o+t ∞		t f	o+t	o+t ∞	∞	o+t ∞	18	6.3
8	k-	o+t ∞ f	t	t f	o+t f	o+t	t+t ∞	o+t ∞ f	21	7.4
9	f-			t f		o	o	f	5	1.8
10	v-			t f		t ∞ f		o	6	2.1
11	s-	o+t ∞		t f		o+t ∞	t		10	3.5
12	ʃ-	o+t ∞ f		t f		o+t ∞	∞	o ∞	13	4.6
13	x-	o+t ∞				o+t f		o+t	8	2.8
14	g-	t		f	o+t f	t	∞		7	2.5
15	h-	o+t ∞ f		t	t f	o+t ∞	∞	o ∞	15	5.3
16	w-			t f		o+t			4	1.4
17	r-			t f	o+t ∞	o+t	t+t ∞ f	f	13	4.6
18	l-	o+t ∞ f		t f	t ∞ f	o ∞	t+t ∞	o f	17	6.0
19	m-		t	t f		t ∞	o+t	o ∞	9	3.2
20	n-	o ∞ f	f	t f	o+t f	o+t f		∞	13	4.6
21	ɲ-	o+t ∞		t f	o+t	o ∞	t+t f		14	4.9
22	ŋ-	o ∞ f		f	o f	o+t ∞	o+t ∞	o	13	4.6
23	y-	o+t ∞ f	f	t f		o+t ∞ f	t f		13	4.6
TOTAL		70	7	39	38	62	34	34	284	
PERCENTAGE		24.6	2.5	13.7	13.4	21.8	12.0	12.0		

Entropy: $\frac{284}{805} = 35.3$.

Table 16. SYLLABLES HAVING /u^ɔ/ AS NUCLEUS

		-u'	-p	-k	-m	-n	-y	-w	TOTAL	%
1	tw-			t		o+t∞			5	17.2
2	dw-									
3	t̥w-			t f		o			3	10.3
4	cw-					∞			1	3.4
5	kw-					o t∞ f			4	13.8
6	sw-			t		o ∞			3	10.3
7	ʃw-			t					1	3.4
8	xw-			t		o			2	6.9
9	thw-			f		t+t∞ f			5	17.2
10	lw-			f		o f			3	10.3
11	ɣw-									
12	ɲw-					t f			2	6.9
13	ɳw-									
14	yw-									
TOTAL				8		21			29	
PERCENTAGE				27.6		72.4				

Entropy: $\frac{29}{490} = 5.1$.

Table 16a. SYLLABLES HAVING /u'/ AS NUCLEUS AND INITIAL CLUSTERS

		-o	-p	-k	-m	-n	-y	-w	TOTAL	%
1	d-	o++∞f		t	∞	ot	ot		11	3.9
2	b-	o++∞f	t	t f	o t f	o t= f	o t+∞		19	6.7
3	t-	o++∞f	t f		∞	∞f	ot		12	4.2
4	th-	o++∞f		t	o	o t	t		10	3.5
5	t-	o++∞f		t f	t	ot f	o t		13	4.6
6	d-	o++∞f	t	f	o t=∞	ott	tt f		16	5.7
7	c-	t+∞f	t f	t f	ott	ott	ot		16	5.7
8	k-	o t+∞		f	ot f	o ∞f	o t+∞		15	5.3
9	f-	o t=∞	t			o	o		6	2.1
10	v-	o++∞f		t f		t	ott f		12	4.2
11	s-	ott f		t f	o t	ot	ot		12	4.2
12	ʒ-	o++∞f	t	t	tt	o t+∞	o f		15	5.3
13	x-	t	t		t		o ∞		5	1.8
14	g-	o ∞		f	ott	f	∞f		9	3.2
15	h-	o t+∞	t f	t f	t f	ott	o t=∞f		17	6.0
16	w-									
17	r-	o++∞f	f	t	o t+∞	t=∞f	o t f	t	18	6.4
18	l-	o++∞f	t f	f	t=∞f	ott f	ott		18	6.4
19	m-	o++∞f	t		t	ot	ott	∞	13	4.6
20	n-	o ∞f	t	o f			ot	t	9	3.2
21	ɲ-	o++∞f			ott	ot ∞	o ∞		13	4.6
22	ŋ-	o++∞f	t f	t	o f	o	o t f		14	4.9
23	y-	ot ∞	t			t+∞f	o t		10	3.5
TOTAL		93	19	23	39	51	55	3	283	
PERCENTAGE		32.8	6.7	8.1	13.8	18.0	19.4	1.1		

Entropy: $\frac{283}{805} = 35.2$.

Table 17. SYLLABLES HAVING /d/ AS NUCLEUS

		-o'	-p	-k	-m	-n	-y	-w	TOTAL	%
1	tw-									
2	dw-									
3	ʈw-									
4	cw-									
5	kw-	o + ∞							4	80
6	sw-									
7	ʂw-									
8	xw-									
9	tʰw-	∞							1	20
10	lw-									
11	ɣw-									
12	ɲw-									
13	ɳw-									
14	yw-									
TOTAL		5							5	
PERCENTAGE		100								

Entropy: $\frac{5}{490} = 1.0.$

Table 17a. SYLLABLES HAVING /ɔ'/ AS NUCLEUS AND INITIAL CLUSTERS

		-u	-p	-k	-m	-ŋ	-y	TOTAL	%
1	u-	o+t∞f	t	t f	o t			10	2.8
2	b-	o+t f	t f	t f	t∞f	o+t∞f	t+t∞f	20	5.6
3	t-	o+t∞f	t	t f	o+t f	o+t∞f	o t ∞f	21	5.9
4	t ^h -	o+t∞f	f	t f	o ∞	o+t∞f	o+t∞f	20	5.6
5	ṭ-	o+t f		t f	t t f	o+t∞f	o ∞f	17	4.7
6	d-	o+t∞f	t	t f	t	o+t∞f	o+t∞f	19	5.3
7	c-	o t ∞	f	t f	o+t∞f	o+t∞	o+t∞	19	5.3
8	k-	o+t∞f	t f	t f	t t f	o+t∞f	t+t∞f	21	5.9
9	f-	o+t∞f	f	t f		o+t f	∞	13	3.6
10	v-	o+t∞f		t f	∞	o t∞f	o+t	15	4.2
11	s-	o t f	f	t f	t	o+t	o+t	13	3.6
12	ʃ-	o+t∞f	f	t f	o t f	o+t∞f	o t	18	5.0
13	x-	o t		t	o t f	o t∞	o	10	2.8
14	g-	t f		t f	f	t	t	7	2.0
15	h-	o+t∞	t f	t f	o t	o+t	t ∞f	16	4.5
16	w-								
17	r-	o+t∞	f	t f	o+t f	o+t∞f	t∞f	19	5.3
18	l-	o+t∞f	t f	t f	o+t∞f	o+t∞f	o+t∞f	24	6.7
19	m-	o t∞f	t	t f		o t∞f	o+t∞f	16	4.5
20	n-	o f	t	t f	t	o+t∞	o+t f	14	3.9
21	ɲ-	o t ∞		t f	o t	o+t∞	o ∞	13	3.6
22	ŋ-	o t ∞f	t f	t f	t f	o t ∞	o f	15	4.2
23	y-	o+t f	t	f	t t f	o+t∞f	t+t∞f	18	5.0
TOTAL		88	22	42	51	87	68	358	
PERCENTAGE		24.6	6.1	11.8	14.2	24.3	20.0		

Entropy: $\frac{358}{690} = 51.9$.

Table 18. SYLLABLES HAVING /u/ AS NUCLEUS

		-o	-p	-k	-m	-n	-y	TOTAL	%
1	o-	o+t∞	f	t f	o+	o t∞	o t ∞	15	5.1
2	b-	o+t∞f	t f	t	t	o+t∞f	o+t f	18	6.1
3	t-	o+t∞f	t	t f	o	o+t∞	o+t f	17	5.8
4	t _h -	o t ∞	f	t		o+t∞f	o t ∞	13	4.4
5	t̄-	o t ∞ f			o f	o t f	o+t∞f	14	4.8
6	d-	o+t∞f	t f	t f	o t	o+t f	o+t∞f	20	6.8
7	c-	∞		t f	o t∞	o+t f	t t∞	13	4.4
8	k-	o+t∞f	t f	t f	o t f	o+t∞f	o t ∞ f	21	7.1
9	f-	o t ∞	t	t	t	t	o t ∞	10	3.4
10	v-	o+t∞				o+t	o t f	10	3.4
11	s-	o ∞	t	t	o+t	o t f	o ∞	12	4.1
12	ʒ-	o+t∞	t f	t f	t	t	o+t	13	4.4
13	x-	o t ∞				o t ∞	o t	8	2.7
14	g-	o t∞	f	f	o+t	o	t t	11	3.7
15	l-	o+t∞f	f	t f	o ∞	o t∞	o+t f	17	5.8
16	w-								
17	r-	o t∞f			o f	t ∞ f	t t∞	12	4.1
18	l-	o+t∞f	t f	t f	t t∞	t t∞f	o+t∞f	21	7.1
19	m-	o t∞f			t	o t	o+t∞f	12	4.1
20	n-	o t ∞ f	f	t	o t f		o+t∞f	14	4.8
21	ŋ-	o ∞		t f	o ∞	o f	t	9	3.1
22	ŋ-	o ∞ f	f	t f	t	o t	o t	11	3.7
23	y-					t	t t	3	1.0
TOTAL		78	19	26	36	62	73	294	
PERCENTAGE		26.5	6.5	8.8	12.2	21.1	24.8		

Entropy: $\frac{294}{690} = 42.6$.

Table 19. SYLLABLES HAVING /o/ AS NUCLEUS

		-ɔ	-p	-k	-m	-n	-y	TOTAL	%
1	ɔ-	o t t f	t f	t	o ∞	o t ∞	o t t	15	4.8
2	b-	o t t ∞ f	t f	t f	o t ∞	o t t ∞ f	t	18	5.8
3	t-	o t ∞	t f	t f	o t ∞	o t t ∞ f	t	16	5.1
4	t h-	o t t ∞ f	t	t f	o	o	o t t ∞	14	4.5
5	t̥-	o t ∞ f		t	t t ∞	o t t f	o t f	15	4.8
6	d-	o t t ∞ f		t f	o t ∞	o t t	t t f	16	5.1
7	c-	o t t ∞	t	t f	t ∞	o f	o t t f	15	4.8
8	k-	o t t ∞ f	t f	t f	o t t f	o t ∞	o t t ∞	20	6.4
9	f-	o t t	f					4	1.3
10	v-				t	o	o t	4	1.3
11	s-	o t ∞	t f	t f	t	o	o t	11	3.5
12	ʃ-	o t ∞ f		t f	t f	o t	o t t ∞	14	4.5
13	x-	o t t		f	o t t f		t ∞	10	3.2
14	g-	o t f	t	t f	o	o t ∞ f	t ∞ f	14	4.5
15	h-	o t f	t f	t	o t t ∞	o t	o t ∞	15	4.8
16	w-								
17	r-	o t ∞ f		t	t f		o f	9	2.9
18	l-	o t t ∞ f	t	t f	o t t ∞ f	o t ∞ f	o t t ∞ f	22	7.1
19	m-	o t t ∞	t f	t f	t ∞	o t t f	o t ∞ f	18	5.8
20	n-	o t t ∞ f	t			o t ∞	o t t f	13	4.2
21	ŋ-	o ∞ f			o t ∞	o t f	o t	11	3.5
22	ɲ-	o t t ∞ f	t	t f	t ∞	o t t ∞ f	o t t	18	5.8
23	y-	o t t ∞ f	f	t f	o t f	o t t	o t t ∞ f	19	6.1
TOTAL		85	22	31	51	58	64	311	
PERCENTAGE		27.3	7.1	10.0	16.4	18.6	20.6		

Entropy: $\frac{311}{690} = 45.1$.

Table 20. SYLLABLES HAVING /ɔ/ AS NUCLEUS

		-iə	-iək	-iən	TOTAL	%
1	iə-	∞		o t	3	1.9
2	b-	o t f	t f	o t ∞ f	11	6.9
3	t-	o t ∞	t f	o t ∞ f	10	6.3
4	t ^h -	o t	t f	o t ∞ f	9	5.6
5	t̥-		t		1	0.6
6	d-	t ∞ f	t	o t ∞ f	10	6.2
7	c-	o t ∞	t	o t ∞ f	10	6.2
8	k-	o t ∞	t f	o t ∞ f	10	6.2
9	f-	t	f	o t f	6	3.8
10	v-	t ∞	t f	o t ∞ f	9	5.6
11	s-	t ∞	t f	o t ∞	7	4.4
12	ʃ-	∞	t	o ∞	4	2.5
13	x-	t ∞	t	o ∞	5	3.1
14	g-			t	1	0.6
15	h-	o		o t ∞ f	6	3.8
16	w-		t f	o t ∞ f	7	4.4
17	r-	o t ∞	t	o t	6	3.8
18	l-	o t f	t f	o t ∞ f	10	6.2
19	m-	t ∞	t f	o t ∞ f	9	5.6
20	n-	o ∞	t f	o t ∞	7	4.4
21	ŋ-	∞	t f	o	4	2.5
22	ɳ-	∞	f	o t f	6	3.8
23	y-	t ∞	t f	o t ∞ f	9	5.6
TOTAL		44	32	84	160	
PERCENTAGE		27.5	16.1	52.5		

Entropy: $\frac{160}{345} = 46.4$

Table 21. SYLLABLES HAVING /iə/ AS NUCLEUS

		-iə	-iək	-iən	TOTAL	%
1	tw-		↑ f	o↑∞	6	13.6
2	dw-					
3	t̥w-			↓ f	2	4.5
4	cw-			o↑∞f	5	11.4
5	kw-		↑ f	o↑∞f	7	15.9
6	sw-		↑	o↑	3	6.8
7	ʃw-			∞	1	9.1
8	xw-	o	↑	o↑ ∞	5	11.4
9	t ^h w-		↑	o ↓	3	6.8
10	lw-			↑ f	2	4.5
11	ɸw-					
12	ɲw-			∞	1	2.3
13	ɳw-		f	o ↓∞f	5	11.4
14	yw-		f	o↑ f	4	9.1
TOTAL		1	9	34	44	
PERCENTAGE		2.3	20.5	77.3		

Entropy: $\frac{44}{210} = 20.9.$

Table 21a. SYLLABLES HAVING /iə/ AS NUCLEUS
AND INITIAL CLUSTERS

		-uə	-uək	-uən	TOTAL	%
1	uə-	o t f	†	o †∞	7	4.3
2	b-	o † †∞ f	†	o † †	9	5.5
3	t-	o f	† f	o † †∞ f	9	5.5
4	th-	o † †∞	† f	o † †∞ f	10	6.1
5	t̥-	o	† f	o † †∞ f	8	4.9
6	d-	o †	† f	o †	6	3.7
7	c-	o † ∞	†	o † ∞	7	4.3
8	k-	o † f	†	o † ∞	7	4.3
9	f-		†	o † † f	5	3.0
10	v-	†∞ f	f	o † † f	8	4.9
11	s-	o	† f	o † †∞	7	4.3
12	ʃ-	o † ∞	† f	o † † f	9	5.5
13	x-	†	†	o	3	1.8
14	g-			o f	2	1.2
15	h-	†	†	o † †∞	6	3.7
16	w-					
17	r-	† ∞ f	† f	o † † f	9	5.5
18	l-	o † †∞ f	† f	o † †∞ f	11	6.7
19	m-	o † ∞	† f	o † † f	9	5.5
20	n-	o † ∞	†	o † †	7	4.3
21	ŋ-		† f	o † † f	6	3.7
22	ɳ-	† †∞ f	† f	∞ f	8	4.9
23	y-	o † †∞ f	f	o † †∞ f	10	6.1
TOTAL		55	32	76	163	
PERCENTAGE		33.7	19.6	46.6		

Entropy: $\frac{163}{345} = 47.2$

Table 22. SYLLABLES HAVING /uə/ AS NUCLEUS

		-uə	-uək	-uən	TOTAL	%
1	uə-	† ∞ f		† ∞	5	5
2	b-	† † ∞	† f	o †	7	7
3	t-	o ∞	† f	o †	6	6
4	t ^h -	o † ∞	† f	o ∞	7	7
5	t̥-			o † †	3	3
6	d-	o † ∞	†	o	5	5
7	c-	o † †	† f	o † f	8	8
8	k-	o f	† f	o † † f	8	8
9	f-					
10	v-	o †	† f	o	5	5
11	s-	o		† † ∞	4	4
12	ʃ-	∞	†	o †	4	4
13	x-	o		o	2	2
14	g-		†		1	1
15	h-			o †	2	2
16	w-					
17	r-	o † ∞	† f	† f	7	7
18	l-	o † † f	† f	o † †	9	9
19	m-	o † †		o † † ∞ f	8	8
20	n-	o	† f	o	4	4
21	ŋ-		†		1	1
22	ŋ-			†	1	1
23	y-	o †		†	3	3
TOTAL		37	22	41	100	
PERCENTAGE		37	22	41		

Entropy: $\frac{100}{345} = 29.0$

Table 23. SYLLABLES HAVING /uə/ AS NUCLEUS

		-ăwk	-ăwn	TOTAL	%
1	ăw-	t f	o t ∞ f	7	5.0
2	b-	t f	o t ∞ f	7	5.0
3	t-	t f	o t ∞ f	7	5.0
4	t ^h -	t f	o t ∞	6	4.3
5	ṭ-	t f	o t ∞ f	7	5.0
6	d-	t f	o t ∞ f	7	5.0
7	c-	t f	o t ∞	6	4.3
8	k-	t f	o t ∞ f	7	5.0
9	f-	t	o t ∞ f	6	4.3
10	v-	t f	o t ∞ f	6	4.3
11	s-	t f	o ∞	4	2.8
12	ʃ-	t f	o t ∞	6	4.3
13	x-	t	o t ∞	4	2.8
14	g-	t f	t f	4	2.8
15	h-	t f	o t ∞ f	7	5.0
16	w-		t	1	0.7
17	r-	t f	o t ∞ f	7	5.0
18	l-	t f	o t ∞ f	7	5.0
19	m-	t f	o t ∞ f	7	5.0
20	n-	t f	o t ∞ f	7	5.0
21	ɲ-	t f	o t ∞ f	7	5.0
22	ŋ-	t f	o t ∞ f	7	5.0
23	y-	t f	o t ∞ f	7	5.0
TOTAL		42	99	141	
PERCENTAGE		29.8	70.2		

$$\text{Entropy: } \frac{141}{230} = 61.3$$

Table 24. SYLLABLES HAVING /ăw/ AS NUCLEUS

TONES AND INTONATION IN SOUTH VIETNAMESE

A. TRAN HUONG MAI

0. Introduction.
1. Tones in Vietnamese.
2. Intonation.

0. INTRODUCTION

This paper deals with the tone system of Southern Vietnamese from two points of view:

1. Tones as consisting of pitch sequences and functioning as a means for distinguishing the meaning of words.
2. Tones as consisting of pitch sequences and functioning as a means for distinguishing the meaning of utterances: intonation.

1. TONES IN VIETNAMESE

1.1. Traditionally, Southern Vietnamese has been described as having five distinctive tones, involving three pitch levels - high, mid, low - and two pitch contours - level and rising.

The five tones mentioned are:

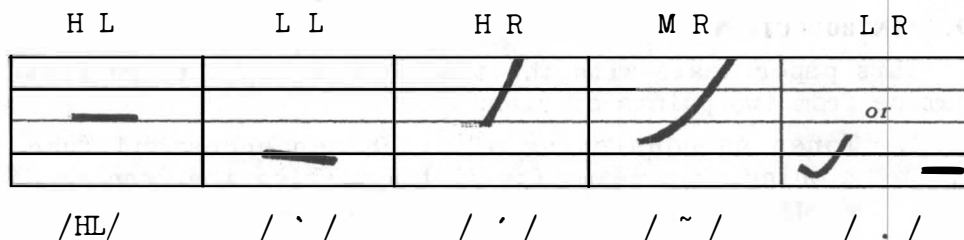
1. High level (unmarked)
2. Low level / ` /
3. High rising / ' /
4. Mid rising / ~ /
5. Low rising / . /

According to L.C. Thompson¹, the basic phonetic characteristics of the five tones are:

¹ L.C. Thompson, *A Vietnamese Grammar* (University of Washington Press, Seattle, 1965).

1. /H L/ high and level
2. / ` / low, trailing
3. / ' / high, rising sharply to the top of the normal voice range
4. / ~ / long rise beginning low mid and rising sometimes as high as high rising / ' /
5. / . / very low, dipping slightly and rising. With syllable ending in /-p-t-k/ it is level.

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



The highest and lowest lines represent the upper and lower limits of the speaking voice in normal speech.

1.2. Analysis of materials with the help of pitch analysing devices: a trans-pitch meter, an intensity meter, and a brush-oscillograph light-beam recording apparatus have given slightly different results.

The most striking difference lies in the pitch contours of two tones: the mid rising tone / ~ / and the low rising tone / . /.

These tones have been found to have a falling-rising contour, not only a rising contour.

Their basic phonetic characteristics should therefore be:

/ ~ / mid-high falling to low and rising to high

/ . / mid-high falling to low and rising to mid-high.

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

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

1. /H L/ mid-high level
2. / ` / low level

3. / ' / mid-high, rising to high
4. / ~ / mid-high falling to low and rising to high
5. / . / mid-high, falling to low and rising to mid-high.

The basic pitch contours of the Vietnamese tones thus described could be represented as follows:

H L	L L	H R	M R	L R
				
/HL/	/ ˊ /	/ ' /	/ ~ /	/ . /

1.3. In this study, the traditional names given to the five tones have been retained.

1.3.1. It is a well known fact that the pitch contours of tones in tone languages, can be modified according to the particular environment in which they occur²:

(a) the changes can be caused by the syntactic position of the tone in a phrase or an utterance, i.e. the tone can vary according to whether it is in initial, medial or final position in a specific pause group;

(b) they can also be caused by mechanical tone sandhi - i.e. the tone can vary, depending on the tone or tones which may precede or follow it in the same pause group;

(c) they can be caused by the shape of the syllable in which they occur;

(d) they can be caused by stress and intonation patterns, i.e. rhythm, and sentence melody.

It has been mentioned by L.C. Thompson, and Jones and Thong³ that the pitch contours of the tones in Vietnamese are modified depending on their position in the pause group, on stress and intonation, etc.

² See K. L. Pike, *Tone Languages*.

³ L.C. Thompson, *A Vietnamese Grammar*, Jones and Thong, *An Introduction to Spoken Vietnamese* (American Council for Learned Societies, Washington D.C., 1960).



EXAMPLES:

1.3.1.1. In Vietnamese, the high level tone has two variants according to the position in the utterance:

In medial position it is high and level, and rises slightly towards the end;



in final position it starts mid-high and falls towards the end.

It can be represented as follows:

	Medial	Final
/H L/		
		

1.3.1.2. The high rising tone has the following variants according to the degree of stress on the syllable in which it occurs if the position of the latter in the utterance is medial.

With strong stress it displays a long and sharp rise; with weak stress it shows a short rise, starts higher than usual.

	Strong Stress	Weak Stress
/ ' /		
		

1.3.2. Since the Vietnamese tones have more than one allotonic pitch contour, it is clearly necessary to choose one allotonic contour for each tone as basic so that descriptions of their changes can be made.

For the present description of Vietnamese tones, the following pitch contours have been chosen as basic:

TONEME	BASIC ALLOTONE
For the high level tone:	Mid-high level
" " low level tone:	Low level
" " high rising tone:	Mid-high rising to high
" " mid-rising:	Mid-high falling to low and rising to high

(Continued on page 23)

TONEME

For the low rising:

BASIC ALLOTONE

Mid-high falling to low
and rising to high.

For a graphic representation of these pitch contours see section 1.2.

The pitch contours of the tones described above, are contours which occur in the following environments:

With isolated tones occurring medially in a pause group carrying strong stress, provided that they are syllables beginning with a vowel and ending in a vowel or semivowel.

1.3. Seeing that detailed description of the modification on the pitch contours of Vietnamese tones will appear shortly as part of my thesis, it has been considered preferable to present here only the following Tone Chart.

This chart shows, in a schematic form, the different variants of the tones resulting from all possible conditioning factors except for those of intonation.

The conditioning factors of intonation are discussed in the next section.

See Tone Charts A, B, C.

2. INTONATION

2.0. The intonation contours in Vietnamese are superimposed on the basic tone system; they modify the pitch characteristics of the tones, but do not affect the tonemic contrast between them.

There are two **main** types of intonation contours:

1. Those which do not reflect the speaker's attitude but serve to specify ordinary statements, questions and commands - they are called basic intonation contours.
2. Those which reflect the speaker's emotional state - they are called emotional intonation contours⁴.

This paper is concerned only with the basic intonation contours.

2.1.0. In Vietnamese, the basic intonation contours are intrinsically linked with the overall intensity patterns.

⁴ K.L. Pike, *Intonation of American English* (University of Michigan Press, Ann Arbor, 1960).

The present description, therefore, discusses the intensity contours as an integral part of the intonation contours.

2.1.0.1. The basic intonation contours of Vietnamese involve two relative pitch levels:

Pitch Level 1 - normal pitch;

Pitch Level 2 - raised pitch;

and five pitch contours.

Two pitch contours occur with -

Pitch Level 1: Falling (always linked with decreasing intensity);

Sustained (always linked with sustained intensity).

Three pitch contours occur with -

Pitch Level 2: Rising (always with sustained intensity);

Rising falling - sustained intensity;

Rising falling - decreasing intensity.


























2.1.0.2. The five basic intonation contours are most easily identified by the tone of the last syllable in the pause group.

The phonetic characteristics of the last tone for each of the contours can be represented as follows:

(see Chart on page 25)

PITCH 1

PITCH 2

	<i>Falling</i> (+Dec. Int.)	<i>Sustained</i> (+Sust. Int.)	<i>Rising</i> (+Sust. Int.)	<i>Rising- Falling</i> (Sust. Int.)	<i>Rising- Falling</i> (Decr. Int.)
H L					
L L					
H R					
M R					
L R					

2.1.1. Intonation Contours with Pitch Level 1

2.1.1.1. Falling Intonation Contour

The falling intonation contour is characterised by a gradual decrease in intensity and a gradual decline in the pitch of the tones in the same pause group, i.e. the absolute intensity of each stressed syllable decreases, and the absolute pitch range of each of the tones decreases when progressing from the beginning to the end of the pause group.

The last tone of the pause group has a falling contour.

2.1.1.1.1. The phonetic features of each of the last tones of the pause group are:

Level tones - start lower than earlier in the same pause group;

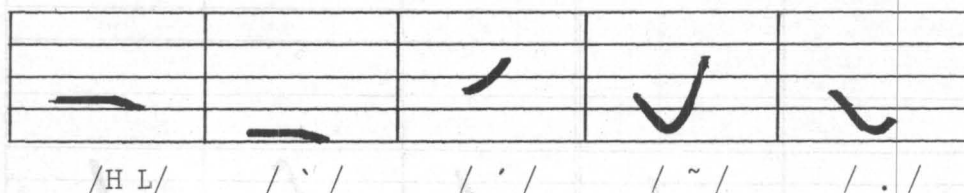
stay level and fall towards the end.

Rising tones -

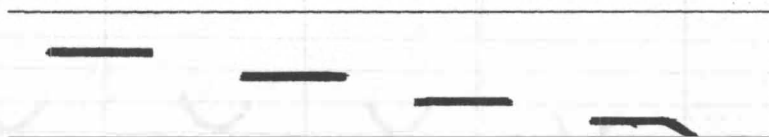
High rising: the rise is shorter and flatter;

Mid and low rising: the rise is shorter.

The last tone of the falling contour can be graphically represented as follows:



2.1.1.1.2. The falling contour can be represented in this way:



The highest and lowest lines represent the absolute pitch range of the tones.

The decline in the pitch of the tones is most effectively heard in groups of identical tones.

EXAMPLES:

/H L/ *cô đi chơi*
 She is going out
 (young girl, go, play) *See chart 1.*

tôi đi theo anh
 I follow you
 (I, go, follow, you brother) *See chart 2.*

/ ˘ / *tôi về vài ngày*
 I am returning for a few days
 (I, return, a few, day) *See chart 4.*

/ ˙ / *chúng nó té*
 They are falling
 (they, fall) *See chart 3.*

/ . / *họ bị mạ-lị*
 They are insulted
 (they, suffered, insult) *See chart 6.*

The falling contours occur in ordinary declarative statements. They indicate, on the part of the speaker, that the statement has an attitude of finality about it, i.e. it is finished and complete.

EXAMPLE:

tôi đã cho nó hôm qua
 I gave it to him yesterday
 (I, past tense marker, give, him, yesterday) *See chart 5;*
also charts 1, 2, 3, 4.

2.1.1.2. Sustained Intonation Contour

The sustained intonation contour is characterised by a sustained intensity pattern, and a sustained pitch level for all the tones in the pause group, i.e. the absolute intensity of each of the syllables remain the same, and the absolute pitch range of the tones remains the same within the pause group.

The tone of the last syllable in the pause group has a rising contour.

2.1.1.2.1. The phonetic characteristics of the last tone in the pause group are:

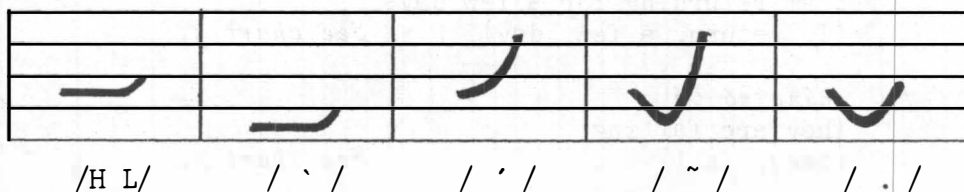
Level tones -

start level and tend to rise towards the end; the rise depends on the degree of stress on the syllable.

Rising tones -

tend to rise higher than previously in the same pause group.

The last tones of the sustained contour can be graphically represented in the following way:

**EXAMPLES:**

mai | *tôi đi nghỉ mát*

Tomorrow, I am going on holidays
(tomorrow, I, go, rest) See chart 7.

hai ông bà chiều con lắm | *không bao giờ ép chúng nó làm gì*

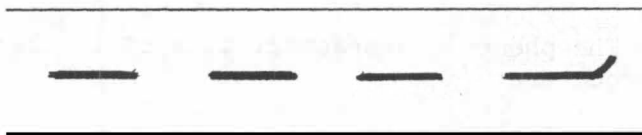
They always please their children, they never force them to
do anything
(two, man, lady, please, children, much, no, never, force,
they, do, anything) See chart 9.

có ít người mỹ | *mà nói tiếng việt được*

There are very few Americans who can speak Vietnamese
(there is, few, person, America, who, speak, language,
Vietnamese, can) See chart 10.

Note: In the above examples, the sustained contours are marked by a single bar [|].

2.1.1.2.2. The sustained intonation contour can be represented in the following way:

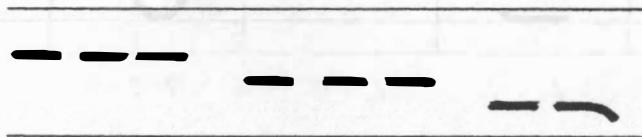


2.1.1.2.3. The sustained contours serve to separate smaller grammatical units which are within larger units, like phrases within clauses, or clauses within sentences.

The sustained contours also occur in unfinished sentences. They indicate the non-finality of an utterance.

2.1.1.3. In a series of sustained intonation contours, the absolute pitch range of each succeeding contour decreases gradually, so that the pitch range of the last contour is the lowest of all.

A series of sustained intonation contours can be graphically represented in the following manner:



EXAMPLES:

bữa nay | tôi sẽ đi chụp hình | gửi về nhà
 I am going to take some pictures to send home, today
 (today, I, future tense marker, go, to photograph, picture, send, home) See chart 11.

*ngòai ra cơm và cá | người việt còn ăn nhiều thứ rau |
 thịt heo | thịt bò | thịt gà | vân vân...*
 Besides rice and fish, the Vietnamese people also eat many kinds of vegetables, pork, beef, chicken, and so on (in addition to, rice, and, fish | person, Vietnamese, still, eat, many, kind, vegetable | meat, pig | meat, pig | meat, cow | meat, chicken | etc.)
 See chart 12.

2.1.2. Intonation Contours with Pitch 2

In intonation contours with Pitch 2, the total pitch range of all the tones in the pause group is raised, i.e. the range starts higher and finishes higher than normally.

2.1.2.1. Rising Contours

The rising intonation contour is characterised by a sustained intensity pattern and a rising contour of the last stressed tone in the pause group.

2.1.2.1.1. The phonetic characteristics of the last stressed tone in the pause group are:

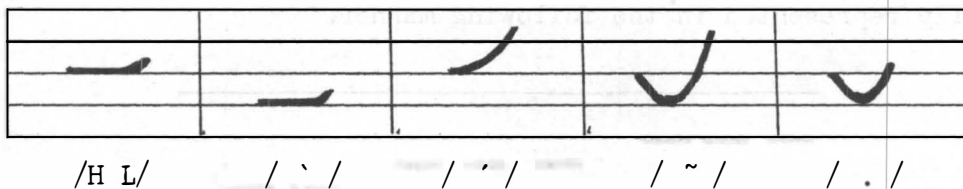
Level tones -

start level and rise towards the end.

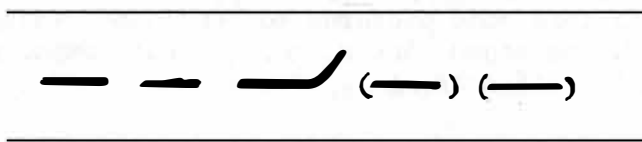
Rising tones -

rise higher than the same tones preceding it in the same pause group.

The last stressed tone of the rising intonation contour can be graphically represented in the following way:



2.1.2.1.2. The rising intonation contours can be graphically represented as follows:



2.1.2.1.3. The rising intonation contours occur with all interrogative sentences, with imperative exhortative sentences; and with calls.

Note: The rising contour occurs only with non-repeated calls; repeated calls have a rising falling contour - see section **2.1.2.4.**

2.1.2.1.4. EXAMPLES

2.1.2.1.4.1. Questions

anh đi chưa? Answer: *đi bây giờ*
 Are you going yet? " I am going right away.
 (big brother, go, yet) See chart 14.

hôm nay anh mạnh không?

How are you today?

(today, big brother, healthy, yes-no question marker) See
 chart 15.

cái đó là cái gì?

What's that?

(thing, there, to be, thing, what thing) See chart 16.

2.1.2.1.4.2. Imperative Sentences

chúng ta đi đi!

Let's go!

(we, go, imperative marker) See chart 17.

chúng mình đi theo chơi!

Let's follow them!

(we, go, follow, imperative particle) See chart 19.

2.1.2.1.4.3. Call

ba ơi!

Father! See chart 26.

2.1.2.2. Rising Falling Contour + Sustained Intensity

This contour is characterised by a sustained intensity pattern and a rise and fall in the last tone of the pause group.

2.1.2.2.1. The phonetic features of the tones of the last syllable in the pause group are:

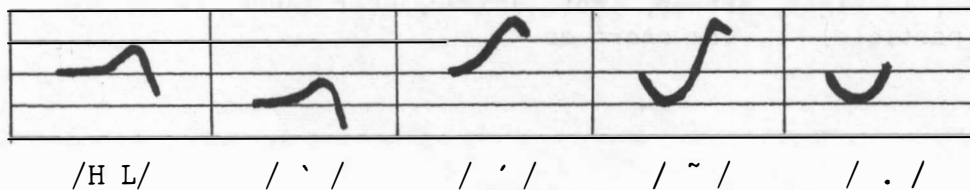
Level tones -

start level, rise sharply towards the end and fall at the end.

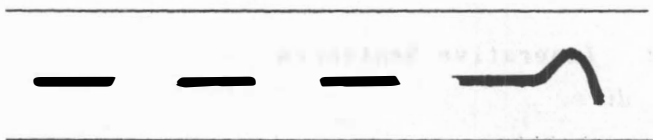
Rising tones -

the rise is much higher than normal and is often followed by a short drop at the end.

The last tone of the rising falling contour + sustained stress could be graphically represented in the following way:



2.1.2.2.2. The rising falling intonation contours with sustained intensity can be graphically represented as follows:



2.1.2.2.3. This contour occurs with imperative sentences expressing command, and with exclamatory statements.

2.1.2.2.4. **EXAMPLES**

2.1.2.2.4.1. **Commands**

đi ra ngoài mà chơi

'Go out and play!'

(go, go out, outside, in order to, play) See chart 28.

2.1.2.2.4.2. **Exclamations**

tôi có đi đâu đâu!

I am not going anywhere!

(I, have, go, anywhere, exclamative particle) See chart 18.

cô ấy mua mà!

She bought it!

(young girl she, that, buy, emphatic particle) See chart 20.

mua rồi còn gì nữa!

It's already bought, what else!

(buy, already, have still, anything, still) See chart 23.

ông đó thấy ốm quá!

He looks so thin!

(man, there, see, thin, very) See chart 21.

không phải ngăn đó ngăn kia kia!

It's not that drawer, it's the one over there!

(no, is right, drawer, that, drawer, over there, definite particle) See chart 22.

2.1.2.3. Rising Falling Contour + Decreasing Intensity

The main characteristics of this contour are a gradual decrease in the overall intensity of the pause group, and a slight rise and fall of the last tone in the pause group.

2.1.2.3.1. The phonetic characteristics of the last tone are:

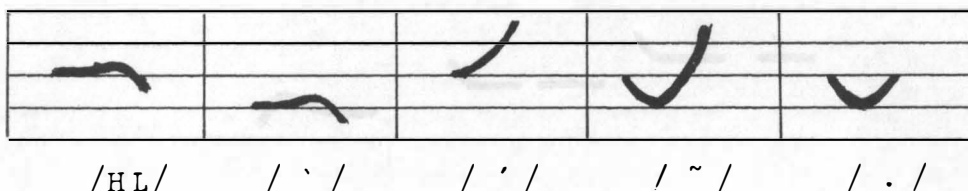
Level tones -

start level, rise slightly and fall at the end, or start level and fall at the end.

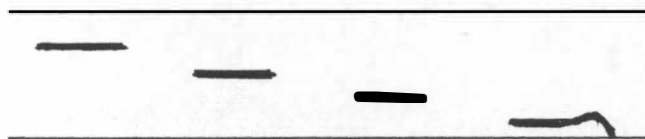
Rising tones -

rise but not as high as in the rising falling contour with sustained stress.

2.1.2.3.2. The graphic representation of the last tone of this contour could be as follows:



2.1.2.3.3. The falling rising contour with decreasing intensity could be graphically represented in the following way:



This contour occurs in polite imperative sentences, i.e. requests.

EXAMPLES:

anh làm ơn viết giúp tôi thư này

Please write this letter for me.

(elder brother, make, favour, write, for, me, letter, this)

See chart 24.

mời ông đi ăn cơm

Dinner is served! (please come and eat)
 (invite, man, go, eat, rice) See chart 25.

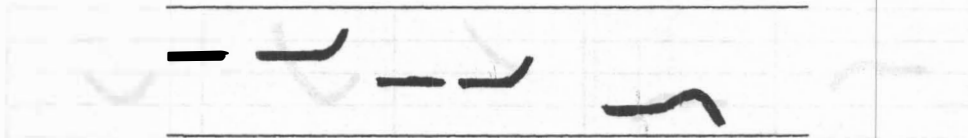
2.1.2.4. Notes on the Intonation Contours occurring with Repeated Calls

As stated in section 2.1.2.1., the rising contours + sustained intensity occurs with calls. However, when a call is repeated, once, twice, or several times, two changes occur:

the last tone of the last call has a rising-falling contour;

the overall intensity pattern - of the first call and repeated calls - decreases.

2.1.2.4.1. The following representation shows more clearly the modifications mentioned above:



2.1.2.4.2. EXAMPLES

Gi ang oi! *Gi ang à!* *Gi ang!*
 Giang! Giang! Giang! (calling Giang) See chart 27.

TONES IN ISOLATION

TONES	BASIC PITCH CONTOURS	In Utterance Medial Position					Utterance Final Position
		Syllable Pattern: C V			(C) V C		(C) V (C)
		V	C _{vd} V	C _{vls} V	V C _n	V C _{-p-t-k}	
HIGH LEVEL /H L/							
LOW LEVEL / ` /							
HIGH RISING / ' /							
MID RISING / ~ /							
LOW RISING / . /							

CHART A

TONES IN PAIRS































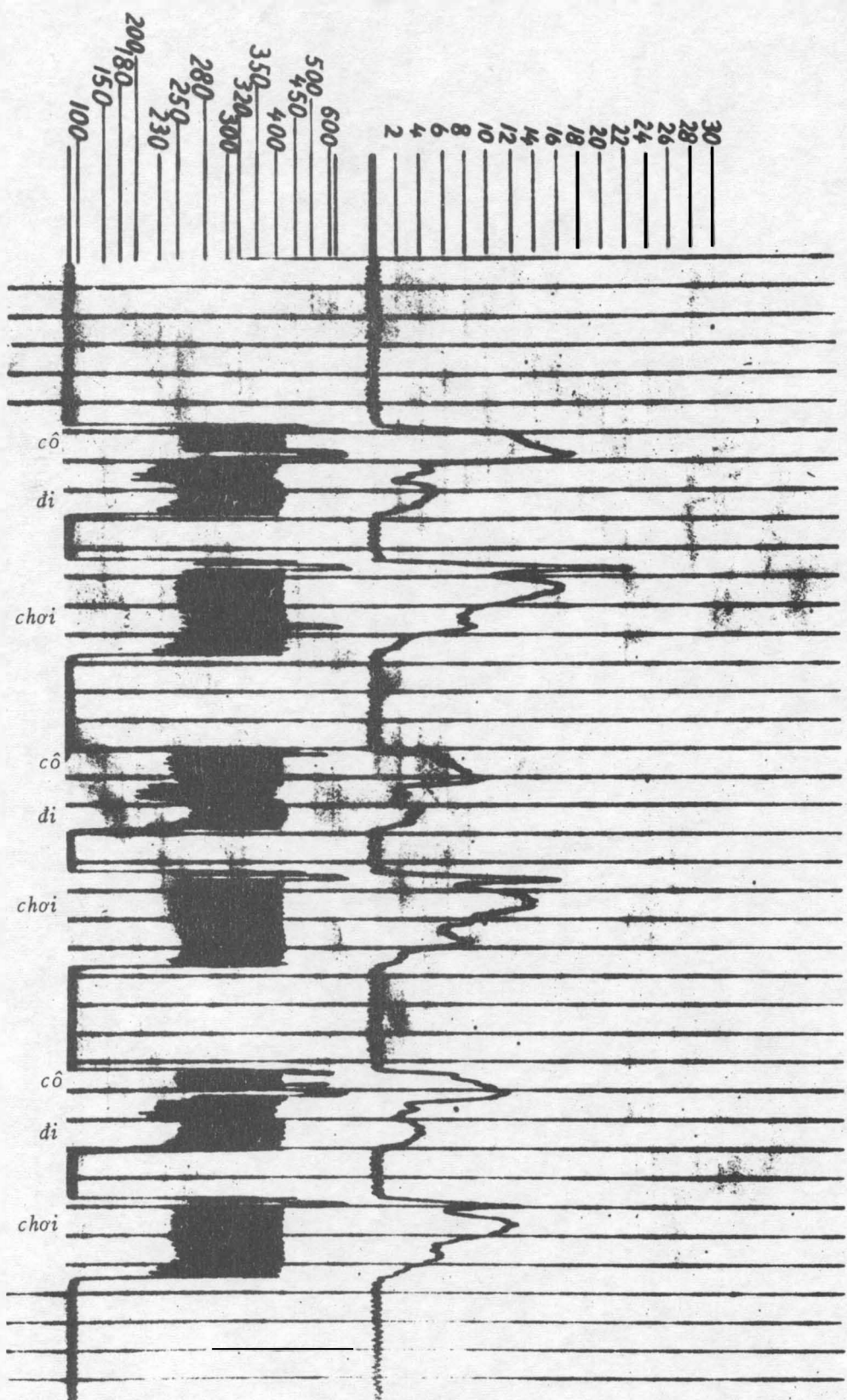
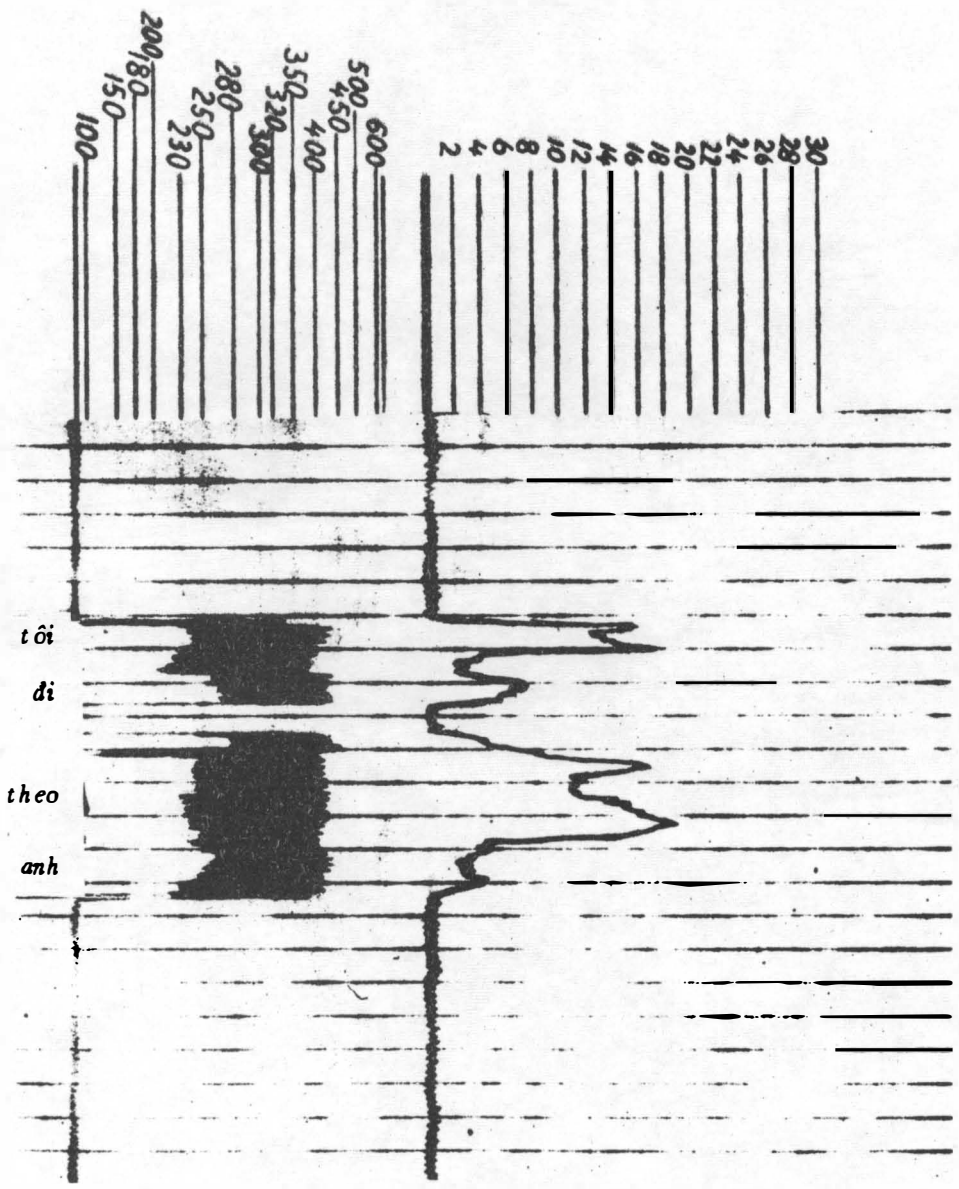
TONES	BASIC PITCH CONTOURS	<i>In Utterance Medial Position</i>							<i>Utterance Final Position</i>
		Non-identical Tones					Identical Tones		
		/H L/	/ ` /	/ ' /	/ ~ /	/ . /	<i>With strong stress</i> [']	<i>With weak stress</i> [`]	
HIGH LEVEL /H L/									
LOW LEVEL / ` /									
HIGH RISING / ' /									
MID RISING / ~ /									
LOW RISING / . /									

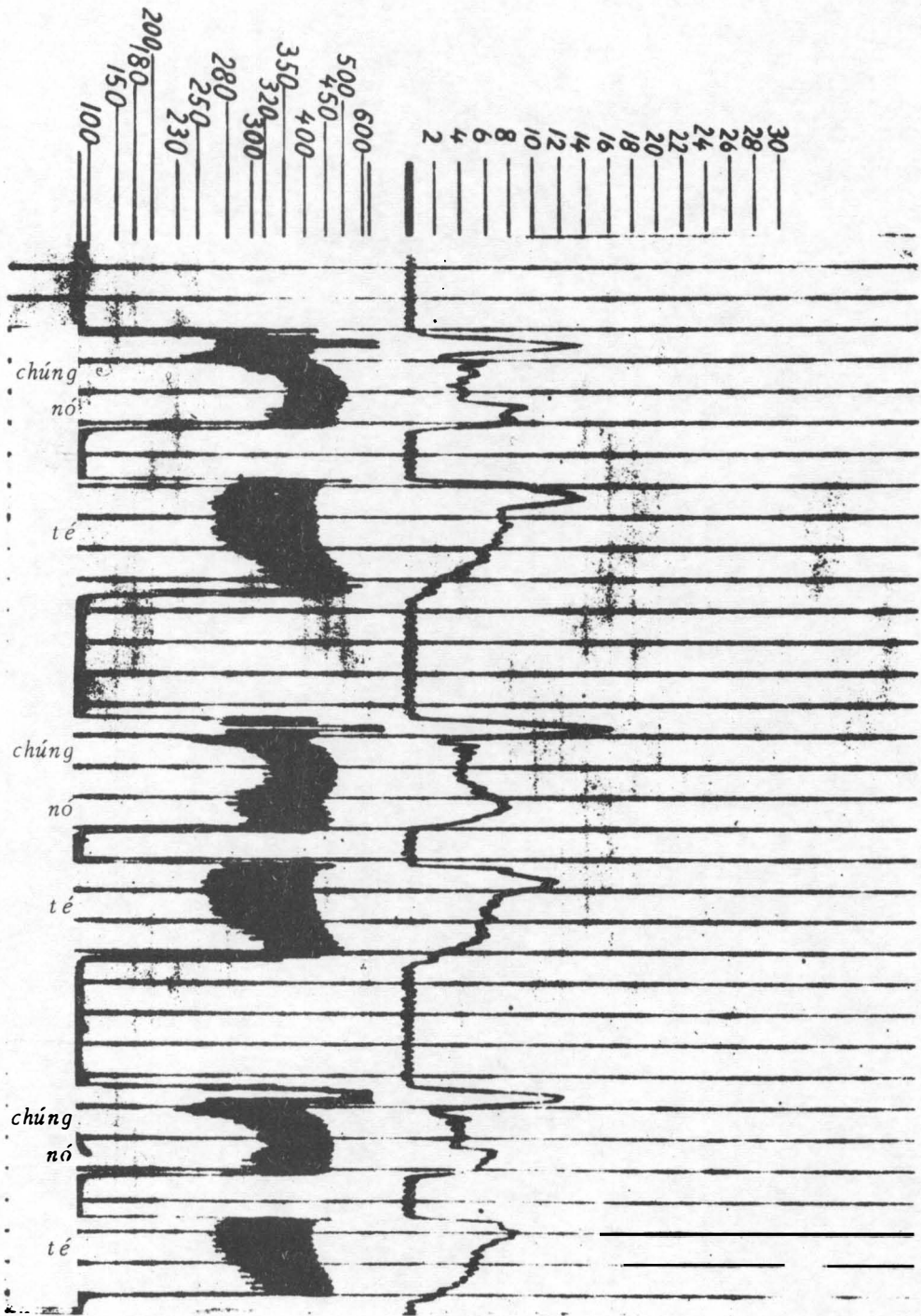
CHART B

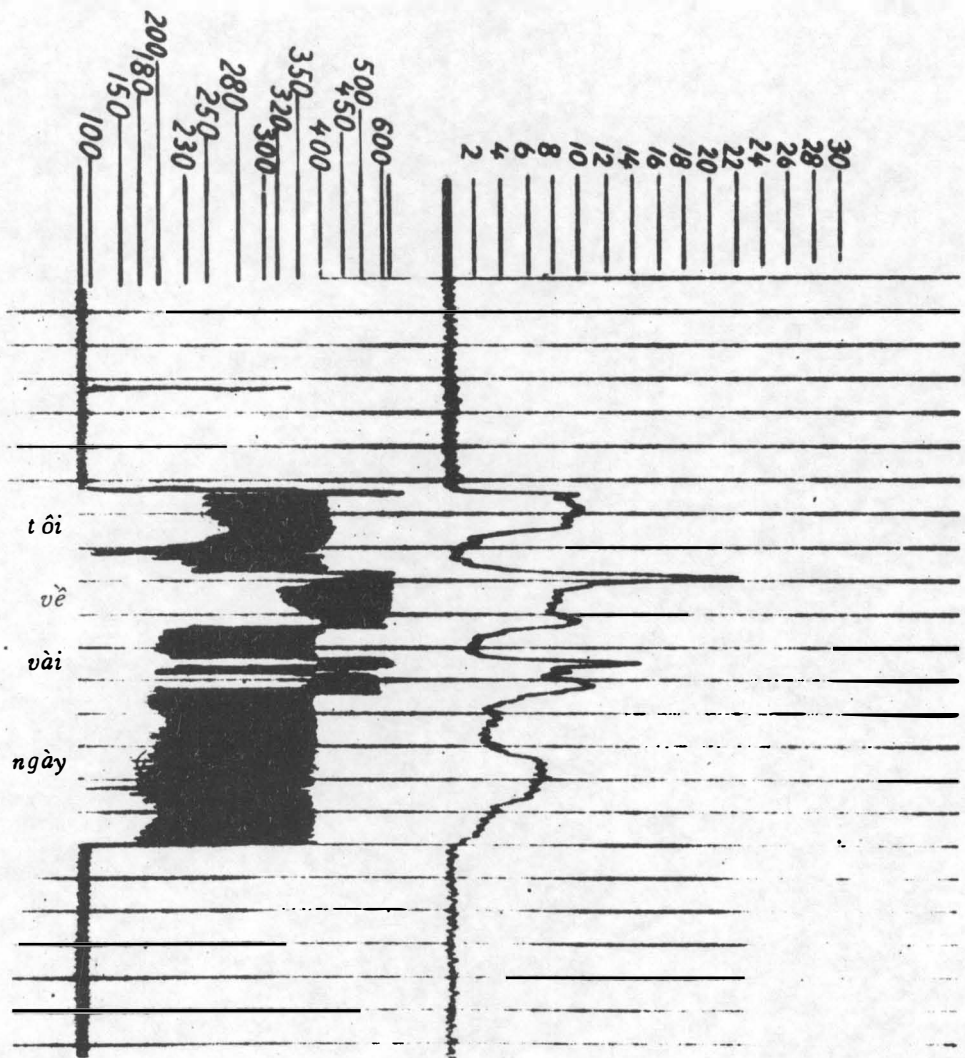
TONES IN THREE SYLLABLE UTTERANCES							IN LONGER UTTERANCES	
TONES	BASIC PITCH CONTOURS	With strong stress [ˈ]		With weak stress [ˌ]		With reduced weak stress [ɹ]	With extra weak stress [°]	With emphatic stress [ˈˈ]
		Utterance Medial	Utterance Final	Medial	Final			
HIGH LEVEL /H L/							or	or
LOW LEVEL /ˌ ˌ /							or	or
HIGH RISING / ˈ ˈ /							or	or
MID RISING / ~ ˈ /							or	or
LOW RISING / ˌ ˈ /							or	or

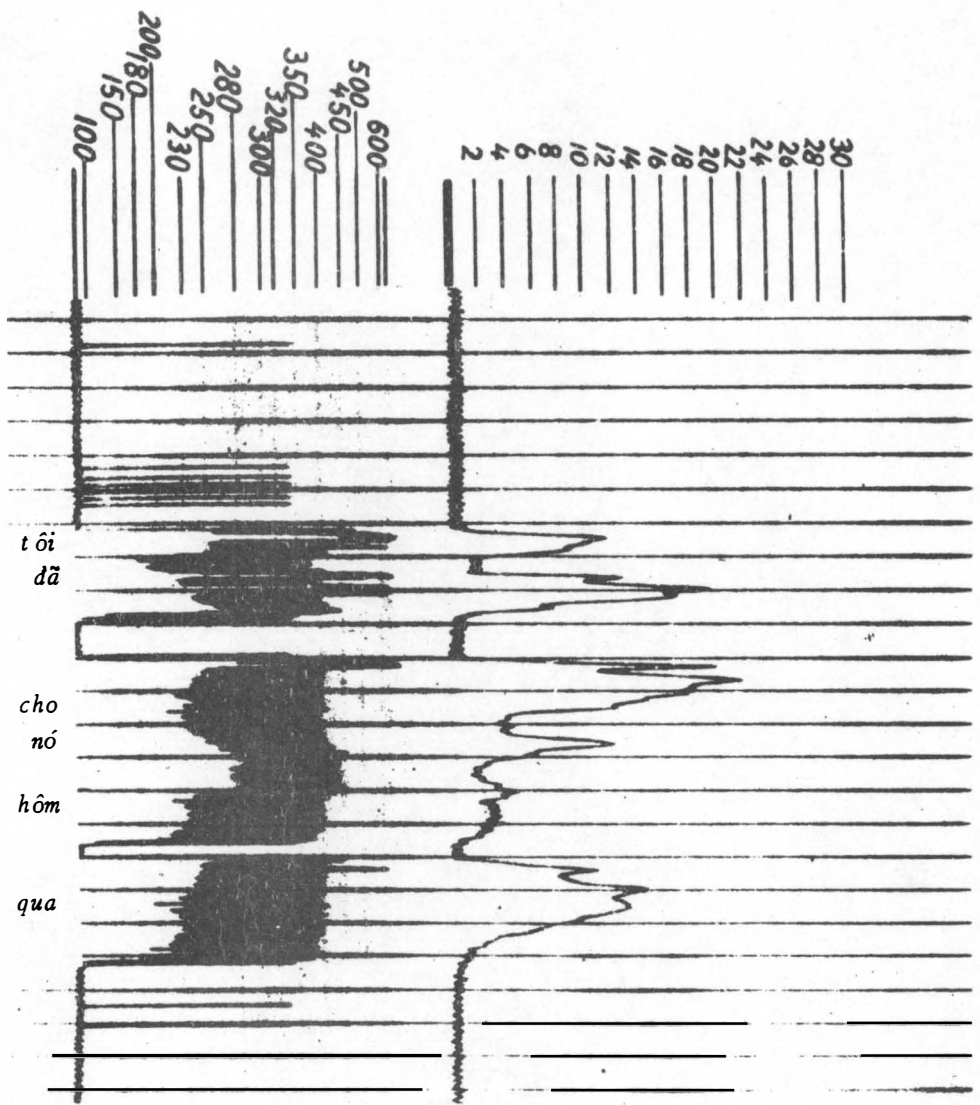
CHART C

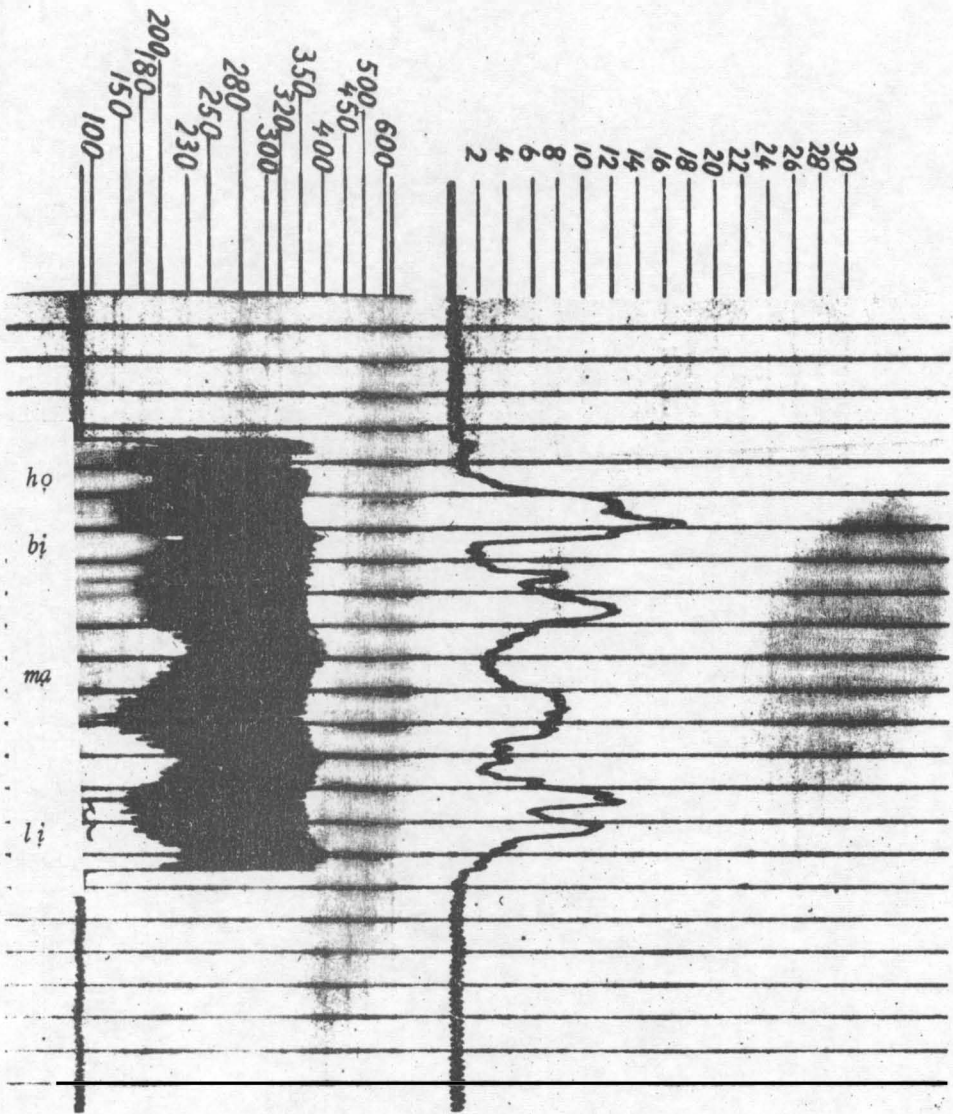


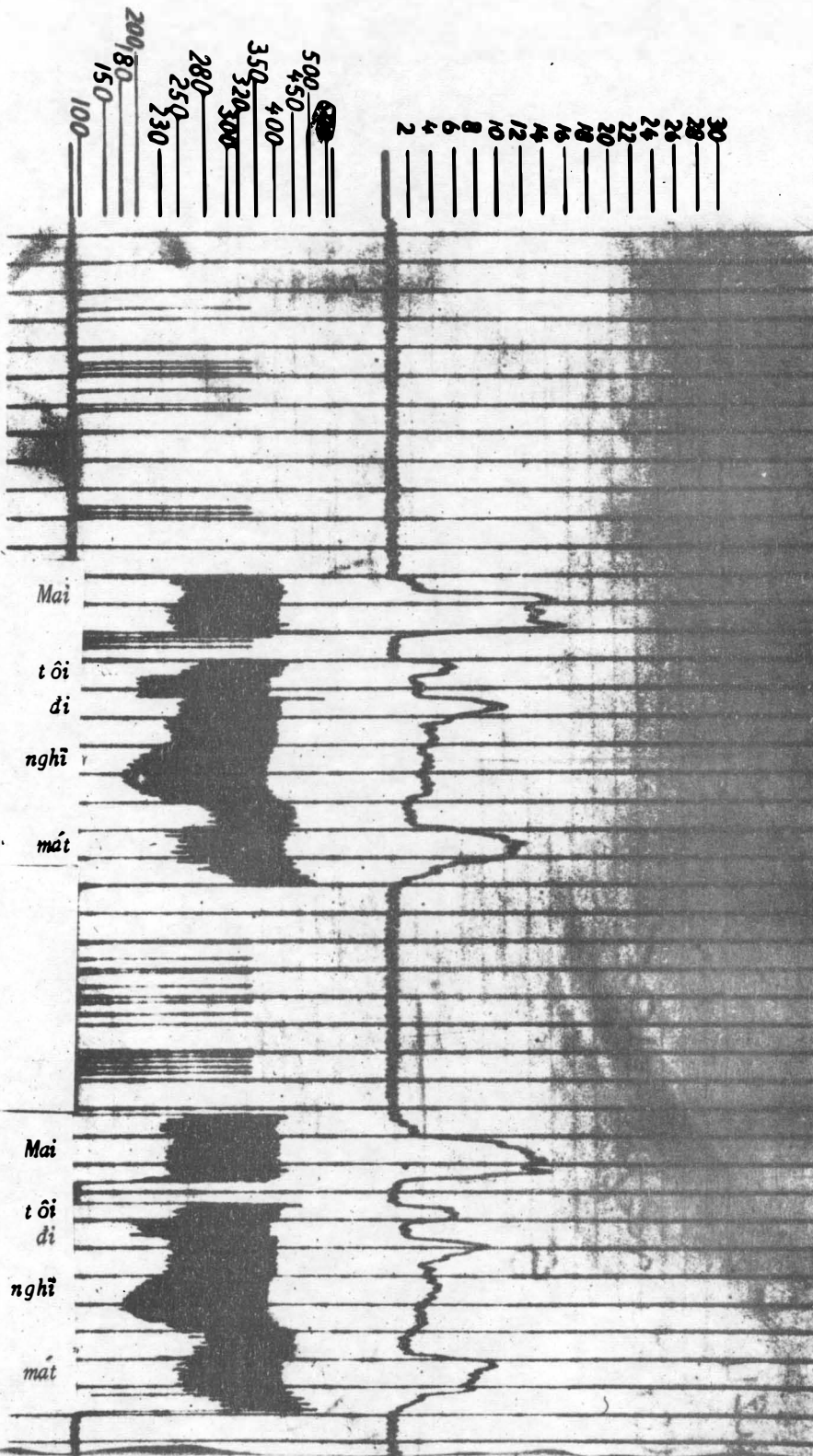






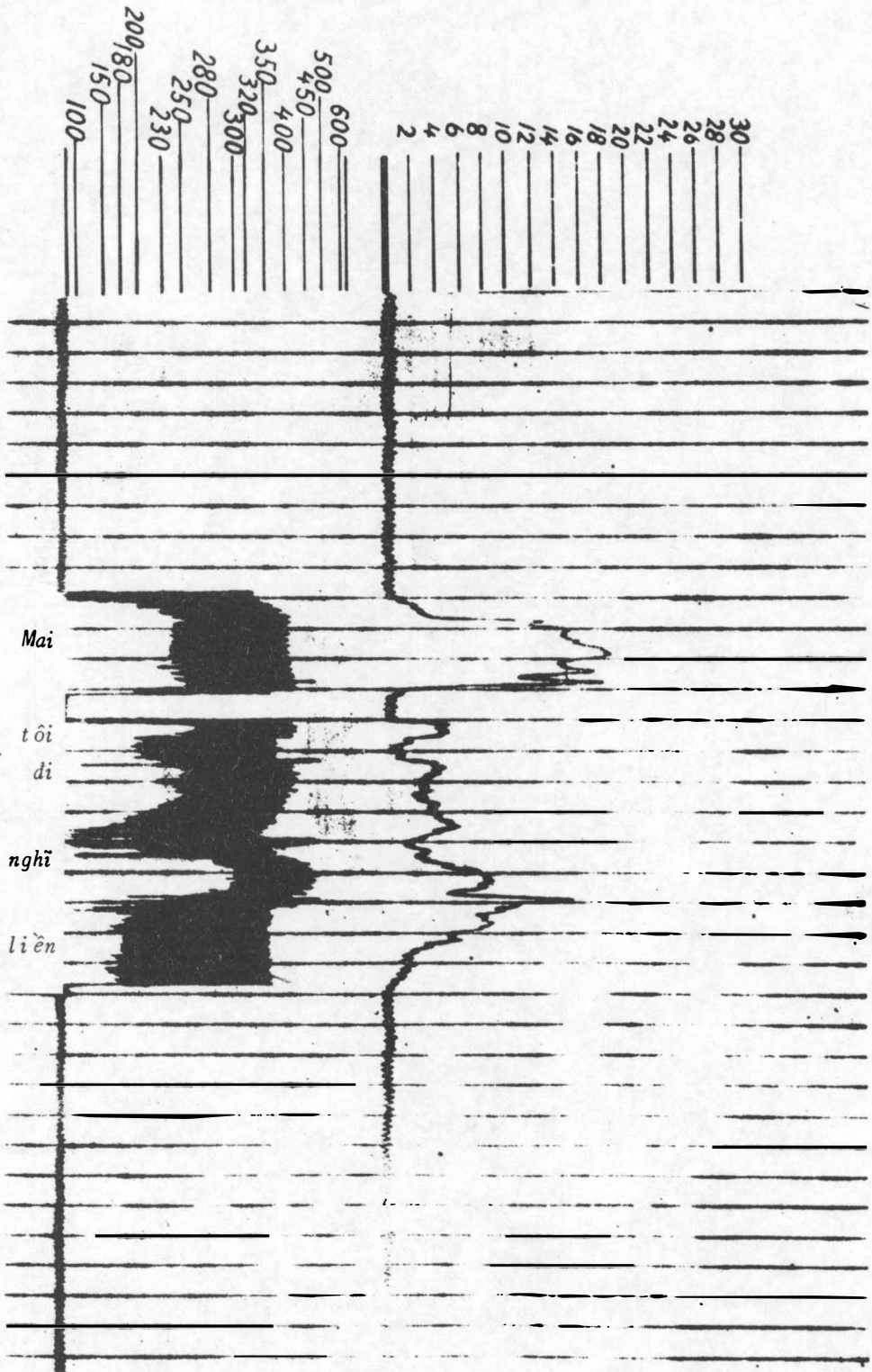


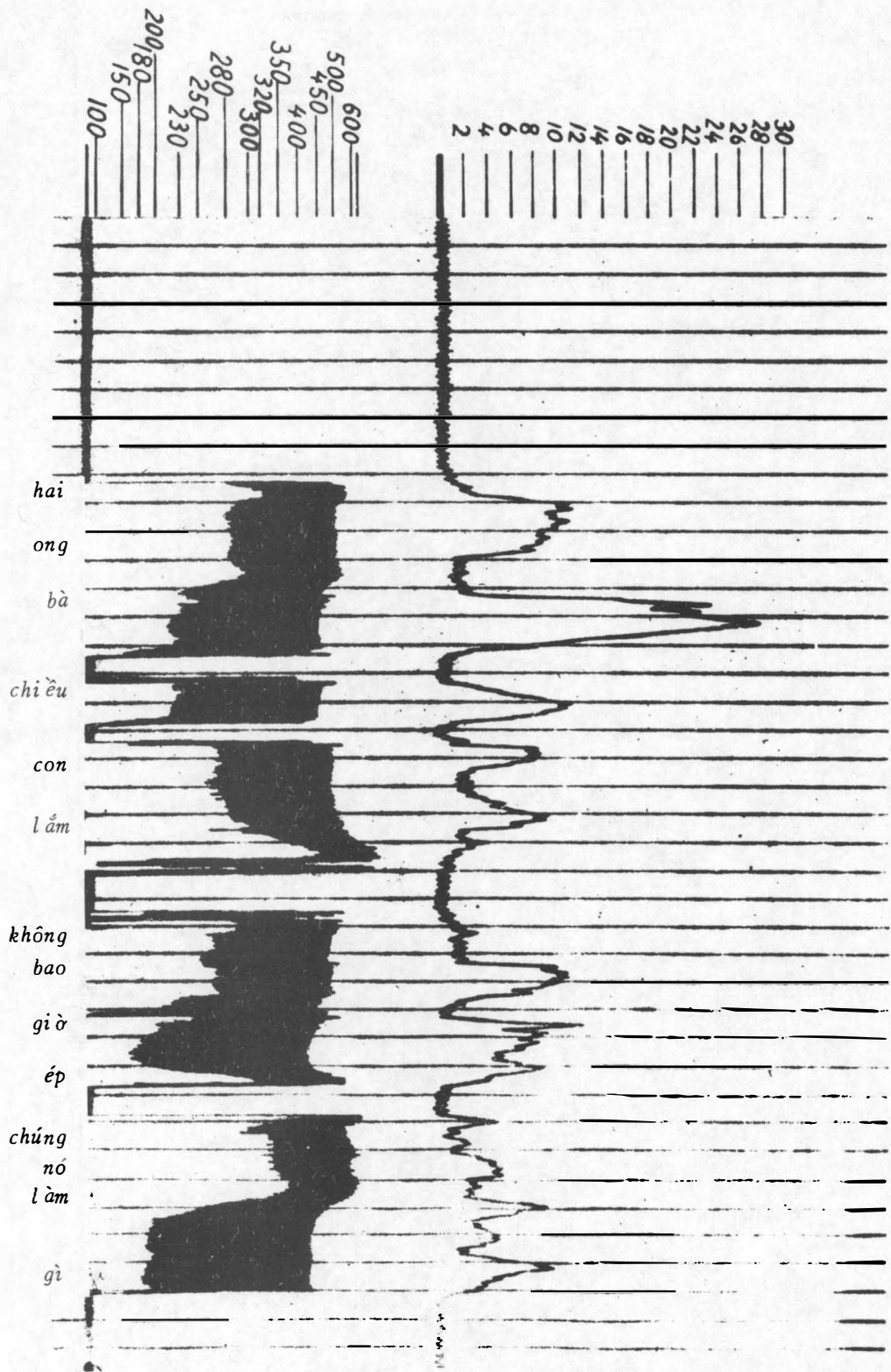


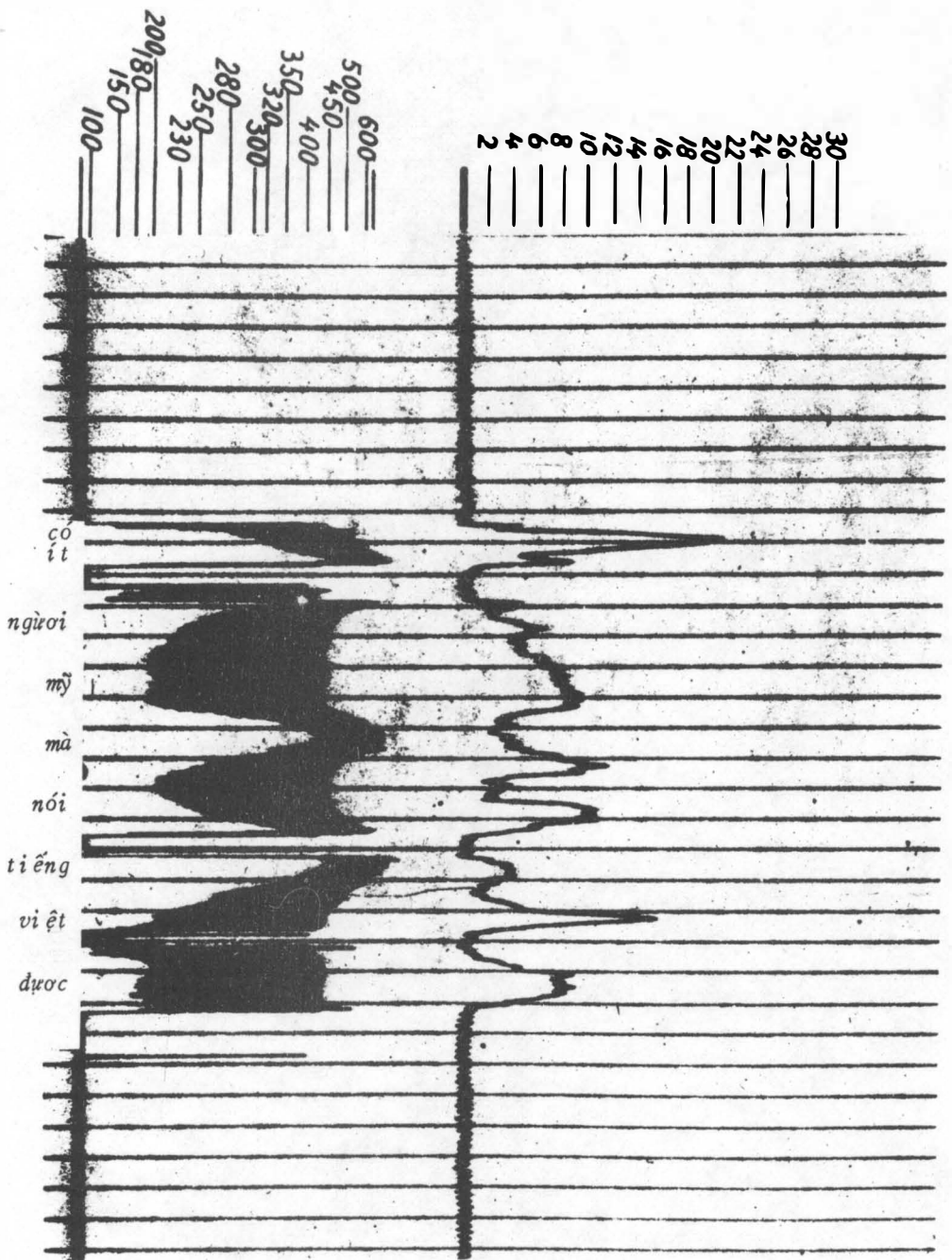


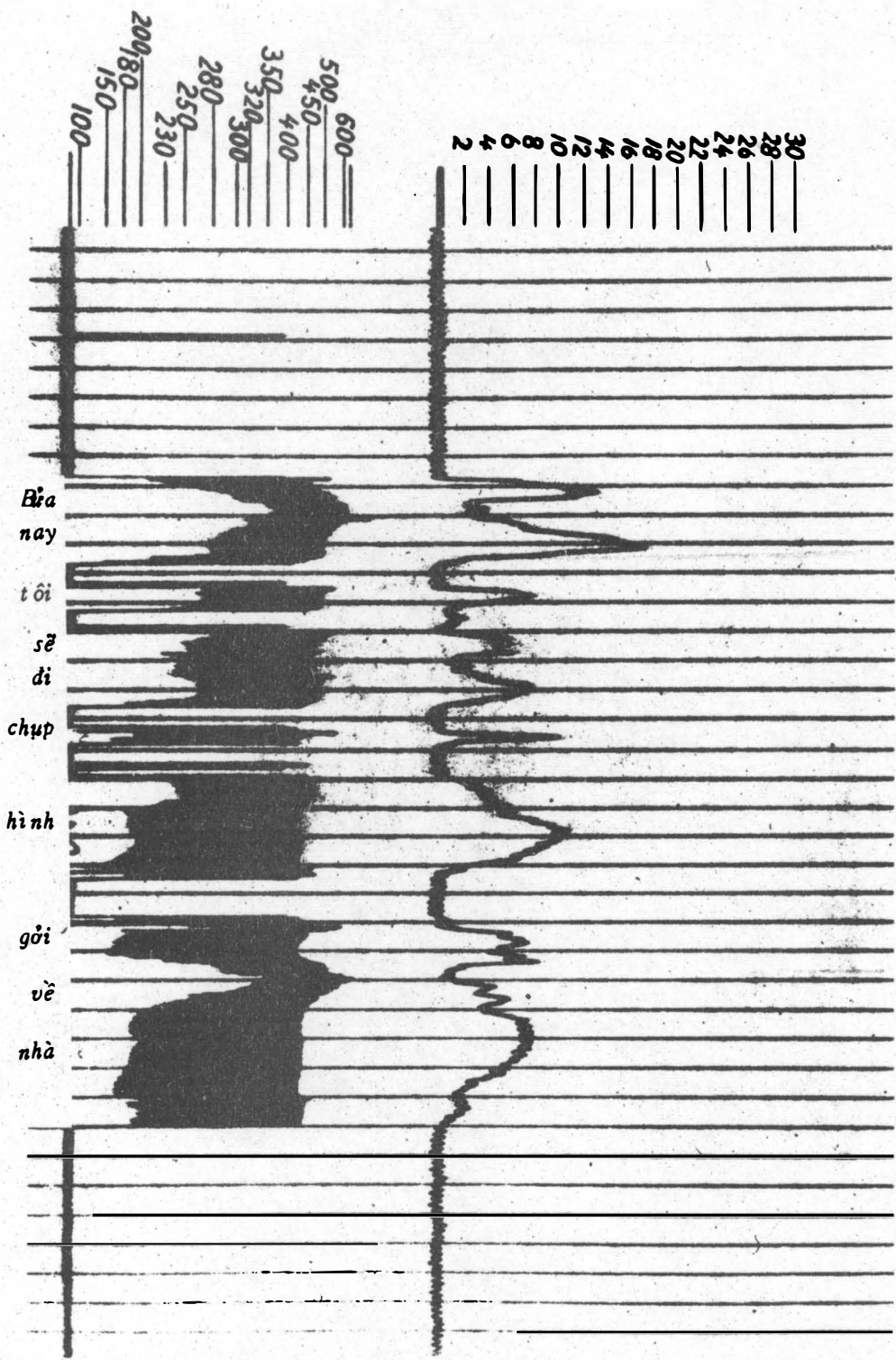
Mai
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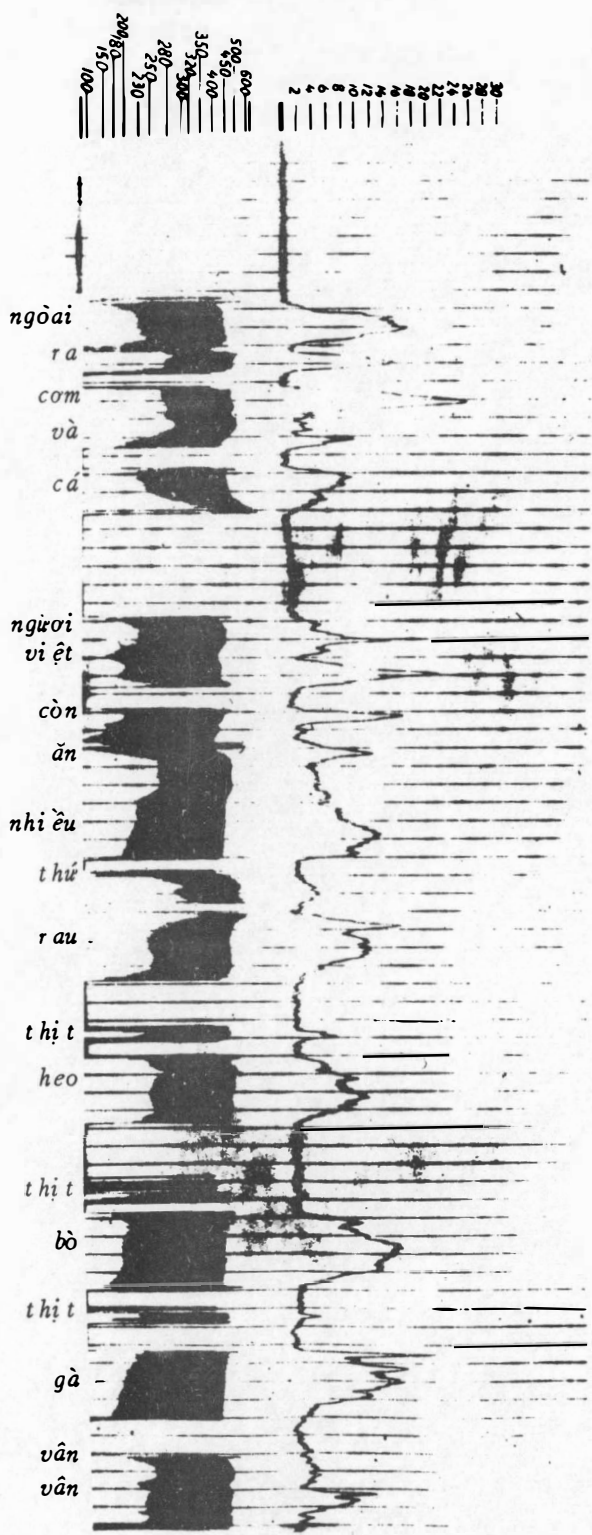
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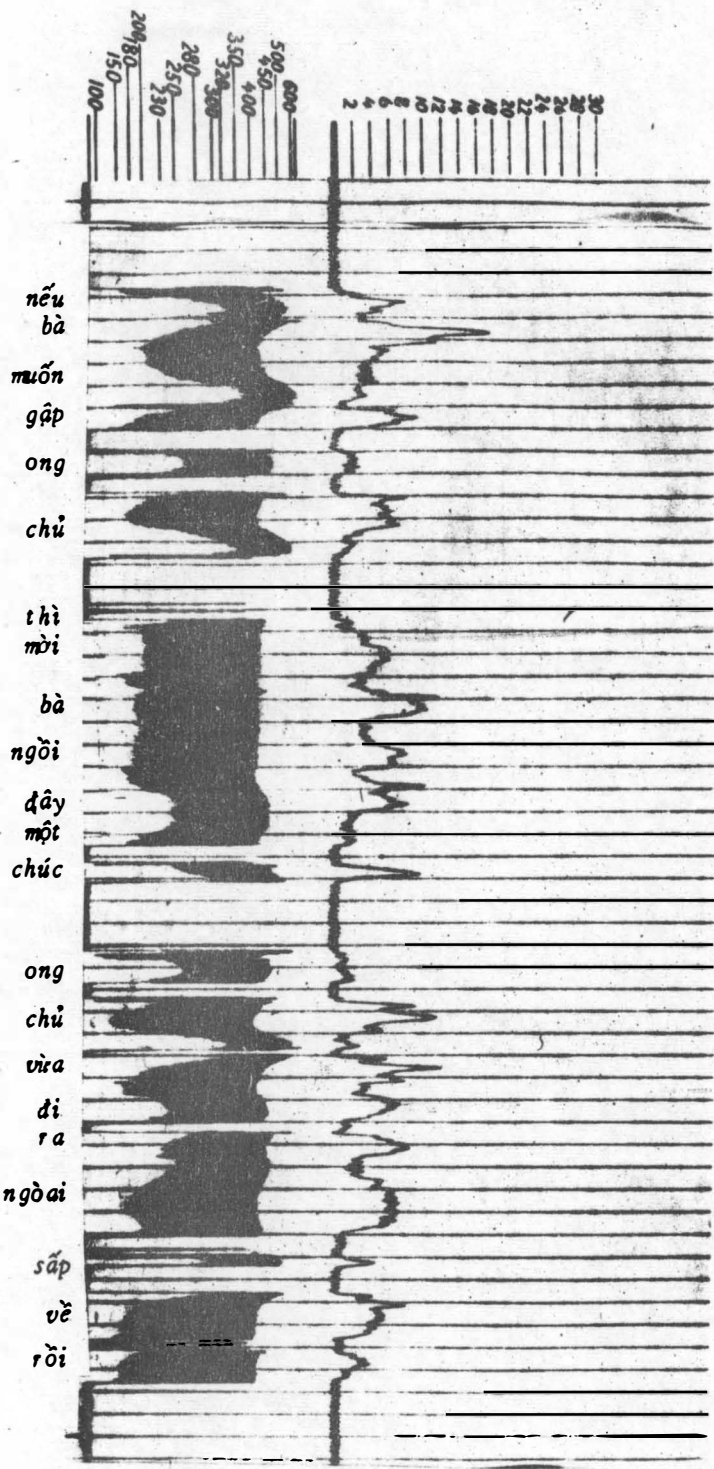


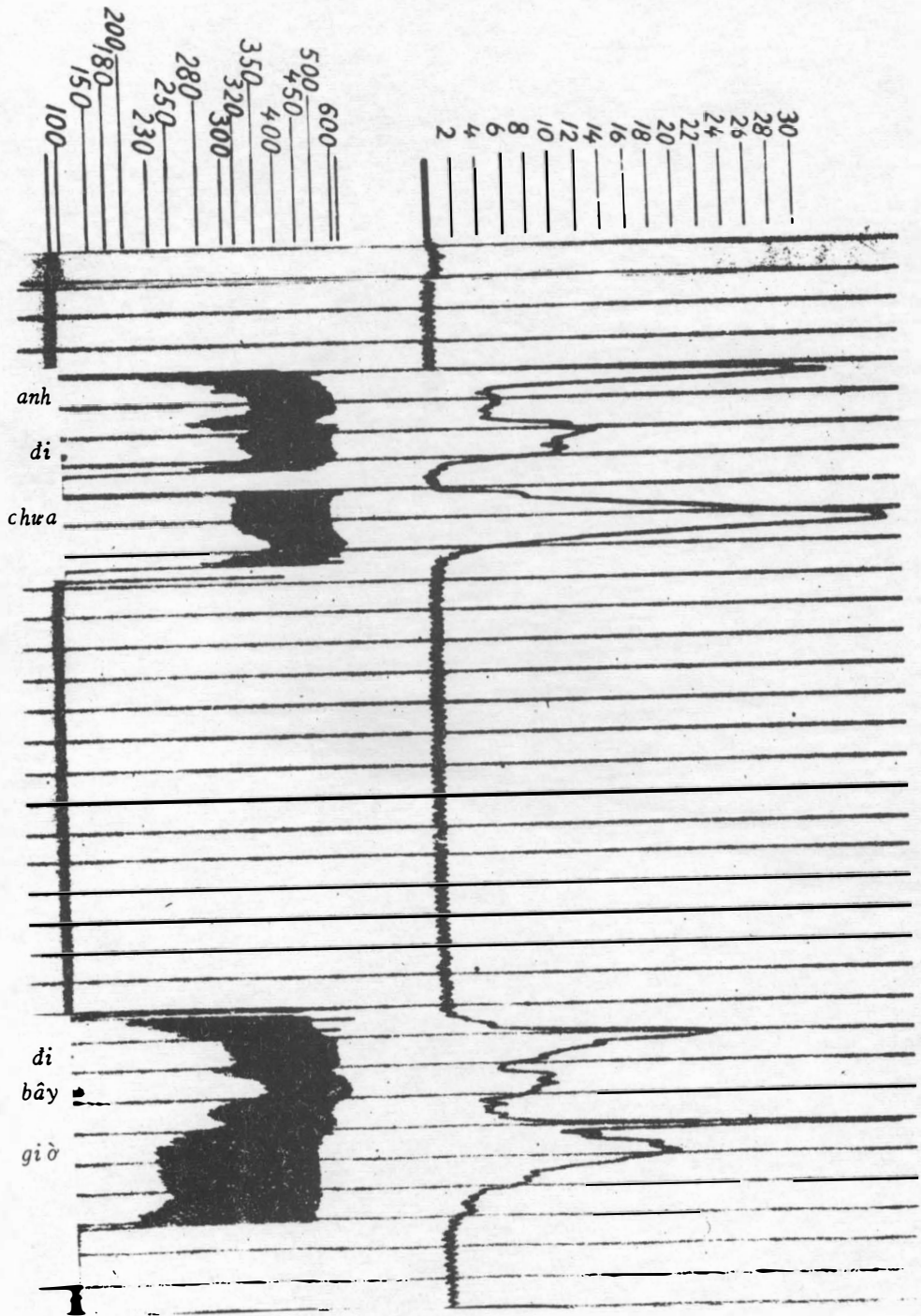


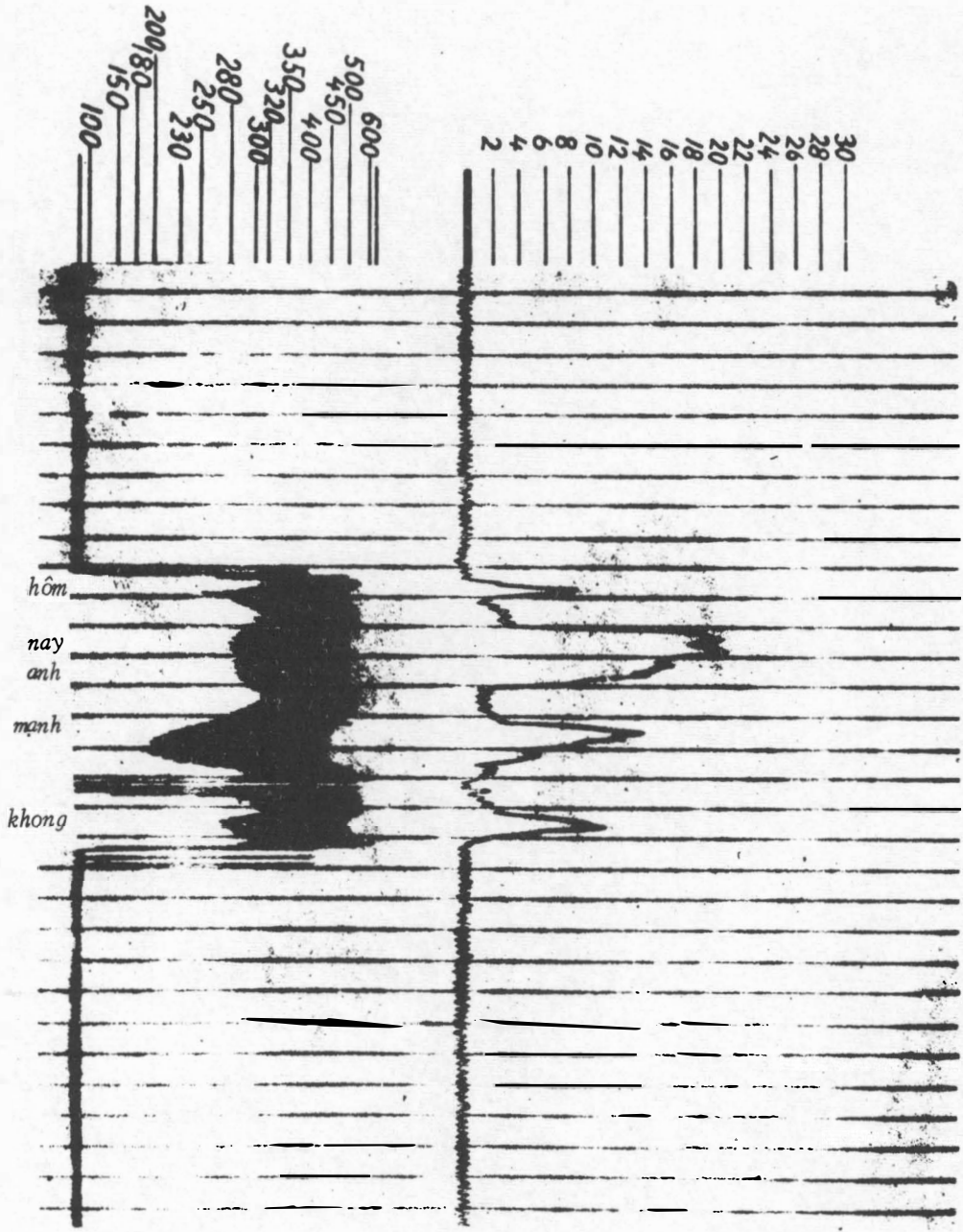


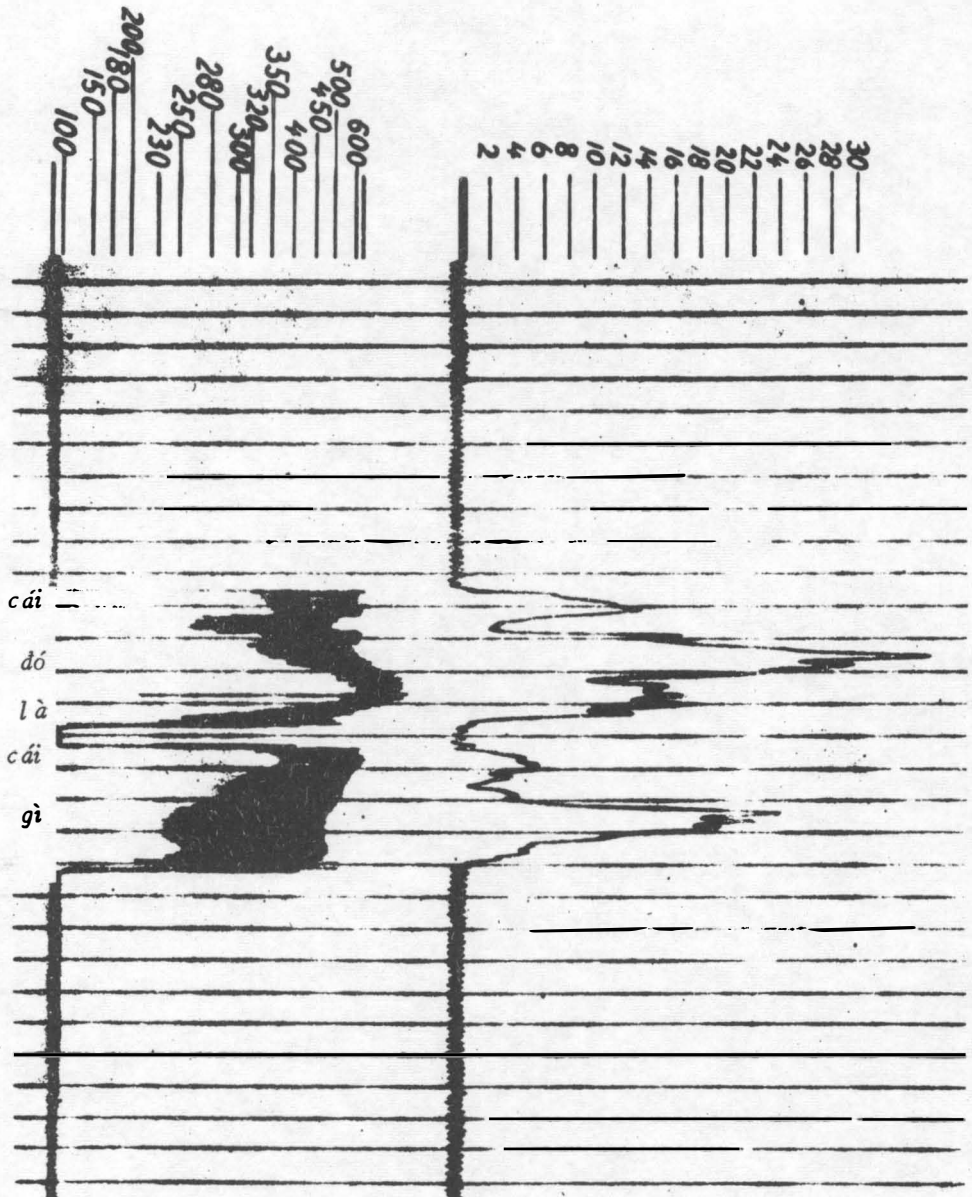




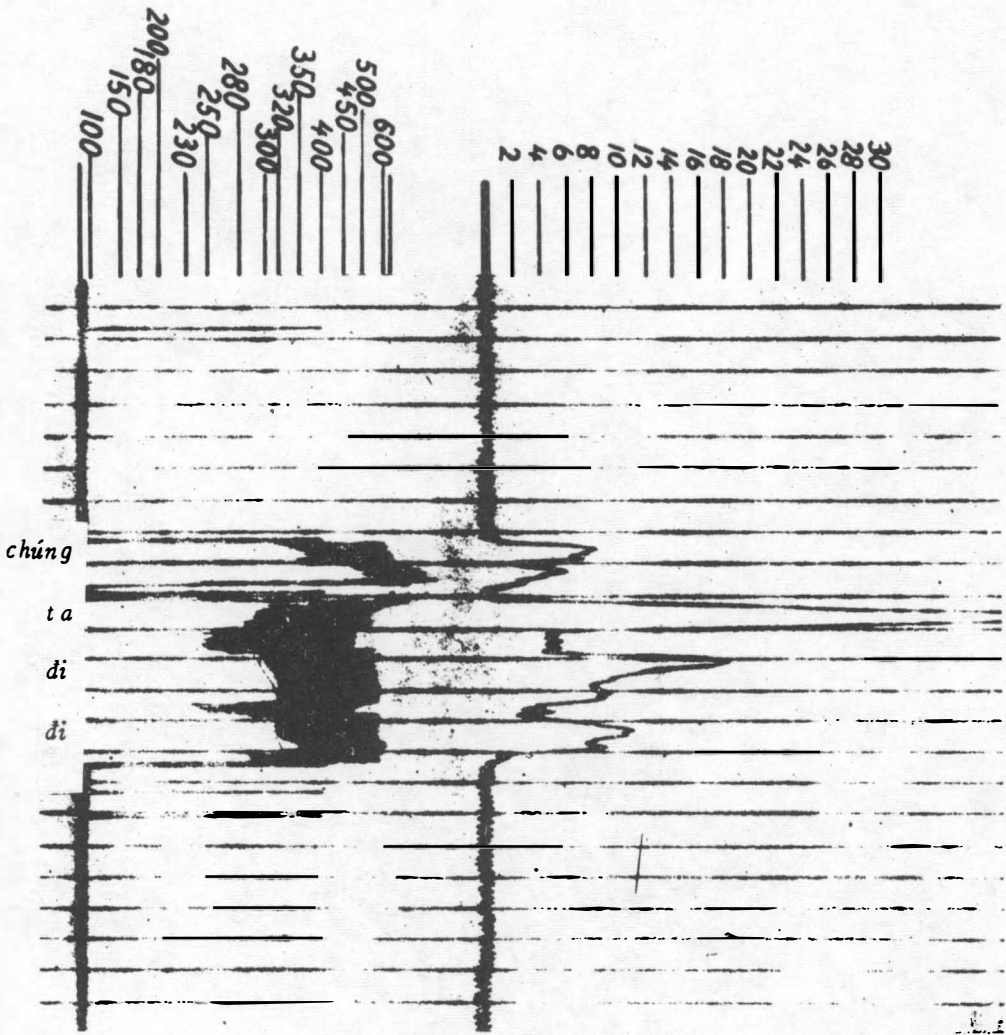


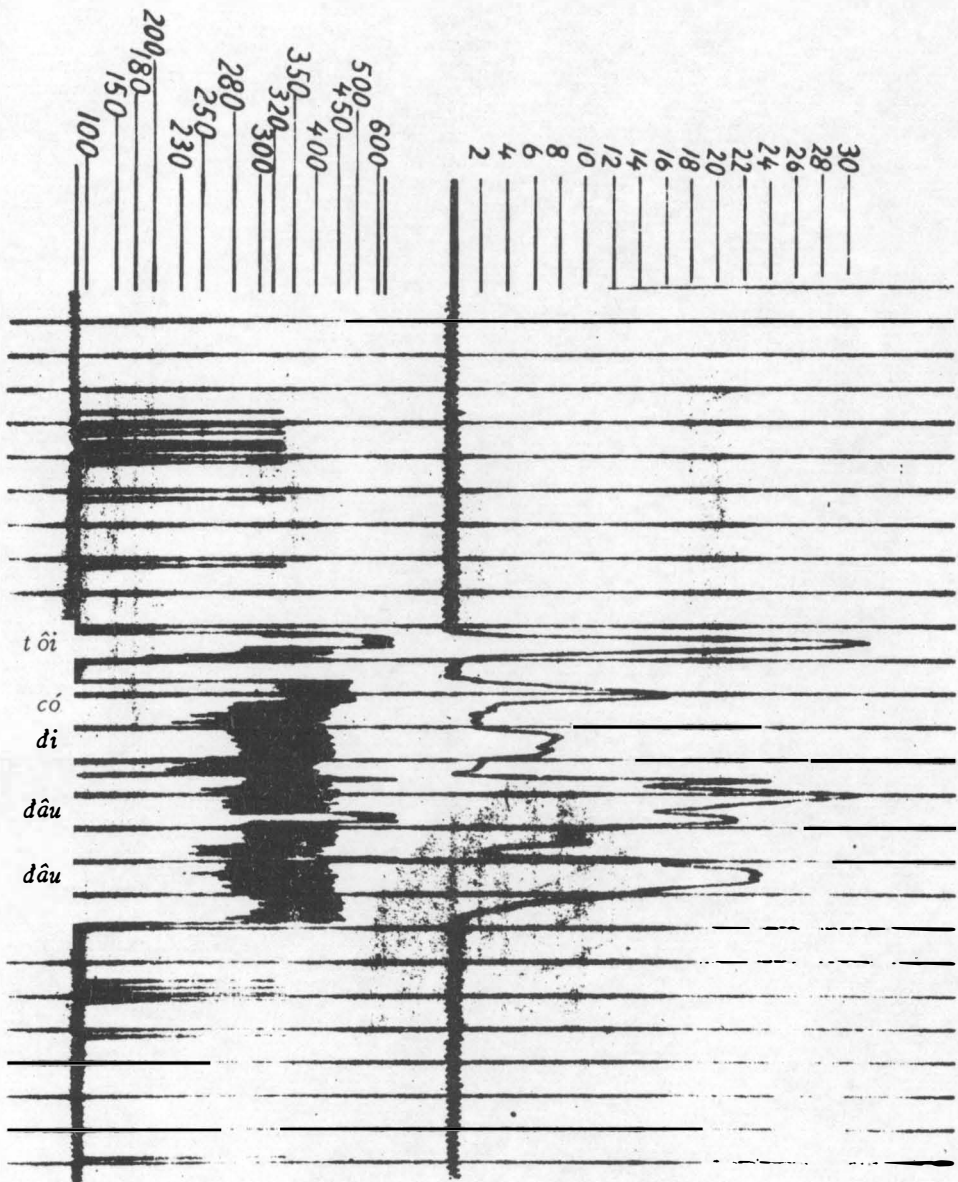


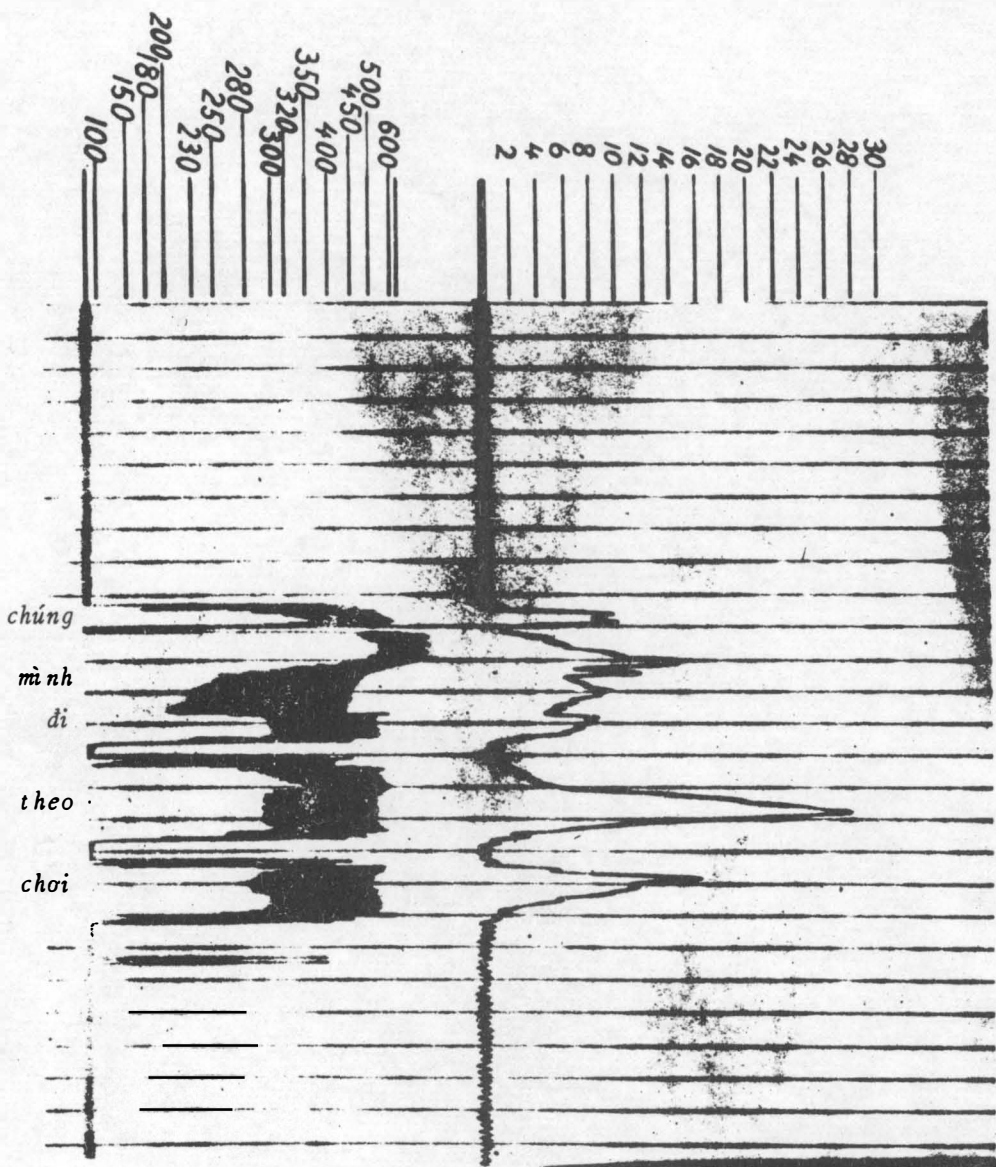


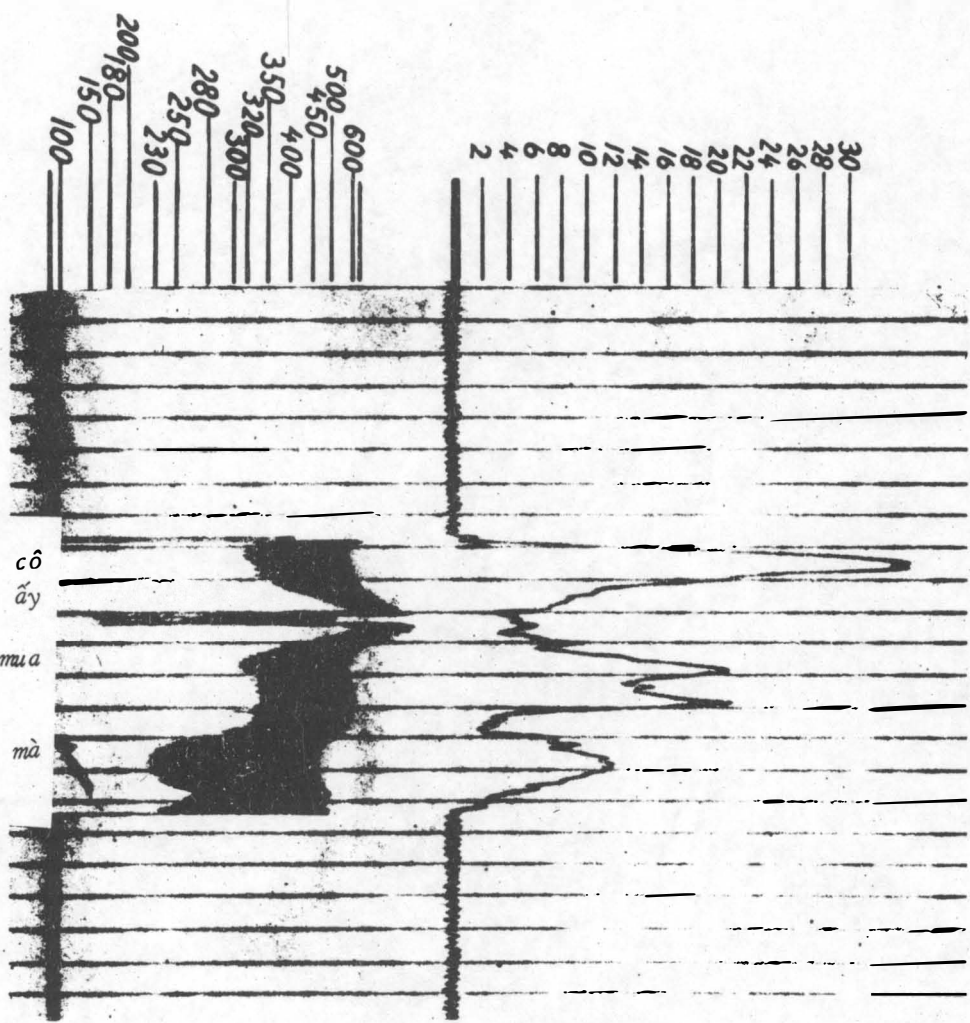


cái
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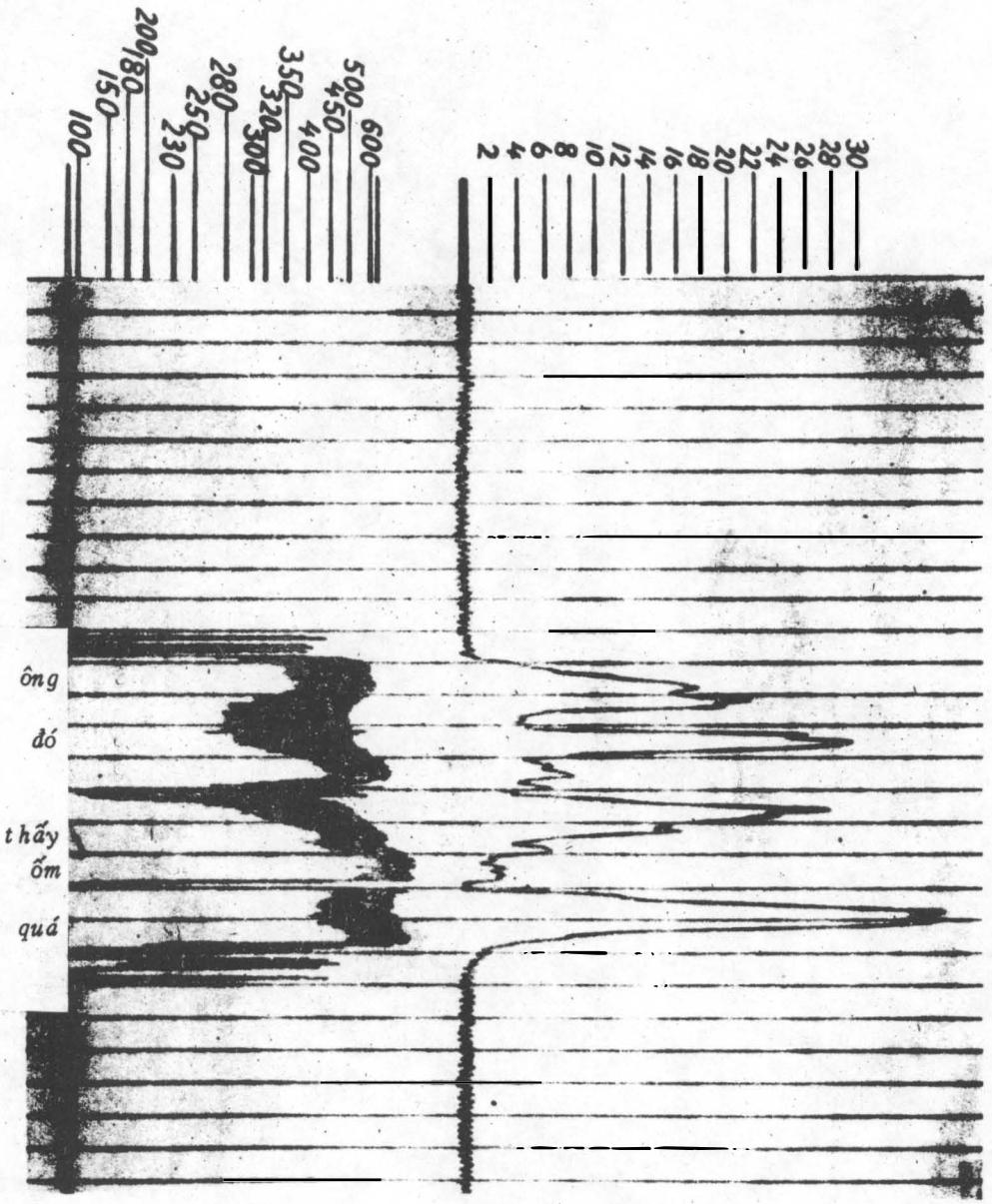


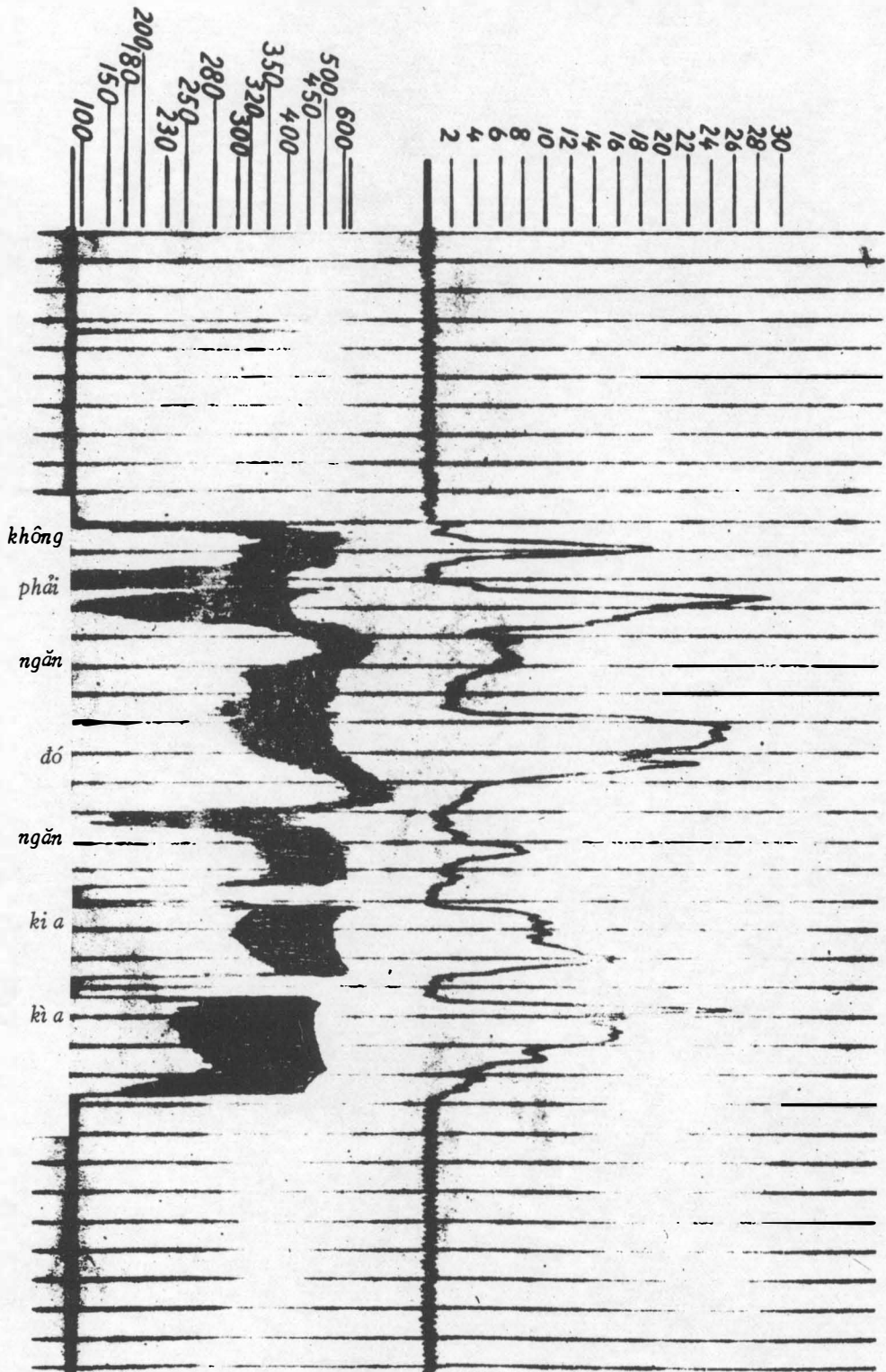


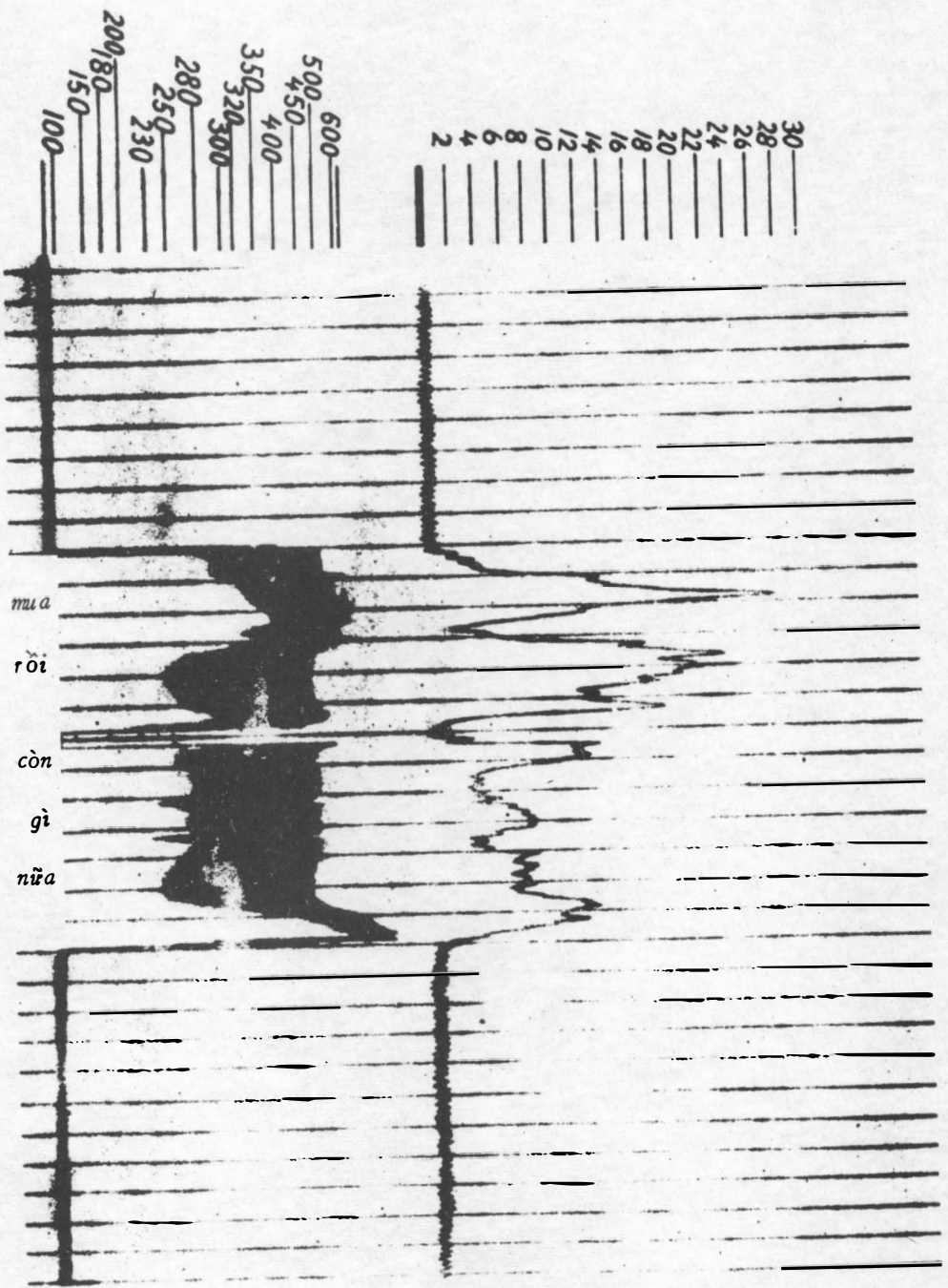


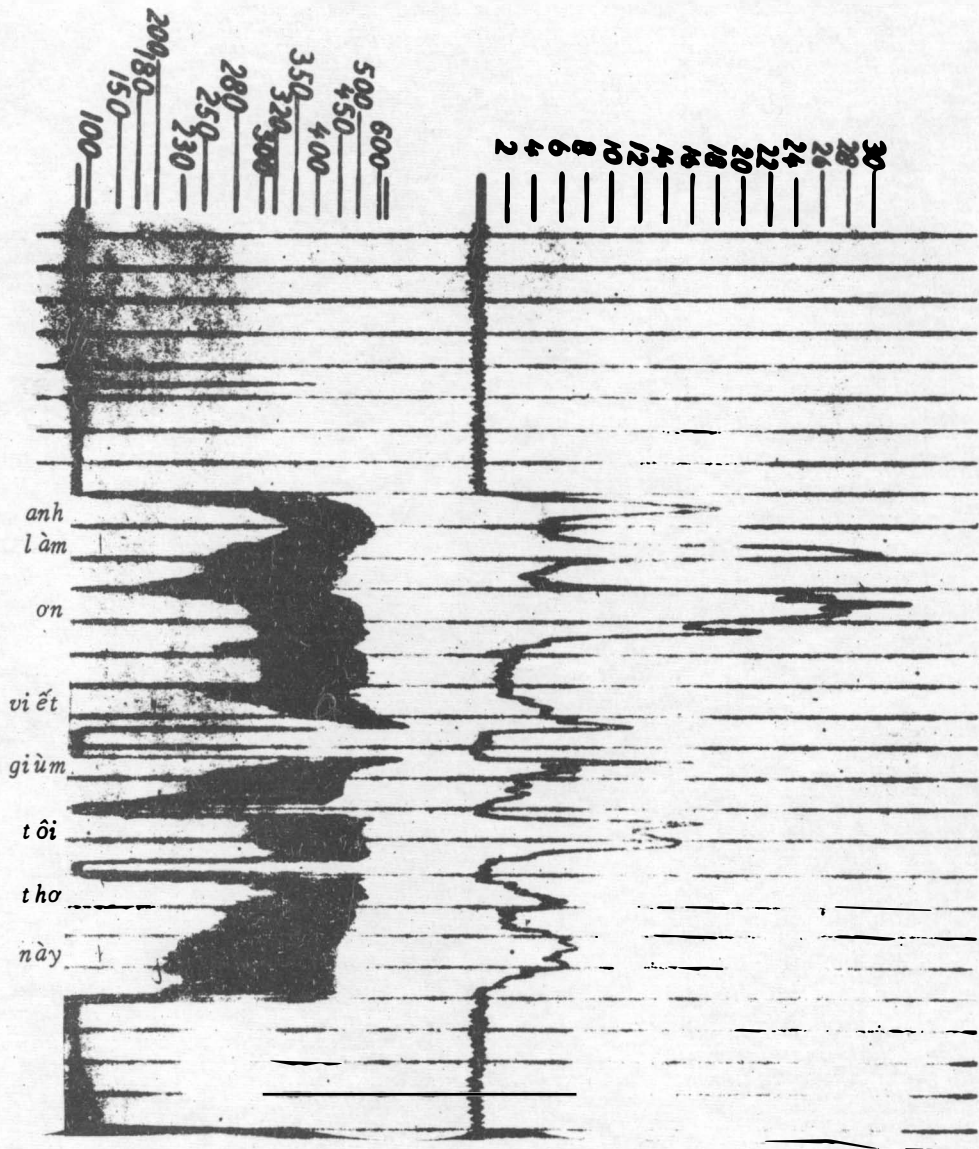


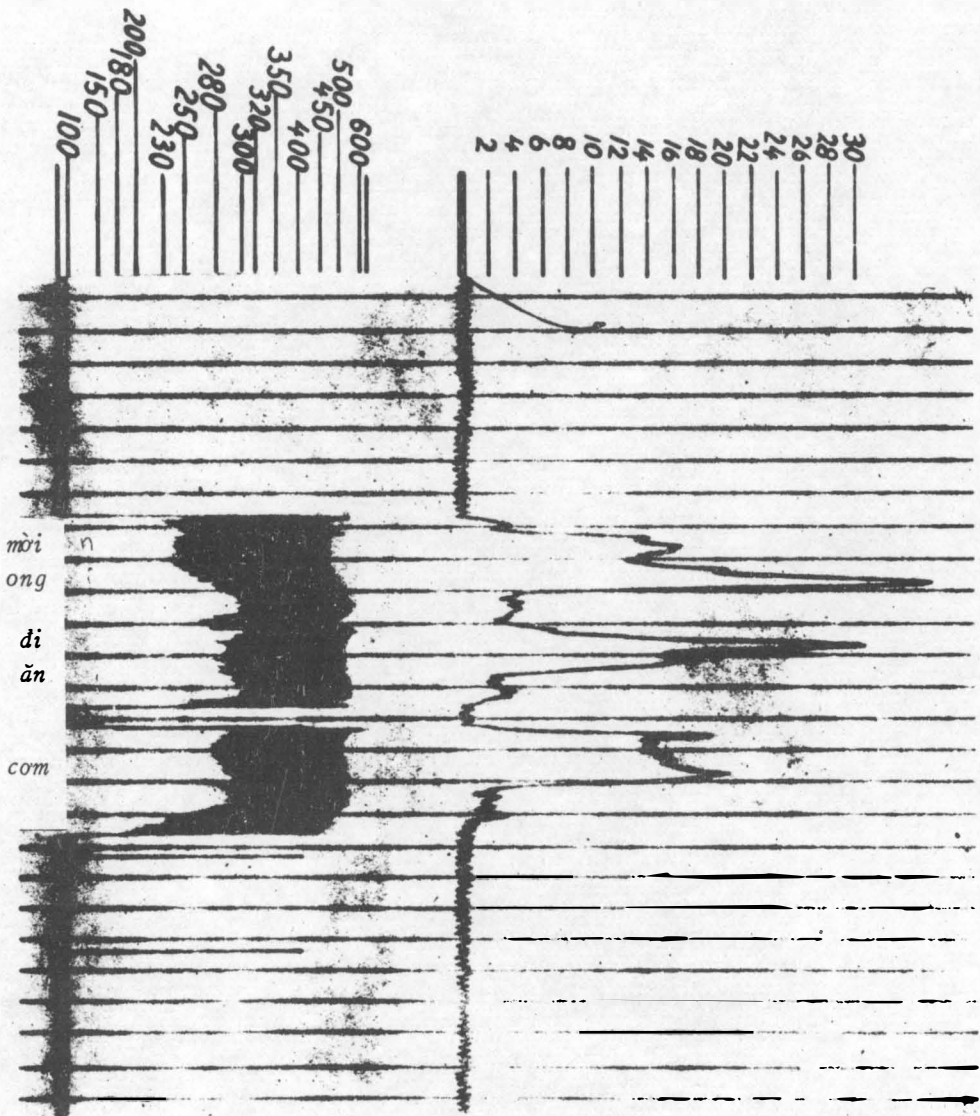
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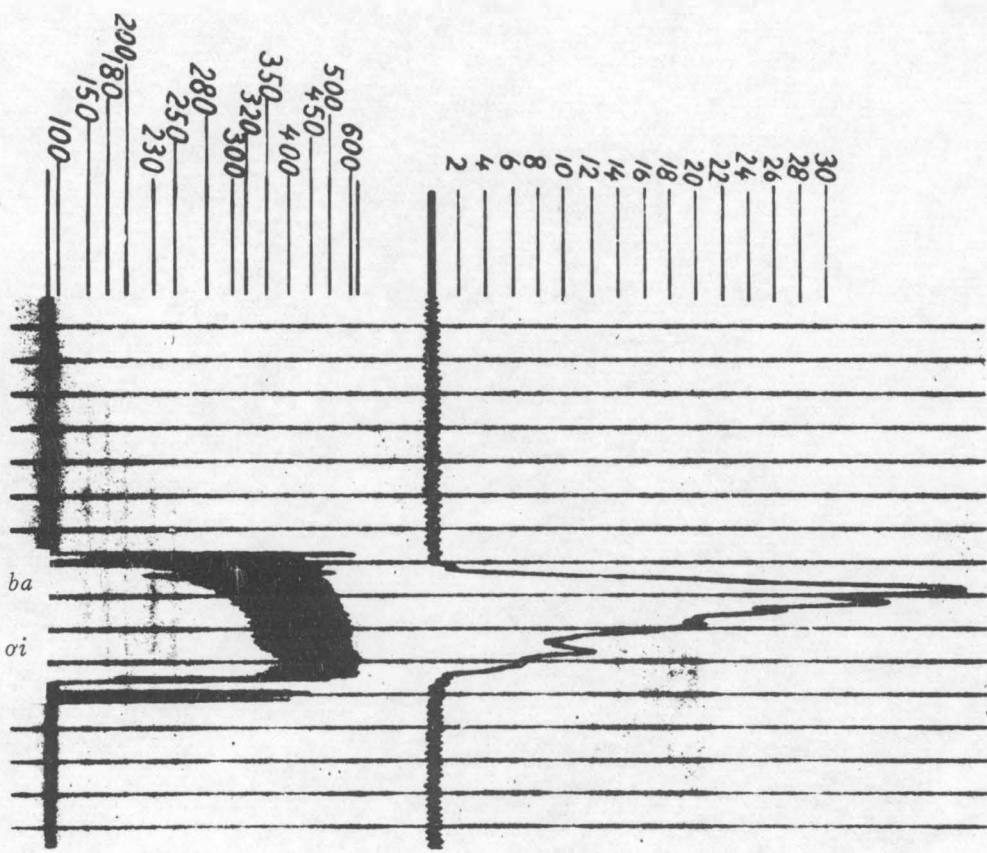


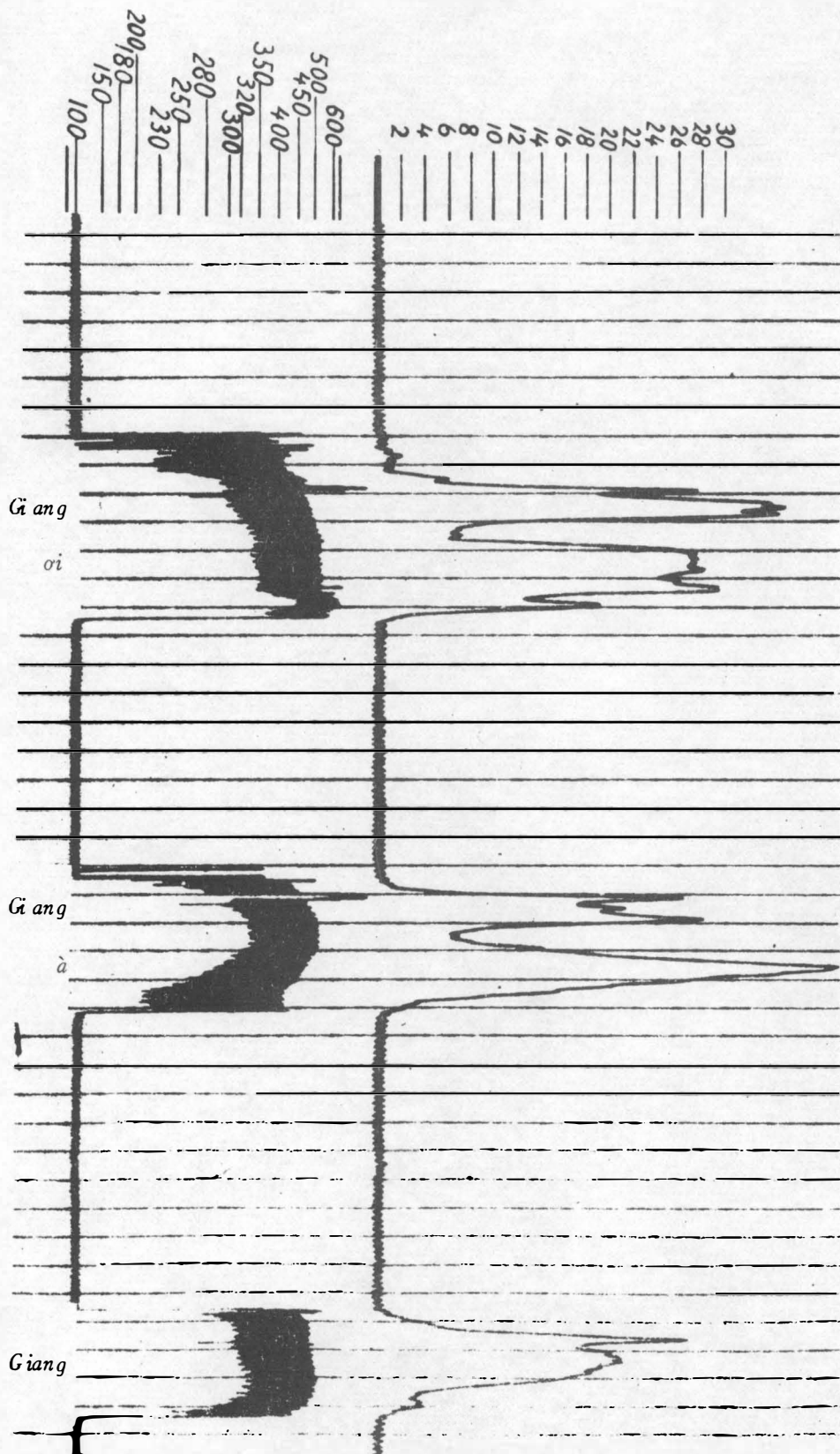












NOTES ON AKHA SEGMENTAL PHONEMES AND TONES

DAVID W. DELLINGER

Akha is one of the languages of what is referred to usually as the Burmic or Burman group within the large Sino-Tibetan family. Its speakers live in China, Burma, Laos and Thailand and may number as many as 100,000 people. They have only just penetrated into Thailand, and live almost exclusively north of a line drawn laterally through Chiengrai city. Their numbers in Chiengrai province in Thailand have been estimated at 6312 in fifty-five villages.¹

This article is based on material gathered during an initial field trip to Thailand in early 1966. A second, longer, field trip in 1967 may offer reason to change some of the interpretations in this paper. My work was carried out in Saencay, an Akha village approximately forty kilometers northwest of Chiengrai. My informant was Aphi Saejui. The material was gathered using Central Thai as a contact language, beginning with a word list of 437 single items plus short sentences and phrases, then gathering extemporaneous conversations and such additional vocabulary as came my way.

The division of the phonemic system into vowels and consonants was based on the determination of syllable peaks - those phonemes functioning as peaks being vowels and the others being consonants. Syllable peaks were determined intuitively and aurally, and the conclusions show the Akha syllabic structure is very simply represented by the canonical forms CV and V. All syllables are phonemically open, though they are sometimes phonetically closed, either by a glottal stop or a nasal quality (see below under discussion of vowel phonemes). Word² initial V syllables are

¹ *Bennington-Cornell Thailand Hilltribe Survey, 1963-1964*, Cornell Thailand Project, Cornell University, N.Y., 1964.

² "Word" is defined (only loosely) here as being the minimum utterance that my informant thought made sense.

quite common, but medially they are considerably less common - [chàə̃·] arrow; [yàʔuʔ] egg; [yoʔʔóʔ] low; [láòʔ] door; [yoʔʔà] wet; [lèʔuʔ] testicles, probably being the majority of the examples recorded.

Akha is a polysyllabic language, roughly 80% of its lexicon having two or more syllables. Many of the polysyllabic words feature reduplication, e.g. [ʔùpèpè] to vomit; [ʔùthəthə] to cough; [bàśaśa] to have a beard; [gənanà] to rest; [gòyòyò] to stand up; [khàjèjè] to shake (something). Of these, some are meaningful even without the feature of reduplication, others apparently are not. The functions of reduplication have not been determined. Other polysyllabic words contain bound morphemes, e.g. {u} head, up (?) as in [ʔùchĩ] headdress; [ʔùdu] head; [ʔukóʔ] hat; {u} a time element, as in [ʔù·byaʔ] day; [ʔùciʔ] night; [ʔùšó] morning; {la} pertaining to the arm, as in [làbæ] costume ring; [làduʔ] lower arm; [làlǝʔ] hand; [làmaʔ] thumb. Some polysyllabic words seem not to be divisible into smaller morphemic units, e.g. [jalá] wind; [cisá] betel; [hòza] pole; [ŋòxe] to break; [ʔàpási] cabbage; [yojóna] often.

There are thirty consonant:phonemes (see Chart 1). This compares with the twenty-five postulated by Lewis³ in his alphabet devised for Bible translation purposes; the twenty-two suggested by Smalley⁴, and the nineteen described by Thomas⁵.

The contrast between aspirated and unaspirated voiceless stops is one of the most difficult situations to verify. It has been suggested by Lewis, Thomas and Smalley (in the above cited reports) that there is no phonemic contrast on the basis of aspiration, that aspirated stops occur before oral vowels and unaspirated before laryngealised (Lewis' "glottalised") vowels. There does seem to be a correlation, but none of the reports describe the distribution of the correlation. Unfortunately, in the whole corpus I gathered - about 900 single lexical items - not a single minimum pair was found based exclusively on segmental phonemes; all pairs

³ Paul Lewis, a description furnished to William Smalley in typewritten copy, date unknown.

⁴ William A. Smalley, *Notes on Some Phonological Problems in Akha as Spoken in the Chiengrai (Thailand) Area*, Chiangmai, 1964 (unpublished).

⁵ David D. Thomas, *Notes on the Pang Khi Heh Dialect of Akha*, Chiangmai (?), 1965 (unpublished).

CHART 1

<i>Manner of articulation</i> \ <i>Place of articulation</i>	<i>Labial</i>	<i>Palatal labial</i>	<i>Dental</i>	<i>Palatal dental</i>	<i>Palatal</i>	<i>Velar</i>	<i>Glottal</i>
Voiced stops	b	by	d	dy		g	
Voiceless unaspirated stops	p	py	t			k	
Voiceless aspirated stops	ph	phy	th			kh	
Voiced affricates			dz		j		
Voiceless unaspirated affricates			ts		c		
Voiceless aspirated affricates					ch		
Voiced fricatives					z	ʒ	
Voiceless fricatives			s		š	x	h
Nasals	m	my	n	ny		ŋ	
Laterals			l				

which differed only in one segmental phoneme also differed tonally. But some basis for judging this aspiration feature is present in the consistency with which my informant used a particular form of a stop in any one word. I have recorded no alternation between aspirated and unaspirated stops. If further investigation substantiates this, it would seem to verify the phonemic status of the *aspiration vs non-aspiration* contrast.⁶

EXAMPLES:

/kh/-/k/ - [ʔakhá] Akha; [ʔàkhé] dog; [khòlǒ] neck; [yɔʔkhǒ] heavy; [khu] to call; [khíloʔ] bicycle; [koʔ] six; [kí·ba] yonder; [kímɤʔ] goat; [bǒkə] box; [kò] to bite; [kaʔ] crossbow.

/ch/-/c/ - [ʔàchíchu] be silent; [chàʔǒ] arrow; [yɔʔché] sour; [chə.] fog; [chù] to raise animals; [chegǒ] mosquito; [ʔu·cíʔ] night; [càhm] feather; [cəchəchə] to run; [cu] to suck; [pacé] hat.

/ph/-/p/ - [phuʔ] village; [sàpha] cloth; [dùphǒ] to bury; [nəphə] wild bananas; [phasì] mattress; [phesí] priest; [thəphòmaʔ] wooden statues; [tépù] a kind of rice; [payòʔ] weighing scale; [pè] to burn; [tsòpèdu] cultivating stick; [pǒ] be wrong; [yupo] to turn.

/th/-/t/ - [pyathæ] be proud; [thíduʔ] fire light; [thu] to sit up; [thə] that; [mòthó] camera; [luthǒ] mosquito larvae; [nətho] call up the spirits; [pàtæ] kind of weed; [là·tiʔ] pants; [gótəʔ] pipe mouth-piece; [motó] padlock; [tǒdze] to fake; [tomaʔ] phallic symbol.

Also in the case of the phones [y] and [z], it was more normal for my informant to be consistent in using one only for any one word, e.g. [yɔʔ-] adjective prefix; [yu] to

⁶ At least, it is more usual in dealing with Southeast Asian languages to regard *aspiration vs non-aspiration* as a contrastive device than *laryngeal vs non-laryngeal*.

sleep; [zò] to fly; [ʔàyecha] to sing; [ʔaysʔ] flower; [hòzə] pole. But in some words, usually preceding [a], [y] and [z] alternated freely with each other and with phones intermediate between the two, e.g. [Zá]⁷ child; [ʔàZaʔ] hog; [dzamíZ.a] woman; [bZəmmaʔ] it (?). And yet when I substituted the opposite phone in the words with which he had been consistent, my informant accepted the words. There are also the facts that other speakers used the opposite phones to my informant, and that some speakers seem to utilise the whole scale of these phones. It is for these reasons I consider [y] and [z] as allophones of /z/. Lewis distinguishes between them in his alphabet, but neither Smalley nor Thomas found a contrast. The problem of [z] ~ [y] as alternation or contrast appears to be dialectal. A possible explanation for my informant's case is that in his dialect or idiolect, the difference was originally phonemic, but through contact with other dialects where the difference was not phonemic, not only has he come to accept free variation of these two phones in others' speech, but it is even encroaching on his own.

/s/ ~ /š/ is another contrast that has an equivocal aspect. It is taken to be contrastive, as it is in Burmese. In Lahu, a closely related Burman language, there is no contrast.⁸ Thus, it would not have been surprising if [s] and [š] had not contrasted; in fact, at times they seem to be in free variation, primarily before [a], e.g. [Sàphyàbæʔ]⁹ thigh; [Sàdyæʔ] mud; [Sají] animal. The variation has also been noted in [khaSìʔ] sand, where [ɪ] is laryngealised. Lewis describes it as phonemic. Smalley found it to be non-phonemic. Thomas said that his informant in careful speech distinguished the two, but apparently did not in natural speech. Both of these phonemes are articulated with the tongue tip against the back of the front lower teeth.

Smalley has also found [ts] and [c], and [dz] and [j] to be non-contrastive in his informant's speech. Both Lewis and Thomas regard them all as phonemic as I did with my informant, e.g. [tse] to bark; [cèce] to defecate; [jò] to invite; [dzə] to study; [jáʔə] Jew's harp; [dza] to eat.

⁷ [Z] = abbreviation for [y] and [z].

⁸ Conversation with James Matisoff, whose Ph.D. dissertation, University of California, Berkeley, was a description of Lahu.

⁹ [S] = abbreviation for [s] and [š].

[r] and [l] are in free variation as allophones of /l/, but [r] has been heard rarely and only in rapid speech, e.g. [yu.Làʔ] bring.¹⁰

There are thirteen simple vowel and three diphthong phonemes (see Chart 2). Lewis has sixteen vocalic symbols in his alphabet, representing the same pattern as above except for /ɔy/. His sixteenth symbol represents /am/. I recorded only one item on only one occasion with /am/ - [yam] time. Because of its rarity of occurrence I have excluded it from my phonemic analysis until I can check the accuracy of that item. Thomas found the same phonemic pattern as Lewis.

CHART 2

Simple Vowels				Diphthongs	
i	ĩ	ɪ	u	ay	ɔy
e	ě	ə	o	aw	
æ	a	ǝ	ɔ		
		ɱ			

/a/ before /z/ sometimes becomes diphthongized, e.g. /šàzə/ [šàyyə] bone; /dàzo/ [dàyzə] grass.

/ǝ/ has the two allophones [ǝ] and [ǝŋ] which are in free variation, apparently. [ǝŋ] may be a conditioned variant, appearing only but optionally before a voiced sound. It is most common before vowels, especially the verb particle /ə/, but has been found before /l/, e.g. [déhǝŋəʔ] to sing (+ verb particle); [ǝŋí] to go make; [jǝŋəʔ] to make (+ verb particle); [dǝŋla] there is (+ verb particle). However, its exact distribution has not been checked yet.

Syllabic /ɱ/ is represented by both [ɱ] and [əɱ], e.g. [nəmsí] sesame; [šəɱ] iron; [səɱ] three; [nyəɱ] house; [xəɱ] a grammatical particle; [kəɱthe] Bangkok; [ʔɱ] sky; [ʔɱdəɱ] cloud; [ʔɱ·aʔ] guts; [cəhɱ] feather; [maʔɱ] Burma; [hɱ]

¹⁰ [L] = abbreviation for [r] and [l].

grammatical classifier. [ɱ] is taken as a vowel because it constitutes the syllable peak in many cases. Since it is in complementary distribution with [əɱ] the two are considered allophones of the same vowel phoneme (see the morphophonemic notes below). To have regarded [ɱ] as /əɱ/ would have complicated the description. If /əɱ/ had been described as vowel + consonant, it would have complicated the description of canonical forms. The form CVC which it would have added would have had only this one filler for the final slots VC (with the possible addition of /aɱ/ - see above). Thomas places both /əɱ/ and /õ/ with the diphthongs, but it seems to me more usual to find nasality as an additional dimension of the simple vowel pattern, rather than of diphthong patterns. /ɱ/ together with the phoneme /õ/ add a third dimension of nasality to the vocalic pattern.

/ĩ/ and /ẽ/ are rounded central vowels.

Diphthongs occur in only a very few morphemes, e.g. [xòy] particle; [náv] Stop!; [áv] particle; [ʔamyáy] how much; [báy] money; [lopháy] train; [sæcáy] Saenchay; [tháy] Thai; [thəmyáyʔ] only; [máy] particle.

There is no restriction on which consonants can occur with which vowels, though not all possible variations have been recorded - e.g. /byo, cə, co, ku, lě/ etc. have not been recorded - there is no significant patterning that would suggest complementary distribution.

In regard to morphophonemics, the following have been noted:

1. /ɱ/ in the V environments $\left\{ \begin{array}{c} v \\ hv \end{array} \right\} \rightarrow [\mathfrak{m}]$
2. /ɱ/ \rightarrow [əɱ]

1. /æ/ in the environments $\left\{ \begin{array}{c} chv \\ šv \\ jv \end{array} \right\} \rightarrow [\varepsilon]$
2. /æ/ \rightarrow [æ]

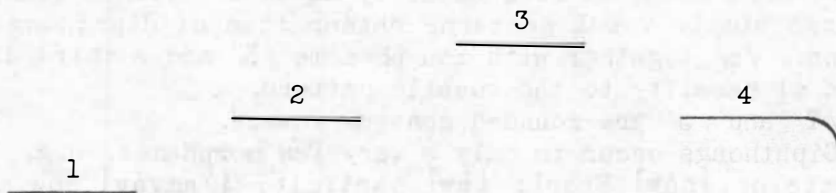
1. /l/ \rightarrow $\left\{ \begin{array}{c} [r] \\ [l] \end{array} \right\}$
1. /õ/ \rightarrow $\left\{ \begin{array}{c} [õ] \\ [õɲ] \end{array} \right\}$

1. /Cə/ + /ə/ verb particle \rightarrow /Cə/ + [ʌ] ¹¹
2. /ə/ \rightarrow [ə]

¹¹ C = consonant.

The morphophonemics will be examined more extensively during the second field trip.

The tonemics are based on three pitch levels. There seems to be agreement among researchers that there are at least three level tones, one on each pitch level. Lewis posits a five tone system in his alphabet - two low tones, one with oral vowel and one with glottalised vowel; two mid tones with the same difference; and a high tone with oral vowel. Smalley and Thomas agree. I analyse my informant's speech as having four tones - a low, mid and high level tones, and a falling tone that falls from mid to low pitch.



These are marked with the following diacritics over the vowels respectively: ` , unmarked, ´ , ´ . There are no restrictions as to which consonant-vowel combinations the tones occur with, nor as to their sequence of occurrence, except that the fourth tone occurs only in utterance-final syllables.

Tone one: [ʔapàʔ] leaf; [gò·jò] mountain; [ʔù·ciʔ] night;
[bòkə] box; [cathòʔ] navel.

Tone two: [duchí] root; [khà·loʔ] stone; [ʔácaʔ] rope;
[yó^thú] thick; [yupoʔ] to turn.

Tone three: [yó^khó] heavy; [ʔí·cu] water; [khaló] basket;
[khéné] toe; [phyú] silver.

Tone four: [ché·] fog; [mæthò] chin; [ʔàkhé] dog;
[myaphyó] face; [ŋàšá·] fish.

As with the segmental phonemes, it was virtually impossible to obtain minimum pairs to establish tonemic contrasts. Perhaps half a dozen tonemically contrastive utterances were found in all.

The problem of intonation patterns, and their effect on the tonemes, has not been investigated thoroughly, nor the question of tone sandhi, though in eighty-two tone test frames constructed to investigate these questions, nothing

was noted suggesting there was sandhi. It appears that sentence intonation "neutralises" normal tone, i.e. replaces tonemes with non-phonemic (non-tonemic) tones whose shape is wholly conditioned by the overall sentence intonation. But the unnaturalness with which the tone test frames were treated by the informant makes the frames unreliable for any final conclusions. Vowel length has also been noted, but whether it is emically significant (at any level) has not been determined. These problems will be pursued in the second field trip.

The laryngealisation, or glottalisation, of the vowels has been noted in my informant's speech, but I consider it non-phonemic, possibly a prosodic feature. I have not yet been able to check with what consistency he laryngealises his words. As with the *aspiration vs non-aspiration* feature, consistency in its appearance or non-appearance with any particular words would be evidence of a phonemic contrast.

POSTSCRIPT:

/k, kh, g, h/ and probably /g, x/ have allophones determined by whether they precede front, central or back vowels, but this distribution was not described as I am not sure what effect the rounded vowels have on the allophones.

was first suggested that the vowel [ɔ] is a diphthong
[ɔɪ] in the initial syllable of the word 'boat'. This
is not a diphthong in the overall phonetic structure of the
word, but it is a diphthong in the first syllable. The
overall phonetic structure of the word is [bɔɪt]. The
vowel [ɔ] is a diphthong in the first syllable, but
it is not a diphthong in the overall phonetic structure
of the word. The overall phonetic structure of the word
is [bɔɪt]. The vowel [ɔ] is a diphthong in the first
syllable, but it is not a diphthong in the overall
phonetic structure of the word.

The overall phonetic structure of the word is [bɔɪt].
The vowel [ɔ] is a diphthong in the first syllable,
but it is not a diphthong in the overall phonetic
structure of the word. The overall phonetic structure
of the word is [bɔɪt]. The vowel [ɔ] is a diphthong
in the first syllable, but it is not a diphthong in
the overall phonetic structure of the word. The overall
phonetic structure of the word is [bɔɪt]. The vowel [ɔ]
is a diphthong in the first syllable, but it is not
a diphthong in the overall phonetic structure of the
word.

POSTSCRIPT

The overall phonetic structure of the word is [bɔɪt].
The vowel [ɔ] is a diphthong in the first syllable,
but it is not a diphthong in the overall phonetic
structure of the word. The overall phonetic structure
of the word is [bɔɪt]. The vowel [ɔ] is a diphthong
in the first syllable, but it is not a diphthong in
the overall phonetic structure of the word. The overall
phonetic structure of the word is [bɔɪt]. The vowel [ɔ]
is a diphthong in the first syllable, but it is not
a diphthong in the overall phonetic structure of the
word.